International Patent Classification

2016.01

Section C

CHEMISTRY; METALLURGY

World Intellectual Property Organization

SECTION C — CHEMISTRY; METALLURGY

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Note(s) [2009.01]

1. In section C, the definitions of groups of chemical elements are as follows:
   Alkali metals: Li, Na, K, Rb, Cs, Fr
   Alkaline earth metals: Ca, Sr, Ba, Ra
   Lanthanides: elements with atomic numbers 57 to 71 inclusive
   Rare earths: Sc, Y, Lanthanides
   Actinides: elements with atomic numbers 89 to 103 inclusive
   Refractory metals: Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, W
   Halogens: F, Cl, Br, I, At

Noble gases: He, Ne, Ar, Kr, Xe, Rn
Platinum group: Os, Ir, Pt, Ru, Rh, Pd
Noble metals: Ag, Au, Platinum group
Light metals: alkali metals, alkaline earth metals, Be, Al, Mg
Heavy metals: metals other than light metals
Iron group: Fe, Co, Ni
Non-metals: H, B, C, Si, N, P, O, S, Se, Te, noble gases, halogens
Metals: elements other than non-metals
Transition elements: elements with atomic numbers 21 to 30 inclusive, 39 to 48 inclusive, 57 to 80 inclusive, 89 upwards

2. Section C covers :
   a. pure chemistry, which covers inorganic compounds, organic compounds, macromolecular compounds, and their methods of preparation;
   b. applied chemistry, which covers compositions containing the above compounds, such as: glass, ceramics, fertilisers, plastics compositions, paints, products of the petroleum industry. It also covers certain compositions on account of their having particular properties rendering them suitable for certain purposes, as in the case of explosives, dyestuffs, adhesives, lubricants, and detergents;
   c. certain marginal industries, such as the manufacture of coke and of solid or gaseous fuels, the production and refining of oils, fats and waxes, the fermentation industry (e.g., brewing and wine-making), the sugar industry;
   d. certain operations or treatments, which are either purely mechanical, e.g., the mechanical treatment of leather and skins, or partly mechanical, e.g., the treatment of water or the prevention of corrosion in general;
   e. metallurgy, ferrous or non-ferrous alloys.
3. In all sections of the IPC, in the absence of an indication to the contrary, the Periodic System of chemical elements referred to is the one with 18 groups as represented in the table below.

Period	1 IA	2 IIA	3 IIIB	4 IVB	5 VB	6 VIB	7 VIIB	8 [--------VIIIB	9 --------]	10	11 IB	12 IIB	13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA	18 VIIIA
1	H																	He
2	Li	Be											B	C	N	O	F	Ne
3	Na	Mg											Al	Si	P	S	Cl	Ar
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	Cs	Ba	Lanthanides	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Ti	Pb	Bi	Po	At	Rn
7	Fr	Ra	Actinides	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn		Fl		Lv		

Lanthanides	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Actinides	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

4.
   a. In the case of operations, treatments, products or articles having both a chemical and a non-chemical part or aspect, the general rule is that the chemical part or aspect is covered by section C.
   b. In some of these cases, the chemical part or aspect brings with it a non-chemical one, even though purely mechanical, because this latter aspect either is essential to the operation or treatment or constitutes an important element thereof. It has seemed, in fact, more logical not to dissociate the different parts or aspects of a coherent whole. This is the case for applied chemistry and for the industries, operations and treatments mentioned in Notes (1)(c), (d) and (e). For example, furnaces peculiar to the manufacture of glass are covered by class C03 and not by class F27.
   c. There are, however, some exceptions in which the mechanical (or non-chemical) aspect carries with it the chemical aspect, for example:
      - Certain extractive processes, in subclass A61K;
      - The chemical purification of air, in subclass A61L;
      - Chemical methods of fire-fighting, in subclass A62D;
      - Chemical processes and apparatus, in class B01;
      - Impregnation of wood, in subclass B27K;
      - Chemical methods of analysis or testing, in subclass G01N;
      - Photographic materials and processes, in class G03, and, generally, the chemical treatment of textiles and the production of cellulose or paper, in section D.
   d. In still other cases, the pure chemical aspect is covered by section C and the applied chemical aspect by another section, such as A, B or F, e.g., the use of a substance or composition for:
      - treatment of plants or animals, covered by subclass A01N;
      - foodstuffs, covered by class A23;
      - ammunition or explosives, covered by class F42.
   e. When the chemical and mechanical aspects are so closely interlocked that a neat and simple division is not possible, or when certain mechanical processes follow as a natural or logical continuation of a chemical treatment, section C may cover, in addition to the chemical aspect, a part only of the mechanical aspect, e.g., after-treatment of artificial stone, covered by class C04. In this latter case, a note or a reference is usually given to make the position clear, even if sometimes the division is rather arbitrary.

CHEMISTRY

C01 INORGANIC CHEMISTRY

Note(s) [3, 2006.01]

1. In subclasses C01B-C01G, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a compound is classified in the last appropriate place, e.g. potassium permanganate is classified only as a permanganate compound, in subclass C01G.
2. Biocidal, pest repellant, pest attractant or plant growth regulatory activity of compounds or preparations is further classified in subclass A01P.

C01B **NON-METALLIC ELEMENTS; COMPOUNDS THEREOF** (fermentation or enzyme-using processes for the preparation of elements or inorganic compounds except carbon dioxide C12P 3/00; production of non-metallic elements or inorganic compounds by electrolysis or electrophoresis C25B)

Note(s) [3, 6, 7, 2006.01]

1. In this subclass, tradenames that are often found in scientific and patent literature have been used in order to define precisely the scope of the groups.
2. Attention is drawn to the definitions of groups of chemical elements following the title of section C.
3. Attention is drawn to Note (1) after class C01, which defines the last place priority rule applied in this class, i.e. in the range of subclasses C01B-C01G and within these subclasses.
4. Therapeutic activity of compounds is further classified in subclass A61P.

Subclass index

HYDROGEN; HYDROGEN ISOTOPES; WATER; HYDRIDES.....3/00, 4/00, 5/00, 6/00
SYNTHESIS GAS.....3/00
HALOGENS OR THEIR COMPOUNDS.....7/00, 9/00, 11/00
OXYGEN, OXIDES IN GENERAL; PER-COMPOUNDS.....13/00, 15/00
SULFUR, COMPOUNDS THEREOF.....17/00
NITROGEN, COMPOUNDS THEREOF.....21/00
PHOSPHORUS, COMPOUNDS THEREOF.....25/00
CARBON, COMPOUNDS THEREOF.....31/00
SILICON, COMPOUNDS THEREOF.....33/00
SELENIUM OR TELLURIUM; BORON.....19/00, 35/00
NOBLE GASES.....23/00
COMPOUNDS HAVING MOLECULAR SIEVE PROPERTIES BUT NOT HAVING BASE-EXCHANGE PROPERTIES.....37/00
COMPOUNDS HAVING MOLECULAR SIEVE AND BASE-EXCHANGE PROPERTIES.....39/00

Hydrogen; Hydrides; Water; Synthesis gas from hydrocarbons

3/00 **Hydrogen; Gaseous mixtures containing hydrogen; Separation of hydrogen from mixtures containing it; Purification of hydrogen** (production of water-gas or synthesis gas from solid carbonaceous material C10J) **[3, 2006.01]**

3/02 • Production of hydrogen or of gaseous mixtures containing hydrogen **[3, 2006.01]**

3/04 • • by decomposition of inorganic compounds, e.g. ammonia **[3, 2006.01]**

3/06 • • by reaction of inorganic compounds containing electro-positively bound hydrogen, e.g. water, acids, bases, ammonia, with inorganic reducing agents (by electrolysis of water C25B 1/04) **[3, 2006.01]**

3/08 • • • with metals **[3, 2006.01]**

3/10 • • • • by reaction of water vapour with metals **[3, 2006.01]**

3/12 • • • by reaction of water vapour with carbon monoxide **[3, 2006.01]**

3/14 • • • • Handling of heat and steam **[3, 2006.01]**

3/16 • • • • using catalysts **[3, 2006.01]**

3/18 • • • • using moving solid particles **[3, 2006.01]**

3/20 • • • by reaction of metal hydroxides with carbon monoxide **[3, 2006.01]**

3/22 • • by decomposition of gaseous or liquid organic compounds **[3, 2006.01]**

3/24 • • • of hydrocarbons **[3, 2006.01]**

3/26 • • • • using catalysts **[3, 2006.01]**

3/28 • • • • using moving solid particles **[3, 2006.01]**

3/30 • • • • • using the fluidised bed technique **[3, 2006.01]**

3/32 • • by reaction of gaseous or liquid organic compounds with gasifying agents, e.g. water, carbon dioxide, air **[3, 2006.01]**
3/34 • • • by reaction of hydrocarbons with gasifying agents **[3, 2006.01]**
3/36 • • • • using oxygen or mixtures containing oxygen as gasifying agents **[3, 2006.01]**
3/38 • • • • using catalysts **[3, 2006.01]**
3/40 • • • • • characterised by the catalyst **[3, 2006.01]**
3/42 • • • • • using moving solid particles **[3, 2006.01]**
3/44 • • • • • • using the fluidised bed technique **[3, 2006.01]**
3/46 • • • • using discontinuously preheated non-moving solid materials, e.g. blast and run **[3, 2006.01]**
3/48 • • • • followed by reaction of water vapour with carbon monoxide **[3, 2006.01]**
3/50 • Separation of hydrogen or hydrogen containing gases from gaseous mixtures, e.g. purification (C01B 3/14 takes precedence) **[3, 2006.01]**
3/52 • • by contacting with liquids; Regeneration of used liquids **[3, 2006.01]**
3/54 • • • including a catalytic reaction **[3, 2006.01]**
3/56 • • by contacting with solids; Regeneration of used solids **[3, 2006.01]**
3/58 • • • including a catalytic reaction **[3, 2006.01]**

4/00 Hydrogen isotopes; Inorganic compounds thereof prepared by isotope exchange, e.g. $NH_3 + D_2 \rightarrow NH_2D + HD$ [1, 2, 2006.01]

5/00 Water [1, 2006.01]
5/02 • Heavy water; Preparation by chemical reaction of hydrogen isotopes or their compounds, e.g. $4ND_3+7O_2 \rightarrow 4NO_2+6D_2O$, $2D_2+O_2 \rightarrow 2D_2O$ **[1, 2006.01]**

6/00 Hydrides of metals; Monoborane or diborane; Addition complexes thereof [1, 2, 2006.01]
6/02 • Hydrides of transition elements; Addition complexes thereof **[1, 2006.01]**
6/04 • Hydrides of alkali metals, alkaline earth metals, beryllium or magnesium; Addition complexes thereof **[1, 2006.01]**
6/06 • Hydrides of aluminium, gallium, indium, thallium, germanium, tin, lead, arsenic, antimony, bismuth or polonium; Monoborane; Diborane; Addition complexes thereof **[1, 2006.01]**
6/10 • • Monoborane; Diborane; Addition complexes thereof **[1, 2, 2006.01]**
6/11 • • • Preparation from boron or inorganic compounds containing boron and oxygen **[2, 2006.01]**
6/13 • • • Addition complexes of monoborane or diborane, e.g. with phosphine, arsine or hydrazine **[2, 2006.01]**
6/15 • • • • Metal borohydrides; Addition complexes thereof **[2, 2006.01]**
6/17 • • • • • Preparation from boron or inorganic compounds containing boron and oxygen **[2, 2006.01]**
6/19 • • • • • Preparation from other compounds of boron **[2, 2006.01]**
6/21 • • • • • • Preparation of borohydrides of alkali metals, alkaline earth metals, magnesium or beryllium; Addition complexes thereof, e.g. $LiBH_4.2N_2H_4$, NaB_2H_7 **[2, 2006.01]**
6/23 • • • • • • Preparation of borohydrides of other metals, e.g. aluminium borohydride; Addition complexes thereof, e.g. $Li[Al(BH_4)_3H]$ **[2, 2006.01]**
6/24 • Hydrides containing at least two metals, e.g. $Li(AlH_4)$; Addition complexes thereof (C01B 6/13-C01B 6/23 take precedence) **[1, 2, 2006.01]**
6/26 • • Preparation from the metal with the highest valency or from its oxides or salts of its oxyacids **[1, 2006.01]**
6/34 • Purification; Stabilisation **[1, 2006.01]**

Halogens; Compounds thereof

7/00 Halogens; Halogen acids [1, 2006.01]
7/01 • Chlorine; Hydrogen chloride **[2, 2006.01]**
7/03 • • Preparation from chlorides **[2, 3, 2006.01]**
7/04 • • • Preparation of chlorine from hydrogen chloride **[1, 3, 2006.01]**
7/05 • • • Preparation from ammonium chloride **[2, 3, 2006.01]**
7/07 • • Purification **[2, 3, 2006.01]**
7/075 • • • of liquid chlorine **[2, 3, 2006.01]**
7/09 • Bromine; Hydrogen bromide **[2, 2006.01]**
7/13 • Iodine; Hydrogen iodide **[2, 2006.01]**
7/14 • • Iodine **[1, 2, 2006.01]**
7/16 • • • Preparation from seaweed **[1, 2, 2006.01]**
7/19 • Fluorine; Hydrogen fluoride **[2, 2006.01]**
7/20 • • Fluorine **[1, 2, 2006.01]**
7/24 • Inter-halogen compounds **[1, 2006.01]**

9/00 General methods of preparing halides (particular individual halides, see the relevant groups in subclasses C01B-C01G according to the element combined with the halogen; electrolytic production of inorganic compounds C25B) **[1, 2006.01]**
9/02 • Chlorides **[1, 2006.01]**
9/04 • Bromides **[1, 2006.01]**
9/06 • Iodides **[1, 2006.01]**
9/08 • Fluorides **[1, 2006.01]**

11/00 Oxides or oxyacids of halogens; Salts thereof [1, 2006.01]
11/02 • Oxides of chlorine **[1, 2006.01]**
11/04 • Hypochlorous acid **[1, 2006.01]**
11/06 • • Hypochlorites, e.g. chlorinated lime **[1, 2006.01]**
11/08 • Chlorous acid **[1, 2006.01]**
11/10 • • Chlorites **[1, 2006.01]**
11/12 • Chloric acid **[1, 2006.01]**
11/14 • • Chlorates **[1, 2006.01]**
11/16 • Perchloric acid **[1, 2006.01]**
11/18 • • Perchlorates **[1, 2006.01]**
11/20 • Oxygen compounds of bromine **[1, 2006.01]**
11/22 • Oxygen compounds of iodine **[1, 2006.01]**
11/24 • Oxygen compounds of fluorine **[1, 2006.01]**

Oxygen; Oxides or hydroxides in general; Per-compounds

13/00 Oxygen; Ozone; Oxides or hydroxides in general [1, 2006.01]
13/02 • Preparation of oxygen (by liquefying F25J) **[1, 2006.01]**
13/08 • • from air with the aid of metal oxides, e.g. barium oxide, manganese oxide **[1, 2006.01]**
13/10 • Preparation of ozone **[1, 2006.01]**

13/11 • • by electric discharge **[2, 2006.01]**
13/14 • Methods for preparing oxides or hydroxides in general (particular individual oxides or hydroxides, see the relevant groups of subclasses C01B-C01G or C25B, according to the element combined with the oxygen or hydroxy group) **[1, 2006.01]**
13/16 • • Purification **[3, 2006.01]**
13/18 • • by thermal decomposition of compounds, e.g. of salts or hydroxides **[3, 2006.01]**
13/20 • • by oxidation of elements in the gaseous state; by oxidation or hydrolysis of compounds in the gaseous state **[3, 2006.01]**
13/22 • • • of halides or oxyhalides **[3, 2006.01]**
13/24 • • • • in the presence of hot combustion gases **[3, 2006.01]**
13/26 • • • • in the presence of a fluidised bed **[3, 2006.01]**
13/28 • • • • using a plasma or an electric discharge **[3, 2006.01]**
13/30 • • • • Removal and cooling of the oxide containing suspension **[3, 2006.01]**
13/32 • • by oxidation or hydrolysis of elements or compounds in the liquid or solid state **[3, 2006.01]**
13/34 • • by oxidation or hydrolysis of sprayed or atomised solutions **[3, 2006.01]**
13/36 • • by precipitation reactions in solutions **[3, 2006.01]**

15/00 Peroxides; Peroxyhydrates; Peroxyacids or salts thereof; Superoxides; Ozonides [1, 2006.01]
15/01 • Hydrogen peroxide **[3, 2006.01]**
15/013 • • Separation; Purification; Concentration **[3, 2006.01]**
15/017 • • • Anhydrous hydrogen peroxide; Anhydrous solutions or gaseous mixtures containing hydrogen peroxide **[3, 2006.01]**
15/022 • • Preparation from organic compounds **[2, 2006.01]**
15/023 • • • by the alkyl-anthraquinone process **[3, 2006.01]**
15/024 • • • from hydrocarbons **[3, 2006.01]**
15/026 • • • from alcohols **[3, 2006.01]**
15/027 • • Preparation from water **[3, 2006.01]**
15/029 • • Preparation from hydrogen and oxygen **[3, 2006.01]**
15/03 • • Preparation from inorganic peroxy-compounds, e.g. from peroxysulfates **[3, 2006.01]**
15/032 • • • from metal peroxides **[3, 2006.01]**
15/037 • • Stabilisation by additives **[3, 2006.01]**
15/04 • Metal peroxides or peroxyhydrates thereof; Superoxides; Ozonides **[1, 3, 2006.01]**
15/043 • • of alkali metals, alkaline earth metals or of magnesium **[2, 3, 2006.01]**
15/047 • • of heavy metals **[2, 3, 2006.01]**
15/055 • Peroxyhydrates (C01B 15/04 takes precedence); Peroxyacids or salts thereof **[3, 2006.01]**
15/06 • • containing sulfur **[1, 3, 2006.01]**
15/08 • • • Peroxysulfates **[1, 3, 2006.01]**
15/10 • • containing carbon **[1, 3, 2006.01]**
15/12 • • containing boron **[1, 3, 2006.01]**
15/14 • • containing silicon **[1, 3, 2006.01]**
15/16 • • containing phosphorus **[1, 3, 2006.01]**

17/00 Sulfur; Compounds thereof [1, 2006.01]
17/02 • Preparation of sulfur; Purification **[1, 2006.01]**
17/027 • • Recovery of sulfur from material containing elemental sulfur, e.g. luxmasses; Purification **[3, 2006.01]**
17/033 • • • using a liquid extractant **[3, 2006.01]**
17/04 • • from gaseous sulfur compounds including gaseous sulfides **[1, 2006.01]**
17/05 • • • by wet processes **[3, 2006.01]**
17/06 • • from non-gaseous sulfides or materials containing such sulfides, e.g. ores **[1, 2006.01]**
17/10 • • Finely-divided sulfur, e.g. sublimed sulfur, flowers of sulfur **[1, 2006.01]**
17/12 • • Insoluble sulfur (mu-sulfur) **[1, 2006.01]**
17/16 • Hydrogen sulfides **[1, 2006.01]**
17/18 • • Hydrogen polysulfides **[1, 2006.01]**
17/20 • Methods for preparing sulfides or polysulfides, in general (ammonium sulfides or polysulfides C01C; sulfides or polysulfides of metals, other than alkali metals, magnesium, calcium, strontium, and barium, see the relevant groups of subclasses C01F or C01G, according to the metal) **[1, 2006.01]**
17/22 • Alkali metal sulfides or polysulfides **[1, 2006.01]**
17/24 • • Preparation by reduction **[1, 2006.01]**
17/26 • • • with carbon **[1, 2006.01]**
17/28 • • • with reducing gases **[1, 2006.01]**
17/30 • • Preparation from sodium or potassium amalgam with sulfur or sulfides **[1, 2006.01]**
17/32 • • Hydrosulfides of sodium or potassium **[1, 2006.01]**
17/34 • • Polysulfides of sodium or potassium **[1, 2006.01]**
17/36 • • Purification **[1, 2006.01]**
17/38 • • Dehydration **[1, 2006.01]**
17/40 • • Making shaped products, e.g. granules **[1, 2006.01]**
17/42 • Sulfides or polysulfides of magnesium, calcium, strontium, or barium **[1, 2006.01]**
17/43 • • from oxides or hydroxides with sulfur or hydrogen sulfide **[1, 2006.01]**
17/44 • • by reduction of sulfates **[1, 2006.01]**
17/45 • Compounds containing sulfur and halogen, with or without oxygen **[1, 2006.01]**
17/46 • Compounds containing sulfur, halogen, hydrogen, and oxygen **[1, 2006.01]**
17/48 • Sulfur dioxide; Sulfurous acid **[1, 2006.01]**
17/50 • • Preparation of sulfur dioxide **[1, 2006.01]**
17/52 • • • by roasting sulfides (C22B 1/00 takes precedence) **[1, 2006.01]**
17/54 • • • by burning elemental sulfur **[1, 2006.01]**
17/56 • • • Separation; Purification **[1, 2006.01]**
17/58 • • • Recovery of sulfur dioxide from acid tar or the like **[1, 2006.01]**
17/60 • • • Isolation of sulfur dioxide from gases **[1, 2006.01]**
17/62 • Methods of preparing sulfites in general (particular individual sulfites, see the relevant groups of subclasses C01B-C01G, according to the cation) **[1, 2006.01]**
17/64 • Thiosulfates; Dithionites; Polythionates **[1, 2006.01]**
17/66 • • Dithionites **[1, 2006.01]**
17/69 • Sulfur trioxide; Sulfuric acid **[3, 2006.01]**
17/70 • • Stabilisation of gamma-form sulfur trioxide **[1, 2006.01]**
17/74 • • Preparation **[1, 3, 2006.01]**
17/76 • • • by contact processes **[1, 2006.01]**
17/765 • • • • Multi-stage SO_3-conversion **[3, 2006.01]**
17/77 • • • • Fluidised-bed processes **[3, 2006.01]**

17/775 • • • • Liquid phase contacting processes or wet catalysis processes **[3, 2006.01]**
17/78 • • • • characterised by the catalyst used **[1, 2006.01]**
17/79 • • • • • containing vanadium **[3, 2006.01]**
17/80 • • • • Apparatus **[1, 2006.01]**
17/82 • • • of sulfuric acid using a nitrogen oxide process **[1, 2006.01]**
17/84 • • • • Chamber process **[1, 2006.01]**
17/86 • • • • Tower process **[1, 2006.01]**
17/88 • • Concentration of sulfuric acid **[1, 2006.01]**
17/90 • • Separation; Purification **[1, 2006.01]**
17/92 • • • Recovery from acid tar or the like **[1, 2006.01]**
17/94 • • • Recovery from nitration acids **[1, 2006.01]**
17/96 • Methods for the preparation of sulfates in general (particular individual sulfates, see the relevant groups of subclasses C01B-C01G, according to the cation) **[1, 2006.01]**
17/98 • Other compounds containing sulfur and oxygen (persulfuric acids C01B 15/06; persulfates C01B 15/08) **[1, 2006.01]**

19/00 Selenium; Tellurium; Compounds thereof [1, 2006.01]
19/02 • Elemental selenium or tellurium **[3, 2006.01]**
19/04 • Binary compounds **[3, 2006.01]**

21/00 Nitrogen; Compounds thereof [1, 2006.01]
21/02 • Preparation of nitrogen (by decomposition of ammonia C01B 3/04) **[1, 2006.01]**
21/04 • Purification or separation of nitrogen (by liquefying F25J) **[1, 2006.01]**
21/06 • Binary compounds of nitrogen with metals, with silicon, or with boron **[1, 2006.01]**
21/064 • • with boron **[3, 2006.01]**
21/068 • • with silicon **[3, 2006.01]**
21/072 • • with aluminium **[3, 2006.01]**
21/076 • • with titanium or zirconium **[3, 2006.01]**
21/08 • Hydrazoic acid; Azides; Halogen azides **[1, 2006.01]**
21/082 • Compounds containing nitrogen and non-metals (C01B 21/06, C01B 21/08 take precedence) **[3, 2006.01]**
21/083 • • containing one or more halogen atoms **[3, 2006.01]**
21/084 • • • containing also one or more oxygen atoms, e.g. nitrosyl halides **[3, 2006.01]**
21/086 • • containing one or more sulfur atoms **[3, 2006.01]**
21/087 • • containing one or more hydrogen atoms **[3, 2006.01]**
21/088 • • • containing also one or more halogen atoms **[3, 2006.01]**
21/09 • • • • Halogeno-amines, e.g. chloramine **[3, 2006.01]**
21/092 • • • containing also one or more metal atoms **[3, 2006.01]**
21/093 • • • containing also one or more sulfur atoms **[3, 2006.01]**
21/094 • • • • Nitrosyl containing acids **[3, 2006.01]**
21/096 • • • • Amidosulfonic acid; Salts thereof **[3, 2006.01]**
21/097 • • containing phosphorus atoms **[3, 2006.01]**
21/098 • • • Phosphonitrilic dihalides; Polymers thereof **[3, 2006.01]**
21/12 • • Carbamic acid; Salts thereof **[1, 2006.01]**
21/14 • • Hydroxylamine; Salts thereof **[1, 2006.01]**
21/16 • • Hydrazine; Salts thereof **[1, 2006.01]**
21/20 • Nitrogen oxides; Oxyacids of nitrogen; Salts thereof **[1, 2006.01]**
21/22 • • Nitrous oxide (N_2O) **[1, 2006.01]**
21/24 • • Nitric oxide (NO) **[1, 2006.01]**
21/26 • • • Preparation by catalytic oxidation of ammonia **[1, 2006.01]**
21/28 • • • • Apparatus **[1, 2006.01]**
21/30 • • • Preparation by oxidation of nitrogen **[1, 2006.01]**
21/32 • • • • Apparatus **[1, 2006.01]**
21/34 • • Nitrogen trioxide (N_2O_3) **[1, 2006.01]**
21/36 • • Nitrogen dioxide (NO_2, N_2O_4) (C01B 21/26, C01B 21/30 take precedence) **[1, 2006.01]**
21/38 • • Nitric acid **[1, 2006.01]**
21/40 • • • Preparation by absorption of oxides of nitrogen **[1, 2006.01]**
21/42 • • • Preparation from nitrates **[1, 2006.01]**
21/44 • • • Concentration **[1, 2006.01]**
21/46 • • • Purification; Separation **[1, 2006.01]**
21/48 • • Methods for the preparation of nitrates in general (particular individual nitrates, see the relevant groups of subclasses C01B-C01G, according to the cation) **[1, 2006.01]**
21/50 • • Nitrous acid; Salts thereof **[1, 2006.01]**

23/00 Noble gases; Compounds thereof (liquefying F25J) **[1, 2006.01]**

25/00 Phosphorus; Compounds thereof (C01B 21/00, C01B 23/00 take precedence; perphosphates C01B 15/16) **[1, 3, 2006.01]**
25/01 • Treating phosphate ores or other raw phosphate materials to obtain phosphorus or phosphorus compounds **[2, 2006.01]**
25/02 • Preparation of phosphorus **[1, 2006.01]**
25/023 • • of red phosphorus **[2, 2006.01]**
25/027 • • of yellow phosphorus **[2, 2006.01]**
25/04 • Purification of phosphorus **[1, 2006.01]**
25/043 • • of red phosphorus **[2, 2006.01]**
25/047 • • of yellow phosphorus **[2, 2006.01]**
25/06 • Hydrogen phosphides **[1, 2006.01]**
25/08 • Other phosphides **[1, 2006.01]**
25/10 • Halides or oxyhalides of phosphorus **[1, 2, 2006.01]**
25/12 • Oxides of phosphorus **[1, 2006.01]**
25/14 • Sulfur, selenium, or tellurium compounds of phosphorus **[1, 2006.01]**
25/16 • Oxyacids of phosphorus; Salts thereof (peroxyacids or salts thereof C01B 15/00) **[1, 2006.01]**
25/163 • • Phosphorous acid; Salts thereof **[2, 2006.01]**
25/165 • • Hypophosphorous acid; Salts thereof **[2, 2006.01]**
25/168 • • Pyrophosphorous acid; Salts thereof **[2, 2006.01]**
25/18 • • Phosphoric acid **[1, 2006.01]**
25/20 • • • Preparation from elemental phosphorus or phosphoric anhydride **[1, 2006.01]**
25/22 • • • Preparation by reacting phosphate containing material with an acid, e.g. wet process **[1, 2006.01]**
25/222 • • • • with sulfuric acid, a mixture of acids mainly consisting of sulfuric acid or a mixture of compounds forming it in situ, e.g. a mixture of sulfur dioxide, water and oxygen **[3, 2006.01]**
25/223 • • • • • only one form of calcium sulfate being formed **[3, 2006.01]**
25/225 • • • • • • Dihydrate process **[3, 2006.01]**
25/226 • • • • • • Hemihydrate process **[3, 2006.01]**

25/228 • • • • • one form of calcium sulfate being formed and then converted to another form **[3, 2006.01]**
25/229 • • • • • • Hemihydrate-dihydrate process **[3, 2006.01]**
25/231 • • • • • • Dihydrate-hemihydrate process **[3, 2006.01]**
25/232 • • • • • Preparation by reacting phosphate containing material with concentrated sulfuric acid and subsequently lixiviating the obtained mass, e.g. clincker process **[3, 2006.01]**
25/234 • • • Purification; Stabilisation; Concentration (purification concomitant with preparation C01B 25/22; preparation involving solvent-solvent extraction C01B 25/46) **[3, 2006.01]**
25/235 • • • • Clarification; Stabilisation to prevent post-precipitation of dissolved impurities **[3, 2006.01]**
25/237 • • • • Selective elimination of impurities **[3, 2006.01]**
25/238 • • • • • Cationic impurities **[3, 2006.01]**
25/24 • • Condensed phosphoric acids **[1, 2006.01]**
25/26 • • Phosphates (perphosphates C01B 15/16) **[1, 2006.01]**
25/28 • • • Ammonium phosphates **[1, 2006.01]**
25/30 • • • Alkali metal phosphates **[1, 2006.01]**
25/32 • • • Phosphates of magnesium, calcium, strontium, or barium **[1, 2006.01]**
25/34 • • • • Magnesium phosphates **[1, 2006.01]**
25/36 • • • Aluminium phosphates **[1, 2006.01]**
25/37 • • • Phosphates of heavy metals **[2, 2006.01]**
25/38 • • • Condensed phosphates **[1, 2006.01]**
25/39 • • • • of alkali metals **[3, 2006.01]**
25/40 • • • • Polyphosphates **[2, 2006.01]**
25/41 • • • • • of alkali metals **[3, 2006.01]**
25/42 • • • • Pyrophosphates **[2, 2006.01]**
25/44 • • • • Metaphosphates **[2, 2006.01]**
25/445 • • • • • of alkali metals **[3, 2006.01]**
25/45 • • • containing plural metal, or metal and ammonium **[3, 2006.01]**
25/455 • • • containing halogen **[3, 2006.01]**
25/46 • • Preparation involving solvent-solvent extraction **[2, 2006.01]**

31/00 **Carbon; Compounds thereof** (C01B 21/00, C01B 23/00 take precedence; percarbonates C01B 15/10; carbon black C09C 1/48) **[1, 3, 2006.01]**
31/02 • Preparation of carbon (by using ultra-high pressure, e.g. for the formation of diamonds, B01J 3/06; by crystal growth C30B); Purification **[1, 2006.01]**
31/04 • • Graphite **[1, 2006.01]**
31/06 • • Diamond **[1, 2006.01]**
31/08 • Active carbon **[1, 2006.01]**
31/10 • • Preparation by using gaseous activating agents **[1, 2006.01]**
31/12 • • Preparation by using non-gaseous activating agents **[1, 2006.01]**
31/14 • • Granulation **[1, 2006.01]**
31/16 • Preparation of ion-exchanging materials from carbonaceous material **[1, 2006.01]**
31/18 • Carbon monoxide **[1, 2006.01]**
31/20 • Carbon dioxide **[1, 2006.01]**
31/22 • • Solidifying **[1, 2006.01]**
31/24 • Methods for the preparation of carbonates or bicarbonates in general (percarbonates C01B 15/10; particular individual carbonates, see the relevant groups of subclasses C01B-C01G, according to the cation) **[1, 2006.01]**
31/26 • Compounds containing carbon and sulfur, e.g. carbon disulfide, carbon oxysulfide; Thiophosgene **[1, 2006.01]**
31/28 • Phosgene **[1, 2006.01]**
31/30 • Carbides **[1, 2006.01]**
31/32 • • Calcium carbide **[1, 2006.01]**
31/34 • • Tungsten or molybdenum carbides **[1, 2006.01]**
31/36 • • Carbides of silicon or boron **[1, 2006.01]**

33/00 **Silicon; Compounds thereof** (C01B 21/00, C01B 23/00 take precedence; persilicates C01B 15/14; carbides C01B 31/36) **[1, 3, 2006.01]**
33/02 • Silicon (forming single crystals or homogeneous polycrystalline material with defined structure C30B) **[1, 5, 2006.01]**
33/021 • • Preparation (chemical coating from the vapour phase C23C 16/00) **[5, 2006.01]**
33/023 • • • by reduction of silica or silica-containing material **[5, 2006.01]**
33/025 • • • • with carbon or a solid carbonaceous material, i.e. carbo-thermal process **[5, 2006.01]**
33/027 • • • by decomposition or reduction of gaseous or vaporised silicon compounds other than silica or silica-containing material **[5, 2006.01]**
33/029 • • • • by decomposition of monosilane **[5, 2006.01]**
33/03 • • • • by decomposition of silicon halides or halosilanes or reduction thereof with hydrogen as the only reducing agent **[5, 2006.01]**
33/031 • • • • • by decomposition of silicon tetraiodide **[5, 2006.01]**
33/033 • • • • by reduction of silicon halides or halosilanes with a metal or a metallic alloy as the only reducing agents **[5, 2006.01]**
33/035 • • • • by decomposition or reduction of gaseous or vaporised silicon compounds in the presence of heated filaments of silicon, carbon or a refractory metal, e.g. tantalum or tungsten, or in the presence of heated silicon rods on which the formed silicon is deposited, a silicon rod being obtained, e.g. Siemens process **[5, 2006.01]**
33/037 • • Purification (by zone-melting C30B 13/00) **[5, 2006.01]**
33/039 • • • by conversion of the silicon into a compound, optional purification of the compound, and reconversion into silicon **[5, 2006.01]**
33/04 • Hydrides of silicon **[1, 2006.01]**
33/06 • Metal silicides **[1, 2006.01]**
33/08 • Compounds containing halogen **[1, 2006.01]**
33/10 • • Compounds containing silicon, fluorine, and other elements **[1, 2006.01]**
33/107 • • Halogenated silanes **[3, 2006.01]**
33/113 • Silicon oxides; Hydrates thereof **[3, 2006.01]**
33/12 • • Silica; Hydrates thereof, e.g. lepidoic silicic acid **[1, 3, 2006.01]**
33/14 • • • Colloidal silica, e.g. dispersions, gels, sols **[1, 3, 2006.01]**
33/141 • • • • Preparation of hydrosols or aqueous dispersions **[3, 2006.01]**

33/142 • • • • • by acidic treatment of silicates **[3, 2006.01]**
33/143 • • • • • • of aqueous solutions of silicates **[3, 2006.01]**
33/145 • • • • Preparation of hydroorganosols, organosols or dispersions in an organic medium **[3, 2006.01]**
33/146 • • • • After-treatment of sols (preparation of hydroorganosols, organosols or dispersions in an organic medium from hydrosols C01B 33/145) **[3, 2006.01]**
33/148 • • • • • Concentration; Drying; Dehydration; Stabilisation; Purification **[3, 2006.01]**
33/149 • • • • • Coating **[3, 2006.01]**
33/151 • • • • • by progressively adding a sol to a different sol, i.e. "build up" of particles using a "heel" **[3, 2006.01]**
33/152 • • • • Preparation of hydrogels **[3, 2006.01]**
33/154 • • • • • by acidic treatment of aqueous silicate solutions **[3, 2006.01]**
33/155 • • • • Preparation of hydroorganogels or organogels **[3, 2006.01]**
33/157 • • • • After-treatment of gels **[3, 2006.01]**
33/158 • • • • • Purification; Drying; Dehydrating **[3, 2006.01]**
33/159 • • • • • Coating or hydrophobisation **[3, 2006.01]**
33/16 • • • Preparation of silica xerogels **[1, 3, 2006.01]**
33/18 • • • Preparation of finely divided silica neither in sol nor in gel form; After-treatment thereof (treatment to enhance the pigmenting or filling properties C09C) **[1, 3, 2006.01]**
33/187 • • • • by acidic treatment of silicates **[3, 2006.01]**
33/193 • • • • • of aqueous solutions of silicates **[3, 2006.01]**
33/20 • Silicates (persilicates C01B 15/14) **[1, 2006.01]**
33/22 • • Magnesium silicates **[1, 2006.01]**
33/24 • • Alkaline earth metal silicates **[1, 2006.01]**
33/26 • • Aluminium-containing silicates **[1, 5, 2006.01]**
33/32 • • Alkali metal silicates (C01B 33/26 takes precedence) **[1, 3, 2006.01]**
33/36 • • having base-exchange properties but not having molecular sieve properties **[6, 2006.01]**
33/38 • • • Layered base-exchange silicates, e.g. clays, micas or alkali metal silicates of kenyaite or magadiite type **[6, 2006.01]**
33/40 • • • • Clays **[6, 2006.01]**
33/42 • • • • Micas **[6, 2006.01]**
33/44 • • • • Products obtained from layered base-exchange silicates by ion-exchange with organic compounds such as ammonium, phosphonium or sulfonium compounds or by intercalation of organic compounds, e.g. organoclay material **[6, 2006.01]**
33/46 • • • Amorphous silicates, e.g. so-called "amorphous zeolites" **[6, 2006.01]**

35/00 Boron; Compounds thereof (monoborane, diborane, metal borohydrides or addition complexes thereof C01B 6/00; perborates C01B 15/12; binary compounds with nitrogen C01B 21/06; phosphides C01B 25/08; carbides C01B 31/36) **[1, 2, 2006.01]**
35/02 • Boron; Borides **[2, 2006.01]**
35/04 • • Metal borides **[2, 2006.01]**
35/06 • Boron halogen compounds **[2, 2006.01]**
35/08 • Compounds containing boron and nitrogen, phosphorus, oxygen, sulfur, selenium or tellurium **[2, 2006.01]**
35/10 • • Compounds containing boron and oxygen (C01B 35/06 takes precedence) **[2, 2006.01]**
35/12 • • • Borates **[2, 2006.01]**
35/14 • • Compounds containing boron and nitrogen, phosphorus, sulfur, selenium or tellurium **[2, 2006.01]**
35/16 • Compounds containing direct bonding between two boron atoms, e.g. $Cl_2B—BCl_2$ **[2, 2006.01]**
35/18 • Compounds containing three or more boron atoms, e.g. NaB_3H_8, $MgB_{10}Br_{10}$ (borazoles C01B 35/14) **[2, 2006.01]**

Compounds characterised primarily by their physical or chemical properties, rather than by their chemical constitution [6]

37/00 Compounds having molecular sieve properties but not having base-exchange properties [6, 2006.01]
37/02 • Crystalline silica-polymorphs, e.g. silicalites **[6, 2006.01]**
37/04 • Aluminophosphates (APO compounds) **[6, 2006.01]**
37/06 • Aluminophosphates containing other elements, e.g. metals, boron **[6, 2006.01]**
37/08 • • Silicoaluminophosphates (SAPO compounds) **[6, 2006.01]**

39/00 Compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites; Their preparation; After-treatment, e.g. ion-exchange or dealumination (treatment to modify the sorption properties, e.g. shaping using a binder, B01J 20/10; treatment to modify the catalytic properties, e.g. combination of treatments to make the zeolites appropriate to their use as a catalyst, B01J 29/04; treatment to improve the ion-exchange properties B01J 39/14) **[6, 2006.01]**

Note(s) [6]

In this group, the following term is used with the meaning indicated:
- "zeolites" means:
  i. crystalline aluminosilicates with base-exchange and molecular sieve properties, having three dimensional, microporous lattice framework structure of tetrahedral oxide units;
  ii. compounds isomorphous to those of the former category, wherein the aluminium or silicon atoms in the framework are partly or wholly replaced by atoms of other elements, e.g. by gallium, germanium, phosphorus or boron.

39/02 • Crystalline aluminosilicate zeolites; Isomorphous compounds thereof; Direct preparation thereof; Preparation thereof starting from a reaction mixture containing a crystalline zeolite of another type, or from preformed reactants: After-treatment thereof **[6, 2006.01]**
39/04 • • using at least one organic template directing agent, e.g. an ionic quaternary ammonium compound or an aminated compound **[6, 2006.01]**
39/06 • • Preparation of isomorphous zeolites characterised by measures to replace the aluminium or silicon atoms in the lattice framework by atoms of other elements **[6, 2006.01]**

39/08 • • • the aluminium atoms being wholly replaced **[6, 2006.01]**
39/10 • • • the replacing atoms being phosphorus atoms **[6, 2006.01]**
39/12 • • • the replacing atoms being boron atoms **[6, 2006.01]**
39/14 • • Type A **[6, 2006.01]**
39/16 • • • from aqueous solutions of an alkali metal aluminate and an alkali metal silicate excluding any other source of alumina or silica but seeds **[6, 2006.01]**
39/18 • • • from a reaction mixture containing at least one aluminium silicate or aluminosilicate of a clay type, e.g. kaolin or metakaolin or its exotherm modification or allophane **[6, 2006.01]**
39/20 • • Faujasite type, e.g. type X or Y **[6, 2006.01]**
39/22 • • • Type X **[6, 2006.01]**
39/24 • • • Type Y **[6, 2006.01]**
39/26 • • Mordenite type **[6, 2006.01]**
39/28 • • Phillipsite or harmotome type, e.g. type B **[6, 2006.01]**
39/30 • • Erionite or offretite type, e.g. zeolite T **[6, 2006.01]**
39/32 • • Type L **[6, 2006.01]**
39/34 • • Type ZSM-4 or type Ω **[6, 2006.01]**
39/36 • • Pentasil type, e.g. types ZSM-5, ZSM-8 or ZSM-11 **[6, 2006.01]**
39/38 • • • Type ZSM-5 **[6, 2006.01]**
39/40 • • • • using at least one organic template directing agent **[6, 2006.01]**
39/42 • • Type ZSM-12 **[6, 2006.01]**
39/44 • • Ferrierite type, e.g. types ZSM-21, ZSM-35 or ZSM-38 **[6, 2006.01]**
39/46 • • Other types characterised by their X-ray diffraction pattern and their defined composition **[6, 2006.01]**
39/48 • • • using at least one organic template directing agent **[6, 2006.01]**
39/50 • Zeolites wherein inorganic bases or salts occlude channels in the lattice framework, e.g. sodalite, cancrinite, nosean, hauynite **[6, 2006.01]**
39/52 • • Sodalites **[6, 2006.01]**
39/54 • Phosphates, e.g. APO or SAPO compounds **[6, 2006.01]**

C01C **AMMONIA; CYANOGEN; COMPOUNDS THEREOF** (salts of oxyacids of halogens C01B 11/00; peroxides, salts of peroxyacids C01B 15/00; thiosulfates, dithionites, polythionates C01B 17/64; compounds containing selenium or tellurium C01B 19/00; azides C01B 21/08; metal amides C01B 21/092; nitrites C01B 21/50; phosphides C01B 25/08; salts of oxyacids of phosphorus C01B 25/16; compounds containing silicon C01B 33/00; compounds containing boron C01B 35/00; fermentation or enzyme-using processes for the preparation of elements or inorganic compounds except carbon dioxide C12P 3/00; production of non-metallic elements or inorganic compounds by electrolysis or electrophoresis C25B)

Note(s) [7, 2006.01]

1. Attention is drawn to Note (1) after class C01, which defines the last place priority rule applied in this class, i.e. in the range of subclasses C01B-C01G and within these subclasses.
2. Therapeutic activity of compounds is further classified in subclass A61P.

1/00 **Ammonia; Compounds thereof [1, 2006.01]**
1/02 • Preparation or separation of ammonia **[1, 2006.01]**
1/04 • • Preparation of ammonia by synthesis (preparation or purification of gas mixtures for ammonia synthesis C01B 3/02) **[1, 2006.01]**
1/08 • • Preparation of ammonia from nitrogenous organic substances **[1, 2006.01]**
1/10 • • Separation of ammonia from ammonia liquors, e.g. gas liquors **[1, 2006.01]**
1/12 • • Separation of ammonia from gases and vapours **[1, 2006.01]**
1/14 • • • Saturators **[1, 2006.01]**
1/16 • Halides of ammonium **[1, 2006.01]**
1/18 • Nitrates of ammonium **[1, 2006.01]**
1/20 • Sulfides; Polysulfides **[1, 2006.01]**
1/22 • Sulfites of ammonium **[1, 2006.01]**
1/24 • Sulfates of ammonium (C01C 1/14 takes precedence) **[1, 2006.01]**
1/242 • • Preparation from ammonia and sulfuric acid or sulfur trioxide **[2, 2006.01]**
1/244 • • Preparation by double decomposition of ammonium salts with sulfates **[2, 2006.01]**
1/245 • • Preparation from compounds containing nitrogen and sulfur **[2, 2006.01]**
1/246 • • • from sulfur-containing ammonium compounds **[2, 2006.01]**
1/247 • • • • by oxidation with free oxygen **[2, 2006.01]**
1/248 • • Preventing coalescing or controlling form or size of crystals **[2, 2006.01]**
1/249 • • Deacidifying the crystals **[2, 2006.01]**
1/26 • Carbonates or bicarbonates of ammonium **[1, 2006.01]**
1/28 • Methods of preparing ammonium salts in general **[1, 2006.01]**

Note(s)

1. This group does not cover ammonium salts of complex acids (other than complex cyanides) containing a metal in the anion, which are covered by the relevant groups of subclasses C01D-C01G, according to the metal.
2. Salts of polybasic acids with ammonium and a metal as cations are classified as though the ammonium were hydrogen.
3. Complex ammine salts are classified in the relevant groups of subclasses C01D-C01G, according to the metal.

3/00 **Cyanogen; Compounds thereof [1, 2006.01]**
3/02 • Preparation of hydrogen cyanide **[1, 2006.01]**
3/04 • • Separation from gases **[1, 2006.01]**
3/06 • Stabilisation of hydrogen cyanide **[1, 2006.01]**
3/08 • Simple or complex cyanides of metals **[1, 2006.01]**
3/10 • • Simple alkali metal cyanides **[1, 3, 2006.01]**
3/11 • • Complex cyanides **[3, 2006.01]**
3/12 • • Simple or complex iron cyanides **[1, 2, 2006.01]**

3/14 • Cyanic acid; Salts thereof **[1, 2006.01]**
3/16 • Cyanamide; Salts thereof **[1, 2006.01]**
3/18 • • Calcium cyanamide **[1, 2006.01]**
3/20 • Thiocyanic acid; Salts thereof **[1, 2006.01]**

C01D COMPOUNDS OF ALKALI METALS, i.e. LITHIUM, SODIUM, POTASSIUM, RUBIDIUM, CAESIUM, OR FRANCIUM (metal hydrides C01B 6/00; salts of oxyacids of halogens C01B 11/00; peroxides, salts of peroxyacids C01B 15/00; sulfides or polysulfides C01B 17/22; thiosulfates, dithionites, polythionates C01B 17/64; compounds containing selenium or tellurium C01B 19/00; binary compounds of nitrogen with metals C01B 21/06; azides C01B 21/08; metal amides C01B 21/092; nitrites C01B 21/50; phosphides C01B 25/08; salts of oxyacids of phosphorus C01B 25/16; carbides C01B 31/30; compounds containing silicon C01B 33/00; compounds containing boron C01B 35/00; cyanides C01C 3/08; salts of cyanic acid C01C 3/14; salts of cyanamide C01C 3/16; thiocyanates C01C 3/20; fermentation or enzyme-using processes for the preparation of elements or inorganic compounds except carbon dioxide C12P 3/00; obtaining metal compounds from mixtures, e.g. ores, which are intermediate compounds in a metallurgical process for obtaining a free metal C22B; production of non-metallic elements or inorganic compounds by electrolysis or electrophoresis C25B)

Note(s) [7, 2006.01]

1. Attention is drawn to Note (1) after class C01, which defines the last place priority rule applied in this class, i.e. in the range of subclasses C01B-C01G and within these subclasses.
2. Therapeutic activity of compounds is further classified in subclass A61P.

1/00 Oxides or hydroxides of sodium, potassium, or alkali metals in general [1, 2, 2006.01]
1/02 • Oxides **[1, 2006.01]**
1/04 • Hydroxides **[1, 2006.01]**
1/20 • • Preparation by reacting oxides or hydroxides with alkali metal salts **[1, 2006.01]**
1/22 • • • with carbonates or bicarbonates **[1, 2006.01]**
1/24 • • • from or via fluorides or silico-fluorides **[1, 2006.01]**
1/26 • • Preparation from or via cyano compounds, e.g. cyanides, cyanamides **[1, 2006.01]**
1/28 • • Purification; Separation **[1, 2006.01]**
1/30 • • • by crystallisation **[1, 2006.01]**
1/32 • • • by adsorption or precipitation **[1, 2006.01]**
1/34 • • • with selective solvents **[1, 2006.01]**
1/36 • • • by oxidation **[1, 2006.01]**
1/38 • • • by dialysis **[1, 2006.01]**
1/40 • • • by electrolysis **[1, 2006.01]**
1/42 • • Concentration; Dehydration **[1, 2006.01]**
1/44 • • Preparation in the form of granules, pieces, or other shaped products **[1, 2006.01]**

3/00 Halides of sodium, potassium, or alkali metals in general [1, 2, 2006.01]
3/02 • Fluorides **[1, 2006.01]**
3/04 • Chlorides **[1, 2006.01]**
3/06 • • Preparation by working up brines, seawater or spent lyes **[1, 2006.01]**
3/08 • • Preparation by working up natural or industrial salt mixtures or siliceous minerals **[1, 2006.01]**
3/10 • Bromides **[1, 2006.01]**
3/12 • Iodides **[1, 2006.01]**
3/14 • Purification **[1, 2006.01]**
3/16 • • by precipitation or adsorption **[1, 2006.01]**
3/18 • • with selective solvents **[1, 2006.01]**
3/20 • • by melting **[1, 2006.01]**
3/22 • Preparation in the form of granules, pieces, or other shaped products **[1, 2006.01]**
3/24 • • Influencing the crystallisation process **[1, 2006.01]**
3/26 • Preventing the absorption of moisture or caking of the crystals **[1, 2006.01]**

5/00 Sulfates or sulfites of sodium, potassium, or alkali metals in general [1, 2, 2006.01]
5/02 • Preparation of sulfates from alkali metal salts and sulfuric acid or bisulfates; Preparation of bisulfates **[1, 2006.01]**
5/04 • Preparation of sulfates with the aid of sulfurous acid or sulfites, e.g. Hargreaves process **[1, 2006.01]**
5/06 • Preparation of sulfates by double decomposition **[1, 2006.01]**
5/08 • • with each other or with ammonium sulfate **[1, 2006.01]**
5/10 • • with sulfates of magnesium, calcium, strontium, or barium **[1, 2006.01]**
5/12 • Preparation of double sulfates of magnesium with sodium or potassium **[1, 2, 2006.01]**
5/14 • Preparation of sulfites (C01D 5/04 takes precedence) **[1, 2006.01]**
5/16 • Purification **[1, 2006.01]**
5/18 • Dehydration **[1, 2006.01]**

7/00 Carbonates of sodium, potassium, or alkali metals in general [1, 2, 2006.01]
7/02 • Preparation by double decomposition **[1, 2006.01]**
7/04 • • with a fluoride or silico-fluoride (C01D 1/24 takes precedence) **[1, 2006.01]**
7/06 • Preparation via sodium or potassium magnesium carbonate **[1, 2006.01]**
7/07 • Preparation from the hydroxides **[2, 2006.01]**
7/08 • Preparation from or via cyano compounds of sodium or potassium (C01D 1/26 takes precedence) **[1, 2006.01]**
7/10 • Preparation of bicarbonates from carbonates (ammonia-soda process C01D 7/18) **[1, 2006.01]**
7/12 • Preparation of carbonates from bicarbonates **[1, 2006.01]**
7/14 • Preparation of sesquicarbonates **[1, 2006.01]**
7/16 • Preparation from compounds of sodium or potassium with amines and carbon dioxide **[1, 2006.01]**
7/18 • Preparation by the ammonia-soda process **[1, 2006.01]**
7/22 • Purification **[1, 2006.01]**
7/24 • • Crystallisation **[1, 2006.01]**
7/26 • • by precipitation or adsorption **[1, 2006.01]**
7/28 • • with selective solvents **[1, 2006.01]**
7/30 • • by oxidation **[1, 2006.01]**
7/32 • • by dialysis **[1, 2006.01]**
7/34 • • by electrolysis **[1, 2006.01]**

7/35 • Varying the content of water of crystallisation or the specific gravity **[2, 2006.01]**
7/37 • • Densifying sodium carbonate **[2, 2006.01]**
7/38 • Preparation in the form of granules, pieces, or other shaped products **[1, 2006.01]**
7/40 • • Influencing the crystallisation process **[1, 2006.01]**
7/42 • Preventing the absorption of moisture or caking **[1, 2006.01]**

9/00 Nitrates of sodium, potassium, or alkali metals in general [1, 2, 2006.01]
9/02 • Preparation by working-up natural salt mixtures **[1, 2006.01]**
9/04 • Preparation with liquid nitric acid **[1, 2006.01]**
9/06 • Preparation with gaseous nitric acid or nitrogen oxides **[1, 2006.01]**
9/08 • Preparation by double decomposition **[1, 2006.01]**
9/10 • • with ammonium nitrate **[1, 2006.01]**
9/12 • • with nitrates of magnesium, calcium, strontium, or barium **[1, 2006.01]**
9/14 • • of salts of potassium with sodium nitrate **[1, 2006.01]**
9/16 • Purification **[1, 2006.01]**
9/18 • Preparation in the form of shaped products, e.g. granules **[1, 2006.01]**
9/20 • Preventing the absorption of moisture or caking **[1, 2006.01]**

13/00 Compounds of sodium or potassium not provided for elsewhere [2, 2006.01]

15/00 Lithium compounds [2, 2006.01]
15/02 • Oxides; Hydroxides **[2, 2006.01]**
15/04 • Halides **[2, 2006.01]**
15/06 • Sulfates; Sulfites **[2, 2006.01]**
15/08 • Carbonates; Bicarbonates **[2, 2006.01]**
15/10 • Nitrates **[2, 2006.01]**

17/00 Rubidium, caesium, or francium compounds [2, 2006.01]

C01F COMPOUNDS OF THE METALS BERYLLIUM, MAGNESIUM, ALUMINIUM, CALCIUM, STRONTIUM, BARIUM, RADIUM, THORIUM, OR OF THE RARE-EARTH METALS (metal hydrides C01B 6/00; salts of oxyacids of halogens C01B 11/00; peroxides, salts of peroxyacids C01B 15/00; sulfides or polysulfides of magnesium, calcium, strontium, or barium C01B 17/42; thiosulfates, dithionites, polythionates C01B 17/64; compounds containing selenium or tellurium C01B 19/00; binary compounds of nitrogen with metals C01B 21/06; azides C01B 21/08; metal amides C01B 21/092; nitrites C01B 21/50; phosphides C01B 25/08; salts of oxyacids of phosphorus C01B 25/16; carbides C01B 31/30; compounds containing silicon C01B 33/00; compounds containing boron C01B 35/00; compounds having molecular sieve properties but not having base-exchange properties C01B 37/00; compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites, C01B 39/00; cyanides C01C 3/08; salts of cyanic acid C01C 3/14; salts of cyanamide C01C 3/16; thiocyanates C01C 3/20; fermentation or enzyme-using processes for the preparation of elements or inorganic compounds except carbon dioxide C12P 3/00; obtaining metal compounds from mixtures, e.g. ores, which are intermediate compounds in a metallurgical process for obtaining a free metal C22B; production of non-metallic elements or inorganic compounds by electrolysis or electrophoresis C25B)

Note(s) [7, 2006.01]

1. Attention is drawn to Note (1) after class C01, which defines the last place priority rule applied in this class, i.e. in the range of subclasses C01B-C01G and within these subclasses.
2. Therapeutic activity of compounds is further classified in subclass A61P.

1/00 Methods of preparing compounds of the metals beryllium, magnesium, aluminium, calcium, strontium, barium, radium, thorium, or the rare earths, in general [1, 2006.01]

3/00 Compounds of beryllium [1, 2006.01]
3/02 • Oxides; Hydroxides **[3, 2006.01]**

5/00 Compounds of magnesium [1, 2006.01]
5/02 • Magnesia **[1, 2006.01]**
5/04 • • by oxidation of metallic magnesium **[1, 2006.01]**
5/06 • • by thermal decomposition of magnesium compounds (calcining magnesite or dolomite C04B 2/10) **[1, 2006.01]**
5/08 • • • by calcining magnesium hydroxide **[1, 2006.01]**
5/10 • • • by thermal decomposition of magnesium chloride with water vapour **[1, 2006.01]**
5/12 • • • by thermal decomposition of magnesium sulfate, with or without reduction **[1, 2006.01]**
5/14 • Magnesium hydroxide **[1, 2006.01]**
5/16 • • by treating magnesia, e.g. calcined dolomite, with water or solutions of salts not containing magnesium **[1, 2006.01]**
5/20 • • by precipitation from solutions of magnesium salts with ammonia **[1, 2006.01]**
5/22 • • from magnesium compounds with alkali hydroxides or alkaline earth oxides or hydroxides **[1, 2006.01]**
5/24 • Magnesium carbonates **[1, 2006.01]**
5/26 • Magnesium halides **[1, 2006.01]**
5/28 • • Fluorides **[1, 2006.01]**
5/30 • • Chlorides **[1, 2006.01]**
5/32 • • • Preparation of anhydrous magnesium chloride by chlorinating magnesium compounds **[1, 2006.01]**
5/34 • • • Dehydrating magnesium chloride containing water of crystallisation **[1, 2006.01]**
5/36 • • Bromides **[1, 2006.01]**
5/38 • Magnesium nitrates **[1, 2006.01]**
5/40 • Magnesium sulfates (double sulfates of magnesium with sodium or potassium C01D 5/12, with other alkali metals C01D 15/06, C01D 17/00) **[1, 3, 2006.01]**
5/42 • Magnesium sulfites **[1, 2006.01]**

7/00 Compounds of aluminium [1, 2006.01]
7/02 • Aluminium oxide; Aluminium hydroxide; Aluminates **[1, 2006.01]**
7/04 • • Preparation of alkali metal aluminates; Aluminium oxide or hydroxide therefrom **[1, 2006.01]**

7/06 • • • by treating aluminous minerals with alkali hydroxide **[1, 2006.01]**
7/08 • • • by treating aluminous minerals with sodium carbonate **[1, 2006.01]**
7/10 • • • by treating aluminous minerals with alkali sulfates and reducing agents **[1, 2006.01]**
7/12 • • • Alkali metal aluminates from alkaline earth metal aluminates **[1, 2006.01]**
7/14 • • • Aluminium oxide or hydroxide from alkali metal aluminates **[1, 2006.01]**
7/16 • • Preparation of alkaline earth metal aluminates; Aluminium oxide or hydroxide therefrom **[1, 2006.01]**
7/18 • • • Aluminium oxide or hydroxide from alkaline earth metal aluminates **[1, 2006.01]**
7/20 • • Preparation of aluminium oxide or hydroxide from aluminous ores with acids or salts **[1, 2006.01]**
7/22 • • • with halides **[1, 2006.01]**
7/24 • • • with nitric acid or nitrogen oxides **[1, 2006.01]**
7/26 • • • with sulfuric acids or sulfates **[1, 2006.01]**
7/28 • • • with sulfurous acid **[1, 2006.01]**
7/30 • • Preparation of aluminium oxide or hydroxide by thermal decomposition of aluminium compounds **[1, 2006.01]**
7/32 • • • of sulfates **[1, 2006.01]**
7/34 • • Preparation of aluminium hydroxide by precipitation from solutions containing aluminium salts **[1, 2006.01]**
7/36 • • • from organic aluminium salts **[1, 2006.01]**
7/38 • • Preparation of aluminium oxide by thermal reduction of aluminous minerals **[1, 2006.01]**
7/40 • • • in the presence of aluminium sulfide **[1, 2006.01]**
7/42 • • Preparation of aluminium oxide or hydroxide from metallic aluminium, e.g. by oxidation **[1, 2006.01]**
7/44 • • Dehydration of aluminium hydroxide **[1, 2006.01]**
7/46 • • Purification of aluminium oxide, aluminium hydroxide or aluminates **[1, 5, 2006.01]**
7/47 • • • of aluminates **[5, 2006.01]**
7/48 • Aluminium halides **[1, 2006.01]**
7/50 • • Fluorides **[1, 2006.01]**
7/52 • • • Double compounds containing both fluorine and other acid groups **[1, 2006.01]**
7/54 • • • Double compounds containing both aluminium and alkali metals or alkaline earth metals **[1, 2006.01]**
7/56 • • Chlorides (containing fluorine C01F 7/52) **[1, 3, 2006.01]**
7/58 • • • Preparation of anhydrous aluminium chloride **[1, 2006.01]**
7/60 • • • • from oxygen-containing aluminium compounds **[1, 2006.01]**
7/62 • • • Purification **[1, 2006.01]**
7/64 • • Bromides (containing fluorine C01F 7/52) **[1, 3, 2006.01]**
7/66 • Aluminium nitrates (containing fluorine C01F 7/52) **[1, 3, 2006.01]**
7/68 • Aluminium compounds containing sulfur (containing fluorine C01F 7/52) **[1, 3, 2006.01]**
7/70 • • Sulfides **[1, 2006.01]**
7/72 • • Sulfites **[1, 2006.01]**
7/74 • • Sulfates **[1, 2006.01]**
7/76 • • • Double salts, e.g. alums **[1, 2006.01]**

11/00 Compounds of calcium, strontium, or barium (C01F 7/00 takes precedence) **[1, 3, 2006.01]**
11/02 • Oxides or hydroxides (production of lime C04B 2/00) **[1, 2006.01]**
11/04 • • by thermal decomposition **[1, 2006.01]**
11/06 • • • of carbonates **[1, 2006.01]**
11/08 • • by reduction of sulfates **[1, 2006.01]**
11/10 • • from sulfides **[1, 2006.01]**
11/12 • • from silicates **[1, 2006.01]**
11/16 • • Purification **[1, 2006.01]**
11/18 • Carbonates **[1, 2006.01]**
11/20 • Halides **[1, 2006.01]**
11/22 • • Fluorides **[1, 2006.01]**
11/24 • • Chlorides **[1, 2006.01]**
11/26 • • • from sulfides **[1, 2006.01]**
11/28 • • • by chlorination of alkaline earth metal compounds **[1, 2006.01]**
11/30 • • • Concentrating; Dehydrating; Preventing the absorption of moisture or caking **[1, 2006.01]**
11/32 • • • Purification **[1, 2006.01]**
11/34 • • Bromides **[1, 2006.01]**
11/36 • Nitrates **[1, 2006.01]**
11/38 • • Preparation with nitric acid or nitrogen oxides **[1, 2006.01]**
11/40 • • Preparation by double decomposition with nitrates **[1, 2006.01]**
11/42 • • Double salts (with magnesium C01F 5/38) **[1, 2006.01]**
11/44 • • Concentrating; Crystallising; Dehydrating; Preventing the absorption of moisture or caking **[1, 2006.01]**
11/46 • Sulfates (dehydration of gypsum C04B 11/02) **[1, 2006.01]**
11/48 • Sulfites **[1, 2006.01]**

13/00 Compounds of radium [1, 2006.01]

15/00 Compounds of thorium [1, 2006.01]

17/00 Compounds of the rare-earth metals, i.e. scandium, yttrium, lanthanum, or the group of the lanthanides [1, 2006.01]

C01G **COMPOUNDS CONTAINING METALS NOT COVERED BY SUBCLASSES C01D OR C01F** (metal hydrides C01B 6/00; salts of oxyacids of halogens C01B 11/00; peroxides, salts of peroxyacids C01B 15/00; thiosulfates, dithionites, polythionates C01B 17/64; compounds containing selenium or tellurium C01B 19/00; binary compounds of nitrogen with metals C01B 21/06; azides C01B 21/08; metal amides C01B 21/092; nitrites C01B 21/50; phosphides C01B 25/08; salts of oxyacids of phosphorus C01B 25/16; carbides C01B 31/30; compounds containing silicon C01B 33/00; compounds containing boron C01B 35/00; compounds having molecular sieve properties but not having base-exchange properties C01B 37/00; compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites, C01B 39/00; cyanides C01C 3/08; salts of cyanic acid C01C 3/14; salts of cyanamide C01C 3/16; thiocyanates C01C 3/20; fermentation or enzyme-using processes for the preparation of elements or inorganic compounds except carbon dioxide C12P 3/00; obtaining metal compounds from mixtures, e.g. ores, which are intermediate compounds in a metallurgical process for obtaining a free metal C21B, C22B; production of non-metallic elements or inorganic compounds by electrolysis or electrophoresis C25B)

Note(s) [7, 2006.01]

1. Attention is drawn to Note (1) after class C01, which defines the last place priority rule applied in this class, i.e. in the range of subclasses C01B-C01G and within these subclasses.
2. Therapeutic activity of compounds is further classified in subclass A61P.

Subclass index

GENERAL METHODS OF PREPARATION.....1/00
METALLIC COMPOUNDS, IN ALPHABETICAL ORDER OF THE SYMBOL FOR THE METAL
Ag Silver.....5/00
As Arsenic.....28/00
Au Gold.....7/00
Bi Bismuth.....29/00
Cd Cadmium.....11/00
Co Cobalt.....51/00
Cr Chromium.....37/00
Cu Copper.....3/00
Fe Iron.....49/00
Ga Gallium.....15/00
Ge Germanium.....17/00
Hf Hafnium.....27/00
Hg Mercury.....13/00
In Indium.....15/00
Ir Iridium.....55/00
Mn Manganese.....45/00
Mo Molybdenum.....39/00
Nb Niobium.....33/00
Ni Nickel.....53/00
Os Osmium.....55/00
Pb Lead.....21/00
Pd Palladium.....55/00
Pt Platinum.....55/00
Re Rhenium.....47/00
Rh Rhodium.....55/00
Ru Ruthenium.....55/00
Sb Antimony.....30/00
Sn Tin.....19/00
Ta Tantalum.....35/00
Ti Titanium.....23/00
Tl Thallium.....15/00
U Uranium.....43/00
V Vanadium.....31/00
W Tungsten.....41/00
Zn Zinc.....9/00
Zr Zirconium.....25/00
COMPOUNDS OF TRANSURANIC ELEMENTS.....56/00
COMPOUNDS OF METALS NOT COVERED BY THE PRECEDING GROUPS.....99/00

1/00 **Methods of preparing compounds of metals not covered by subclasses C01B, C01C, C01D, C01F, in general** (electrolytic production of inorganic compounds C25B 1/00) **[1, 2, 2006.01]**

1/02 • Oxides **[1, 2006.01]**

1/04 • Carbonyls **[1, 2006.01]**

1/06 • Halides **[1, 2006.01]**

1/08 • Nitrates **[1, 2006.01]**

1/10 • Sulfates **[1, 2006.01]**

1/12 • Sulfides **[1, 2006.01]**

1/14 • Sulfites **[1, 2006.01]**

3/00 Compounds of copper [1, 2006.01]
3/02 • Oxides; Hydroxides **[1, 2006.01]**
3/04 • Halides **[1, 2006.01]**
3/05 • • Chlorides **[3, 2006.01]**
3/06 • • Oxychlorides **[1, 2006.01]**
3/08 • Nitrates **[1, 2006.01]**
3/10 • Sulfates **[1, 2006.01]**
3/12 • Sulfides **[1, 2006.01]**
3/14 • Complexes with ammonia **[1, 2006.01]**

5/00 Compounds of silver [1, 2006.01]
5/02 • Halides **[3, 2006.01]**

7/00 Compounds of gold [1, 2006.01]

9/00 Compounds of zinc [1, 2006.01]
9/02 • Oxides; Hydroxides **[1, 3, 2006.01]**
9/03 • • Processes of production using dry methods, e.g. vapour phase processes **[3, 2006.01]**
9/04 • Halides **[1, 2006.01]**
9/06 • Sulfates **[1, 2006.01]**
9/08 • Sulfides **[1, 2006.01]**

11/00 Compounds of cadmium [1, 2006.01]
11/02 • Sulfides **[3, 2006.01]**

13/00 Compounds of mercury [1, 2006.01]
13/02 • Oxides **[1, 2006.01]**
13/04 • Halides **[1, 2006.01]**

15/00 Compounds of gallium, indium, or thallium [1, 2006.01]

17/00 Compounds of germanium [1, 2006.01]
17/02 • Germanium dioxide **[1, 2006.01]**
17/04 • Halides of germanium **[1, 2006.01]**

19/00 Compounds of tin [1, 2006.01]
19/02 • Oxides **[1, 2006.01]**
19/04 • Halides **[1, 2006.01]**
19/06 • • Stannous chloride **[1, 2006.01]**
19/08 • • Stannic chloride **[1, 2006.01]**

21/00 Compounds of lead [1, 2006.01]
21/02 • Oxides **[1, 2006.01]**
21/04 • • Lead suboxide (Pb_2O) **[1, 2006.01]**
21/06 • • Lead monoxide (PbO) **[1, 2006.01]**
21/08 • • Lead dioxide (PbO_2) **[1, 2006.01]**
21/10 • • Red lead (Pb_3O_4) **[1, 2006.01]**
21/12 • Hydroxides **[1, 2006.01]**
21/14 • Carbonates **[1, 2006.01]**
21/16 • Halides **[1, 2006.01]**
21/18 • Nitrates **[1, 2006.01]**
21/20 • Sulfates **[1, 2006.01]**
21/21 • Sulfides **[3, 2006.01]**
21/22 • Plumbates; Plumbites **[1, 2006.01]**

23/00 Compounds of titanium [1, 2006.01]
23/02 • Halides of titanium **[1, 2006.01]**
23/04 • Oxides; Hydroxides **[1, 3, 2006.01]**
23/047 • • Titanium dioxide **[3, 2006.01]**
23/053 • • • Producing by wet processes, e.g. hydrolysing titanium salts **[3, 2006.01]**
23/07 • • • Producing by vapour phase processes, e.g. halide oxidation **[3, 2006.01]**
23/08 • • • Drying; Calcining **[1, 3, 2006.01]**

25/00 Compounds of zirconium [1, 2006.01]
25/02 • Oxides **[1, 2006.01]**
25/04 • Halides **[1, 2006.01]**
25/06 • Sulfates **[1, 2006.01]**

27/00 Compounds of hafnium [1, 2006.01]
27/02 • Oxides **[1, 2006.01]**
27/04 • Halides **[1, 2006.01]**
27/06 • Sulfates **[1, 2006.01]**

28/00 Compounds of arsenic [3, 2006.01]
28/02 • Arsenates; Arsenites **[3, 2006.01]**

29/00 Compounds of bismuth [1, 2006.01]

30/00 Compounds of antimony [3, 2006.01]
30/02 • Antimonates; Antimonites **[3, 2006.01]**

31/00 Compounds of vanadium [1, 2006.01]
31/02 • Oxides **[3, 2006.01]**
31/04 • Halides **[3, 2006.01]**

33/00 Compounds of niobium [1, 2006.01]

35/00 Compounds of tantalum [1, 2006.01]
35/02 • Halides **[3, 2006.01]**

37/00 Compounds of chromium [1, 2006.01]
37/02 • Oxides or hydrates thereof **[1, 2006.01]**
37/027 • • Chromium dioxide **[3, 2006.01]**
37/033 • • Chromium trioxide; Chromic acid **[3, 2006.01]**
37/04 • Chromium halides **[1, 2006.01]**
37/06 • • Chromylhalides **[1, 2006.01]**
37/08 • Chromium sulfates **[1, 2006.01]**
37/10 • • Chrome alum **[1, 2006.01]**
37/14 • Chromates; Bichromates **[1, 2006.01]**

39/00 Compounds of molybdenum [1, 2006.01]
39/02 • Oxides; Hydroxides **[3, 2006.01]**
39/04 • Halides **[3, 2006.01]**
39/06 • Sulfides **[3, 2006.01]**

41/00 Compounds of tungsten [1, 2006.01]
41/02 • Oxides; Hydroxides **[3, 2006.01]**
41/04 • Halides **[3, 2006.01]**

43/00 Compounds of uranium [1, 2006.01]
43/01 • Oxides; Hydroxides **[3, 2006.01]**
43/025 • • Uranium dioxide **[3, 2006.01]**
43/04 • Halides of uranium **[1, 2006.01]**
43/06 • • Fluorides **[1, 2006.01]**
43/08 • • Chlorides **[1, 2006.01]**
43/10 • • Bromides **[1, 2006.01]**
43/12 • • Iodides **[1, 2006.01]**

45/00 Compounds of manganese [1, 2006.01]
45/02 • Oxides; Hydroxides **[1, 2006.01]**
45/04 • Carbonyls **[1, 2006.01]**
45/06 • Halides **[1, 2006.01]**
45/08 • Nitrates **[1, 2006.01]**
45/10 • Sulfates **[1, 2006.01]**
45/12 • Manganates; Permanganates **[1, 2006.01]**

47/00 Compounds of rhenium [1, 2006.01]

49/00 Compounds of iron [1, 2006.01]
49/02 • Oxides; Hydroxides **[1, 2006.01]**

49/04 • • Ferrous oxide (FeO) **[1, 2006.01]**
49/06 • • Ferric oxide (Fe_2O_3) **[1, 2006.01]**
49/08 • • Ferroso-ferric oxide (Fe_3O_4) **[1, 2006.01]**
49/10 • Halides **[1, 2006.01]**
49/12 • Sulfides **[1, 2006.01]**
49/14 • Sulfates **[1, 2006.01]**
49/16 • Carbonyls **[1, 2006.01]**

51/00 Compounds of cobalt [1, 2006.01]
51/02 • Carbonyls **[1, 2006.01]**
51/04 • Oxides; Hydroxides **[1, 2006.01]**
51/06 • Carbonates **[1, 2006.01]**
51/08 • Halides **[1, 2006.01]**
51/10 • Sulfates **[1, 2006.01]**
51/12 • Complexes with ammonia **[1, 2006.01]**

53/00 Compounds of nickel [1, 2006.01]
53/02 • Carbonyls **[1, 2006.01]**
53/04 • Oxides; Hydroxides **[1, 2006.01]**
53/06 • Carbonates **[1, 2006.01]**
53/08 • Halides **[1, 2006.01]**
53/09 • • Chlorides **[3, 2006.01]**
53/10 • Sulfates **[1, 2006.01]**
53/11 • Sulfides **[3, 2006.01]**
53/12 • Complexes with ammonia **[1, 2006.01]**

55/00 Compounds of ruthenium, rhodium, palladium, osmium, iridium, or platinum [1, 2006.01]

56/00 Compounds of transuranic elements [1, 2006.01]

99/00 Subject matter not provided for in other groups of this subclass [2010.01]

C02 TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE

C02F TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE (processes for making harmful chemical substances harmless, or less harmful, by effecting a chemical change in the substances A62D 3/00; separation, settling tanks or filter devices B01D; special arrangements on waterborne vessels of installations for treating water, waste water or sewage, e.g. for producing fresh water, B63J; adding materials to water to prevent corrosion C23F; treating radioactively-contaminated liquids G21F 9/04) **[3]**

Note(s) [7, 2006.01]

1. When classifying in this subclass, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.
2. In this subclass, it is desirable to add the indexing codes of groups C02F 101/00 or C02F 103/00.

Subclass index

CHEMICAL OR PHYSICAL TREATMENT.....1/00, 5/00
BIOLOGICAL TREATMENT.....3/00
AERATION OF STRETCHES.....7/00
MULTISTEP TREATMENT.....9/00
TREATMENT OF SLUDGE.....11/00

1/00 Treatment of water, waste water, or sewage (C02F 3/00-C02F 9/00 take precedence) **[3, 2006.01]**
1/02 • by heating **[3, 2006.01]**
1/04 • • by distillation or evaporation **[3, 2006.01]**
1/06 • • • Flash evaporation **[3, 2006.01]**
1/08 • • • Thin film evaporation **[3, 2006.01]**
1/10 • • • by direct contact with a particulate solid or with a fluid, as a heat transfer medium **[3, 2006.01]**
1/12 • • • • Spray evaporation **[3, 2006.01]**
1/14 • • • using solar energy **[3, 2006.01]**
1/16 • • • using waste heat from other processes **[3, 2006.01]**
1/18 • • • Transportable devices to obtain potable water **[3, 2006.01]**
1/20 • by degassing, i.e. liberation of dissolved gases **[3, 2006.01]**
1/22 • by freezing **[3, 2006.01]**
1/24 • by flotation (C02F 1/465 takes precedence) **[3, 5, 2006.01]**
1/26 • by extraction **[3, 2006.01]**
1/28 • by sorption (using ion-exchange C02F 1/42; sorbent compositions B01J) **[3, 2006.01]**
1/30 • by irradiation **[3, 2006.01]**
1/32 • • with ultra-violet light **[3, 2006.01]**
1/34 • with mechanical oscillations **[3, 2006.01]**
1/36 • • ultrasonic vibrations **[3, 2006.01]**
1/38 • by centrifugal separation **[3, 2006.01]**
1/40 • Devices for separating or removing fatty or oily substances or similar floating material (cleaning or keeping clear the surface of open water from oil or like materials E02B 15/04; devices in sewers for separating liquid or solid substances from sewage E03F 5/14) **[3, 5, 2006.01]**
1/42 • by ion-exchange **[3, 2006.01]**
1/44 • by dialysis, osmosis or reverse osmosis **[3, 2006.01]**
1/46 • by electrochemical methods **[3, 5, 2006.01]**
1/461 • • by electrolysis **[5, 2006.01]**
1/463 • • • by electrocoagulation **[5, 2006.01]**
1/465 • • • by electroflotation **[5, 2006.01]**
1/467 • • • by electrochemical disinfection **[5, 2006.01]**
1/469 • • by electrochemical separation, e.g. by electro-osmosis, electrodialysis, electrophoresis **[5, 2006.01]**
1/48 • with magnetic or electric fields (C02F 1/46 takes precedence) **[3, 2006.01]**

1/50 • by addition or application of a germicide or by oligodynamic treatment (C02F 1/467 takes precedence) **[3, 5, 2006.01]**
1/52 • by flocculation or precipitation of suspended impurities **[3, 2006.01]**
1/54 • • using organic material **[3, 2006.01]**
1/56 • • • Macromolecular compounds **[3, 2006.01]**
1/58 • by removing specified dissolved compounds (using ion-exchange C02F 1/42; softening water C02F 5/00) **[3, 2006.01]**
1/60 • • Silicon compounds **[3, 2006.01]**
1/62 • • Heavy metal compounds **[3, 2006.01]**
1/64 • • • of iron or manganese **[3, 2006.01]**
1/66 • by neutralisation; pH adjustment (for degassing C02F 1/20; using ion-exchange C02F 1/42; for flocculation or precipitation of suspended impurities C02F 1/52; for removing dissolved compounds C02F 1/58) **[3, 2006.01]**
1/68 • by addition of specified substances, e.g. trace elements, for ameliorating potable water **[3, 2006.01]**
1/70 • by reduction **[3, 2006.01]**
1/72 • by oxidation **[3, 2006.01]**
1/74 • • with air (aeration of stretches of water C02F 7/00) **[3, 2006.01]**
1/76 • • with halogens or compounds of halogens **[3, 2006.01]**
1/78 • • with ozone **[3, 2006.01]**

3/00 Biological treatment of water, waste water, or sewage [3, 2006.01]
3/02 • Aerobic processes **[3, 2006.01]**
3/04 • • using trickle filters **[3, 2006.01]**
3/06 • • using submerged filters **[3, 2006.01]**
3/08 • • using moving contact bodies **[3, 2006.01]**
3/10 • • Packings; Fillings; Grids **[3, 2006.01]**
3/12 • • Activated sludge processes **[3, 2006.01]**
3/14 • • • using surface aeration **[3, 2006.01]**
3/16 • • • • the aerator having a vertical axis **[3, 2006.01]**
3/18 • • • • the aerator having a horizontal axis **[3, 2006.01]**
3/20 • • • using diffusers **[3, 2006.01]**
3/22 • • • using circulation pipes **[3, 2006.01]**
3/24 • • • using free-fall aeration or spraying **[3, 2006.01]**
3/26 • • • using pure oxygen or oxygen-rich gas **[3, 2006.01]**
3/28 • Anaerobic digestion processes **[3, 2006.01]**
3/30 • Aerobic and anaerobic processes **[3, 2006.01]**
3/32 • characterised by the animals or plants used, e.g. algae **[3, 2006.01]**
3/34 • characterised by the micro-organisms used **[3, 2006.01]**

5/00 Softening water; Preventing scale; Adding scale preventatives or scale removers to water, e.g. adding sequestering agents (softening using ion-exchange C02F 1/42) **[3, 2006.01]**
5/02 • Softening water by precipitation of the hardness **[3, 2006.01]**
5/04 • • using phosphates (C02F 5/06 takes precedence) **[3, 2006.01]**
5/06 • • using calcium compounds **[3, 2006.01]**
5/08 • Treatment of water with complexing chemicals or other solubilising agents for softening, scale prevention or scale removal, e.g. adding sequestering agents **[3, 2006.01]**
5/10 • • using organic substances **[3, 2006.01]**
5/12 • • • containing nitrogen (C02F 5/14 takes precedence) **[3, 2006.01]**
5/14 • • • containing phosphorus **[3, 2006.01]**

7/00 Aeration of stretches of water [3, 2006.01]

9/00 Multistep treatment of water, waste water or sewage [3, 2006.01]

Note(s) [3, 7, 2006.01]

1. This group covers only those combined treating operations where the essential characteristic resides in the combination of treatment steps.
2. This group does not cover treatments where the essential characteristic resides in an individual step of the treatment, which treatments are covered by groups C02F 1/00-C02F 7/00. An example of such treatments is a treatment in which the essential characteristic resides in a chemical treatment step and in which the one or more other steps, such as filtration or settlement, are conventional.
3. In this group, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.
4. Any individual step of a multistep treatment, which is not identified by the classification in the last appropriate place, and which is considered to represent information of interest for search, may also be classified in one or more of groups C02F 1/00-C02F 1/56 or C02F 1/66-C02F 7/00. This can, for example, be the case which it is considered of interest to enable searching of multistep treatments using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

9/02 • involving a separation step **[7, 2006.01]**
9/04 • at least one step being a chemical treatment **[7, 2006.01]**
9/06 • • Electrochemical treatment **[7, 2006.01]**
9/08 • at least one step being a physical treatment **[7, 2006.01]**
9/10 • • Thermal treatment **[7, 2006.01]**
9/12 • • Irradiation or treatment with electric or magnetic fields **[7, 2006.01]**
9/14 • at least one step being a biological treatment **[7, 2006.01]**

11/00 Treatment of sludge; Devices therefor [3, 2006.01]
11/02 • Biological treatment **[3, 2006.01]**
11/04 • • Anaerobic treatment; Production of methane by such processes **[3, 2006.01]**
11/06 • by oxidation **[3, 2006.01]**
11/08 • • Wet air oxidation **[3, 2006.01]**
11/10 • by pyrolysis **[3, 2006.01]**
11/12 • by de-watering, drying, or thickening **[3, 2006.01]**
11/14 • • with addition of chemical agents **[3, 2006.01]**
11/16 • • using drying or composting beds **[3, 2006.01]**
11/18 • by thermal conditioning (by pyrolysis C02F 11/10) **[3, 2006.01]**
11/20 • • by freezing **[3, 2006.01]**

Indexing scheme associated with groups C02F 1/00-C02F 11/00 relating to the nature of the contaminant in the water, waste water, sewage or sludge. [7]

101/00 Nature of the contaminant [7, 2006.01]

101/10 • Inorganic compounds **[7, 2006.01]**
101/12 • • Halogens or halogen-containing compounds **[7, 2006.01]**
101/14 • • • Fluorine or fluorine-containing compounds **[7, 2006.01]**
101/16 • • Nitrogen compounds, e.g. ammonia **[7, 2006.01]**
101/18 • • • Cyanides **[7, 2006.01]**
101/20 • • Heavy metals or heavy metal compounds **[7, 2006.01]**
101/22 • • • Chromium or chromium compounds, e.g. chromates **[7, 2006.01]**
101/30 • Organic compounds **[7, 2006.01]**
101/32 • • Hydrocarbons, e.g. oil **[7, 2006.01]**
101/34 • • containing oxygen **[7, 2006.01]**
101/36 • • containing halogen **[7, 2006.01]**
101/38 • • containing nitrogen **[7, 2006.01]**

Indexing scheme associated with groups C02F 1/00-C02F 11/00, relating to the nature of the water, waste water, sewage or sludge to be treated. [7]

103/00 Nature of the water, waste water, sewage or sludge to be treated [7, 2006.01]

103/02 • Non-contaminated water, e.g. for industrial water supply **[7, 2006.01]**
103/04 • • for obtaining pure or ultra-pure water **[7, 2006.01]**
103/06 • Contaminated groundwater or leachate **[7, 2006.01]**
103/08 • Seawater, e.g. for desalination **[7, 2006.01]**
103/10 • from quarries or from mining activities **[7, 2006.01]**
103/12 • from the silicate or ceramic industries, e.g. waste waters from cement or glass factories **[7, 2006.01]**
103/14 • Paint wastes **[7, 2006.01]**
103/16 • from metallurgical processes, i.e. from the production, refining or treatment of metals, e.g. galvanic wastes **[7, 2006.01]**
103/18 • from the wet purification of gaseous effluents **[7, 2006.01]**
103/20 • from animal husbandry **[7, 2006.01]**
103/22 • from the processing of animals, e.g. poultry, fish, or parts thereof **[7, 2006.01]**
103/24 • • from tanneries **[7, 2006.01]**
103/26 • from the processing of plants or parts thereof **[7, 2006.01]**
103/28 • • from the paper or cellulose industry **[7, 2006.01]**
103/30 • from the textile industry **[7, 2006.01]**
103/32 • from the food or foodstuff industry, e.g. brewery waste waters **[7, 2006.01]**
103/34 • from the chemical industry not provided for in groups C02F 103/12-C02F 103/32 **[7, 2006.01]**
103/36 • • from the manufacture of organic compounds **[7, 2006.01]**
103/38 • • • Polymers **[7, 2006.01]**
103/40 • • from the manufacture or use of photosensitive materials **[7, 2006.01]**
103/42 • from bathing facilities, e.g. swimming pools **[7, 2006.01]**
103/44 • from vehicle washing facilities **[7, 2006.01]**

C03 GLASS; MINERAL OR SLAG WOOL

C03B MANUFACTURE OR SHAPING OF GLASS, OR OF MINERAL OR SLAG WOOL; SUPPLEMENTARY PROCESSES IN THE MANUFACTURE OR SHAPING OF GLASS, OR OF MINERAL OR SLAG WOOL (surface treatment C03C)

Subclass index

MANUFACTURE OF GLASS
Processes before melting....1/00, 3/00
Melting processes....5/00, 7/00
Other processes....8/00
SHAPING
Blowing....9/00
Pressing....11/00
Rolling....13/00
Other methods....15/00-21/00
Manufacture of fibres or filaments....37/00
Transporting during manufacture....35/00
Preventing glass adhesion....40/00
Production of quartz or fused silica articles....20/00
AFTER-TREATMENTS
Thermic treatment....25/00, 29/00, 32/00
Tempering....27/00
Severing....23/26, 33/00
Re-forming....23/00, 31/00
of fibres or filaments....37/10

Melting the raw material

1/00 Preparing the batches [1, 2006.01]
1/02 • Compacting the glass batches, e.g. pelletising **[5, 2006.01]**

3/00 Charging the melting furnaces [1, 2006.01]
3/02 • combined with preheating, premelting or pretreating the glass-making ingredients, pellets or cullet **[5, 2006.01]**

5/00 Melting in furnaces; Furnaces so far as specially adapted for glass manufacture [1, 2006.01]
5/02 • in electric furnaces **[1, 2006.01]**
5/027 • • by passing an electric current between electrodes immersed in the glass bath, i.e. by direct resistance heating **[3, 2006.01]**
5/03 • • • Tank furnaces **[5, 2006.01]**
5/033 • • by using resistance heaters above or in the glass bath, i.e. by indirect resistance heating **[3, 2006.01]**

Note(s)

Group C03B 5/02 takes precedence over groups C03B 5/04-C03B 5/14.

5/04 • in tank furnaces **[1, 2006.01]**
5/05 • • Discontinuously-working tank furnaces, e.g. day tanks **[5, 2006.01]**
5/06 • in pot furnaces **[1, 2006.01]**
5/08 • • Glass-melting pots **[1, 2006.01]**
5/10 • in combined tank furnaces and pots **[1, 2006.01]**
5/12 • in shaft furnaces **[1, 2006.01]**
5/14 • in revolving cylindrical furnaces **[1, 2006.01]**
5/16 • Special features of the melting process; Auxiliary means specially adapted for glass-melting furnaces **[1, 2006.01]**
5/167 • • Means for preventing damage to equipment, e.g. by molten glass, hot gases, batches (C03B 5/20, C03B 5/42 take precedence) **[5, 2006.01]**
5/173 • • Apparatus for changing the composition of the molten glass in glass furnaces, e.g. for colouring the molten glass (chemical aspects C03C) **[5, 2006.01]**
5/18 • • Stirring devices; Homogenisation **[1, 2006.01]**
5/182 • • • by moving the molten glass along fixed elements, e.g. deflectors, weirs, baffle plates **[5, 2006.01]**
5/183 • • • using thermal means, e.g. for creating convection currents **[5, 2006.01]**
5/185 • • • • Electric means **[5, 2006.01]**
5/187 • • • with moving elements **[3, 2006.01]**
5/193 • • • using gas, e.g. bubblers **[3, 2006.01]**
5/20 • • Bridges, shoes, throats, or other devices for withholding dirt, foam, or batch **[1, 2006.01]**
5/225 • • Refining (C03B 5/18 takes precedence) **[3, 2006.01]**
5/23 • • Cooling the molten glass (C03B 5/18, C03B 5/225 take precedence) **[3, 2006.01]**
5/235 • • Heating the glass (C03B 5/02, C03B 5/18, C03B 5/225 take precedence) **[3, 2006.01]**
5/237 • • • Regenerators or recuperators specially adapted for glass-melting furnaces **[5, 2006.01]**
5/24 • • Automatically regulating the melting process **[1, 2006.01]**
5/26 • • Outlets; Overflows **[1, 2006.01]**
5/28 • • Siphons **[1, 2006.01]**
5/42 • • Details of construction of furnace walls, e.g. to prevent corrosion; Use of materials for furnace walls **[3, 2006.01]**
5/425 • • • Preventing corrosion or erosion (C03B 5/44 takes precedence) **[5, 2006.01]**
5/43 • • • Use of materials for furnace walls, e.g. fire-bricks **[5, 2006.01]**
5/435 • • • Heating arrangements for furnace walls **[5, 2006.01]**
5/44 • • • Cooling arrangements for furnace walls **[3, 2006.01]**

7/00 Distributors for the molten glass; Means for taking-off charges of molten glass; Producing the gob [1, 2006.01]
7/01 • Means for taking-off charges of molten glass **[5, 2006.01]**
7/02 • Forehearths, i.e. feeder channels **[3, 2006.01]**
7/04 • • Revolving forehearths **[3, 2006.01]**
7/06 • • Means for thermal conditioning or controlling the temperature of the glass **[3, 2006.01]**
7/07 • • • Electric means **[5, 2006.01]**
7/08 • Feeder spouts, e.g. gob feeders **[3, 2006.01]**
7/082 • • Pneumatic feeders **[5, 2006.01]**
7/084 • • Tube mechanisms **[5, 2006.01]**
7/086 • • Plunger mechanisms **[5, 2006.01]**
7/088 • • Outlets, e.g. orifice rings **[5, 2006.01]**
7/09 • • Spout blocks **[5, 2006.01]**
7/092 • • Stirring devices; Homogenisation (C03B 5/18 takes precedence) **[5, 2006.01]**
7/094 • • Means for heating, cooling or insulation **[5, 2006.01]**
7/096 • • • for heating **[5, 2006.01]**
7/098 • • • • electric **[5, 2006.01]**
7/10 • Cutting-off the glass flow with the aid of knives or scissors; Construction of the blades used **[3, 2006.01]**
7/11 • • Construction of the blades **[5, 2006.01]**
7/12 • • Cutting-off a free-hanging glass stream **[3, 2006.01]**
7/14 • Transferring molten glass or gobs to glass blowing or pressing machines (C03B 7/18-C03B 7/22 take precedence) **[3, 2006.01]**
7/16 • • using deflector chutes **[3, 2006.01]**
7/18 • Suction feeders **[3, 2006.01]**
7/20 • Scoop feeders **[3, 2006.01]**
7/22 • Gathering-devices in the form of rods or pipes **[3, 2006.01]**

8/00 Production of glass by other processes than melting processes (C03B 37/014 takes precedence; preparation of finely divided silica, in general C01B 33/18) **[4, 2006.01]**
8/02 • by liquid phase reaction processes **[4, 2006.01]**
8/04 • by gas phase reaction processes **[4, 2006.01]**

Shaping of glass

9/00 Blowing glass; Production of hollow glass articles [1, 2006.01]
9/02 • with the mouth; Auxiliary means therefor **[1, 2006.01]**
9/03 • • Blow pipes **[3, 2006.01]**
9/04 • • Making hollow glass articles with feet or projections **[1, 2006.01]**

9/06 • • Making hollow glass articles with double walls, e.g. vacuum flasks **[1, 2006.01]**
9/08 • Finish-blowing with compressed air of blanks blown with the mouth **[1, 2006.01]**
9/10 • Blowing glass cylinders for sheet manufacture **[1, 2006.01]**
9/12 • starting from a ribbon of glass; Ribbon machines **[1, 2006.01]**
9/13 • in gob feeder machines (C03B 9/28, C03B 9/29 take precedence) **[3, 2006.01]**
9/14 • • in "blow" machines or in "blow-and-blow" machines (C03B 9/193, C03B 9/20 take precedence) **[1, 3, 2006.01]**
9/16 • • • in machines with turn-over moulds **[1, 3, 2006.01]**
9/18 • • • • Rotary-table machines **[1, 3, 2006.01]**
9/19 • • • • • having only one rotary table **[3, 2006.01]**
9/193 • • in "press-and-blow" machines **[3, 2006.01]**
9/195 • • • Rotary-table machines **[3, 2006.01]**
9/197 • • • Construction of the blank mould **[3, 2006.01]**
9/20 • in "vacuum blowing" or in "vacuum-and-blow" machines **[1, 2006.01]**
9/22 • • Rotary table machines **[1, 2006.01]**
9/24 • • Construction of the blank mould **[1, 2006.01]**
9/28 • in machines of the endless-chain type (C03B 9/12 takes precedence) **[1, 3, 2006.01]**
9/29 • Paste mould machines (C03B 9/28 takes precedence) **[3, 2006.01]**
9/295 • • Rotary table machines **[5, 2006.01]**
9/30 • Details of blowing glass (for blowing with the mouth C03B 9/02); Use of materials for the moulds **[1, 2006.01]**
9/31 • • Blowing laminated glass articles or glass with enclosures, e.g. wires, bubbles **[5, 2006.01]**
9/32 • • Giving special shapes to parts of hollow glass articles **[1, 2006.01]**
9/325 • • • Forming screw threads or lips at the mouth of hollow glass articles; Neck moulds **[3, 2006.01]**
9/33 • • • Making hollow glass articles with feet or projections; Moulds therefor **[3, 2006.01]**
9/335 • • • Forming bottoms to blown hollow glass articles; Bottom moulds **[3, 2006.01]**
9/34 • • Glass-blowing moulds not otherwise provided for **[1, 2006.01]**
9/347 • • • Construction of the blank or blow mould **[3, 2006.01]**
9/353 • • • Mould holders **[3, 2006.01]**
9/36 • • Blow heads; Supplying, ejecting, or controlling the air **[1, 2006.01]**
9/38 • • Means for cooling, heating, or insulating glass-blowing machines **[1, 2006.01]**
9/40 • • Gearing or controlling mechanisms specially adapted for glass-blowing machines **[1, 2006.01]**
9/41 • • • Electric or electronic systems **[5, 2006.01]**
9/42 • • Means for fusing, burning-off, or edge-melting combined with glass-blowing machines (uniting glass pieces by fusing C03B 23/20) **[1, 2006.01]**
9/44 • • Means for discharging combined with glass-blowing machines, e.g. take-outs **[1, 2006.01]**
9/447 • • • Means for the removal of glass articles from the blow-mould, e.g. take-outs **[5, 2006.01]**
9/453 • • • Means for pushing newly formed glass articles onto a conveyor, e.g. sweep-out mechanisms; Dead-plate mechanisms **[5, 2006.01]**
9/46 • • Means for cutting the hot glass in glass-blowing machines (burning-off C03B 9/42) **[1, 2006.01]**
9/48 • • Use of materials for the moulds **[3, 2006.01]**

11/00 Pressing glass [1, 2006.01]
11/02 • in machines with rotary tables **[1, 2006.01]**
11/04 • in machines with moulds fed by suction **[1, 2006.01]**
11/05 • in machines with reciprocating moulds **[3, 2006.01]**
11/06 • Construction of plunger or mould **[1, 2006.01]**
11/07 • • Suction moulds **[3, 2006.01]**
11/08 • • for making solid articles, e.g. lenses **[1, 2006.01]**
11/10 • • for making hollow articles **[1, 2006.01]**
11/12 • Cooling, heating, or insulating the plunger, the mould, or the glass-pressing machine (C03B 9/38 takes precedence) **[1, 3, 2006.01]**
11/14 • with metal inserts **[1, 2006.01]**
11/16 • Gearing or controlling mechanisms specially adapted for glass presses **[1, 2006.01]**

13/00 Rolling glass [1, 2006.01]
13/01 • Rolling profiled glass articles **[5, 2006.01]**
13/02 • Rolling non-patterned sheets discontinuously **[1, 2006.01]**
13/04 • Rolling non-patterned sheets continuously **[1, 2006.01]**
13/06 • Rolling corrugated sheets **[1, 2006.01]**
13/08 • Rolling patterned sheets **[1, 2006.01]**
13/10 • Rolling multi-layer sheets **[1, 2006.01]**
13/12 • Rolling glass with enclosures, e.g. wire or asbestos **[1, 2006.01]**
13/14 • Rolling other articles **[1, 2006.01]**
13/16 • Construction of the glass rollers **[1, 2006.01]**
13/18 • Auxiliary means for rolling glass, e.g. sheet supports, gripping devices, hand-ladles, means for moving glass pots **[1, 2006.01]**

15/00 Drawing glass upwardly from the melt [1, 2006.01]
15/02 • Drawing glass sheets **[1, 2006.01]**
15/04 • • from the free surface of the melt **[1, 2006.01]**
15/06 • • from a debiteuse **[1, 2006.01]**
15/08 • • by means of bars below the surface of the melt **[1, 2006.01]**
15/10 • • multi-layer glass sheets or glass sheets coated with coloured layers **[1, 2006.01]**
15/12 • • Construction of the annealing tower **[1, 2006.01]**
15/14 • Drawing tubes, cylinders, or rods from the melt **[1, 2006.01]**
15/16 • • Drawing tubes, cylinders, or rods, coated with coloured layers **[1, 2006.01]**
15/18 • Means for laying-down and conveying combined with the drawing of glass sheets, tubes, or rods **[1, 2006.01]**

17/00 Forming glass by flowing out, pushing-out, or drawing downwardly or laterally from forming slits or by overflowing over lips [1, 2006.01]
17/02 • Forming glass coated with coloured layers **[1, 2006.01]**
17/04 • Forming tubes or rods by drawing from stationary or rotating tools or from forming nozzles **[1, 2006.01]**
17/06 • Forming glass sheets **[3, 2006.01]**

18/00 Shaping glass in contact with the surface of a liquid [1, 2006.01]
18/02 • Forming sheets **[1, 2006.01]**
18/04 • • Changing or regulating the dimensions of the molten glass ribbon **[3, 2006.01]**
18/06 • • • using mechanical means, e.g. restrictor bars, edge rollers **[3, 2006.01]**

18/08 • • • using gas **[3, 2006.01]**
18/10 • • • using electric means **[3, 2006.01]**
18/12 • • Making multilayer, coloured or armoured glass (chemical aspects C03C) **[3, 2006.01]**
18/14 • • Changing the surface of the glass ribbon, e.g. roughening (by chemical methods C03C) **[3, 2006.01]**
18/16 • • Construction of the float tank; Use of material for the float tank; Coating or protection of the tank wall **[3, 2006.01]**
18/18 • • Controlling or regulating the temperature of the float bath; Composition or purification of the float bath **[3, 2006.01]**
18/20 • • Composition of the atmosphere above the float bath; Treating or purifying the atmosphere above the float bath **[3, 2006.01]**
18/22 • • • Controlling or regulating the temperature of the atmosphere above the float tank **[3, 2006.01]**

19/00 Other methods of shaping glass (manufacture or treatment of flakes, fibres, or filaments from softened glass, minerals, or slags C03B 37/00) **[1, 2006.01]**
19/01 • by progressive fusion of powdered glass onto a shaping substrate, i.e. accretion **[5, 2006.01]**
19/02 • by casting **[1, 2006.01]**
19/04 • by centrifuging **[1, 2006.01]**
19/06 • by sintering (production of quartz or fused silica articles C03B 20/00) **[1, 2, 2006.01]**
19/08 • by foaming **[1, 2006.01]**
19/09 • by fusing powdered glass in a shaping mould **[3, 2006.01]**
19/10 • Forming beads **[1, 2006.01]**
19/12 • by liquid-phase reaction processes **[5, 2006.01]**
19/14 • by gas-phase reaction processes **[5, 2006.01]**

20/00 Processes specially adapted for the production of quartz or fused silica articles [3, 2006.01]

21/00 Severing glass sheets, tubes, or rods while still plastic [1, 2006.01]
21/02 • by cutting (C03B 9/46 takes precedence) **[1, 2006.01]**
21/04 • by punching out **[1, 2006.01]**
21/06 • by flashing-off, burning-off, or fusing (C03B 9/42 takes precedence) **[1, 3, 2006.01]**

23/00 Re-forming shaped glass (re-forming fibres or filaments C03B 37/14) **[1, 2006.01]**
23/02 • Re-forming glass sheets **[1, 2006.01]**
23/023 • • by bending **[3, 2006.01]**
23/025 • • • by gravity **[3, 2006.01]**
23/027 • • • • with moulds having at least two upward pivotable mould sections **[3, 2006.01]**
23/03 • • • by press-bending between shaping moulds **[3, 2006.01]**
23/031 • • • • the glass sheets being in a vertical position (C03B 23/033 takes precedence) **[5, 2006.01]**
23/033 • • • • in a continuous way, e.g. roll forming **[3, 2006.01]**
23/035 • • • using a gas cushion or by changing gas pressure, e.g. by applying vacuum **[3, 2006.01]**
23/037 • • by drawing **[3, 2006.01]**
23/04 • Re-forming tubes or rods **[1, 2006.01]**
23/043 • • Heating devices specially adapted for re-forming tubes or rods in general, e.g. burners **[5, 2006.01]**
23/045 • • Tools or apparatus specially adapted for re-forming tubes or rods in general, e.g. glass lathes, chucks (C03B 23/043 takes precedence) **[5, 2006.01]**
23/047 • • by drawing (C03B 37/025 takes precedence) **[5, 2006.01]**
23/049 • • by pressing (C03B 21/04, C03B 23/26 take precedence) **[5, 2006.01]**
23/051 • • by gravity, e.g. sagging **[5, 2006.01]**
23/053 • • by centrifuging (C03B 37/04 takes precedence) **[5, 2006.01]**
23/055 • • by rolling **[5, 2006.01]**
23/057 • • by fusing, e.g. for flame sealing (C03B 9/42, C03B 21/06, C03B 33/08 take precedence) **[5, 2006.01]**
23/06 • • by bending **[1, 2006.01]**
23/07 • • by blowing, e.g. for making electric bulbs **[3, 2006.01]**
23/08 • • to exact dimensions, e.g. calibrating **[1, 2006.01]**
23/09 • • Reshaping the ends, e.g. as grooves, threads or mouths **[3, 2006.01]**
23/11 • • Reshaping by drawing without blowing, in combination with separating, e.g. for making ampoules **[3, 2006.01]**
23/13 • • Reshaping combined with uniting or heat sealing, e.g. making vacuum bottles **[3, 2006.01]**
23/18 • Re-forming and sealing ampoules **[1, 2006.01]**
23/20 • Uniting glass pieces by fusing without substantial reshaping **[1, 2006.01]**
23/203 • • Uniting glass sheets (C03B 23/24 takes precedence) **[3, 2006.01]**
23/207 • • Uniting glass rods, glass tubes, or hollow glassware (C03B 23/24 takes precedence) **[3, 2006.01]**
23/213 • • • Joining projections or feet **[3, 2006.01]**
23/217 • • • for the production of cathode ray tubes or similarly shaped tubes **[3, 2006.01]**
23/22 • • Uniting glass lenses, e.g. forming bifocal lenses **[1, 2006.01]**
23/24 • • Making hollow glass sheets or bricks **[1, 2006.01]**
23/26 • Punching reheated glass **[1, 2006.01]**

<u>After-treatment of glass product</u>

25/00 Annealing glass products (after-treatment of fibres C03B 37/10) **[1, 2006.01]**
25/02 • in a discontinuous way **[1, 2006.01]**
25/04 • in a continuous way **[1, 2006.01]**
25/06 • • with horizontal displacement of the glass products **[3, 2006.01]**
25/08 • • • of glass sheets **[3, 2006.01]**
25/087 • • • • being in a vertical position **[5, 2006.01]**
25/093 • • • • being in a horizontal position on a fluid support, e.g. a gas or molten metal **[5, 2006.01]**
25/10 • • with vertical displacement of the glass products **[3, 2006.01]**
25/12 • • • of glass sheets **[3, 2006.01]**

27/00 Tempering glass products (after-treatment of fibres C03B 37/10) **[1, 2006.01]**
27/004 • by bringing the hot glass product in contact with a solid cooling surface, e.g. sand grains **[5, 2006.01]**
27/008 • by using heat of sublimation of solid particles **[5, 2006.01]**

27/012 • by heat treatment, e.g. for crystallisation; Heat treatment of glass products before tempering by cooling (C03B 27/008, C03B 27/016 take precedence) **[5, 2006.01]**
27/016 • by absorbing heat radiated from the glass product **[5, 2006.01]**
27/02 • using liquid **[3, 5, 2006.01]**
27/03 • • the liquid being a molten metal or a molten salt **[5, 2006.01]**
27/04 • using gas **[3, 2006.01]**
27/044 • • for flat or bent glass sheets being in a horizontal position **[5, 2006.01]**
27/048 • • • on a gas cushion **[5, 2006.01]**
27/052 • • for flat or bent glass sheets being in a vertical position **[5, 2006.01]**
27/056 • • • supported on the lower edge **[5, 2006.01]**
27/06 • • for glass products other than flat or bent glass plates, e.g. hollow glassware, lenses **[3, 2006.01]**

29/00 Reheating glass products for softening or fusing their surfaces; Fire-polishing; Fusing of margins (after-treatment of fibres C03B 37/10) **[1, 2006.01]**
29/02 • in a discontinuous way **[1, 2006.01]**
29/04 • in a continuous way **[1, 2006.01]**
29/06 • • with horizontal displacement of the products **[5, 2006.01]**
29/08 • • • Glass sheets **[5, 2006.01]**
29/10 • • • • being in a vertical position **[5, 2006.01]**
29/12 • • • • being in a horizontal position on a fluid support, e.g. a gas or molten metal **[5, 2006.01]**
29/14 • • with vertical displacement of the products **[5, 2006.01]**
29/16 • • • Glass sheets **[5, 2006.01]**

31/00 Manufacture of rippled or crackled glass [1, 2006.01]

32/00 Thermal after-treatment of glass products not provided for in groups C03B 25/00-C03B 31/00, e.g. crystallisation, eliminating gas inclusions or other impurities (after-treatment of fibres C03B 37/10) **[2, 2006.01]**
32/02 • Thermal crystallisation, e.g. for crystallising glass bodies into glass-ceramic articles **[5, 2006.01]**

33/00 Severing cooled glass (severing glass fibres C03B 37/16) **[1, 2006.01]**
33/02 • Cutting or splitting sheet glass; Apparatus or machines therefor (C03B 33/09 takes precedence; glass-cutting tools C03B 33/10) **[1, 3, 2006.01]**
33/023 • • the sheet being in a horizontal position **[5, 2006.01]**
33/027 • • • Scoring tool holders; Driving mechanisms therefor **[5, 2006.01]**
33/03 • • • Glass cutting tables; Apparatus for transporting or handling sheet glass during the cutting or breaking operations **[5, 2006.01]**
33/033 • • • Apparatus for opening score lines in glass sheets **[5, 2006.01]**
33/037 • • • Controlling or regulating **[5, 2006.01]**
33/04 • • Cutting or splitting in curves, especially for making spectacle lenses **[1, 2006.01]**
33/06 • Cutting or splitting glass tubes, rods, or hollow products (C03B 33/09 takes precedence) **[1, 3, 2006.01]**
33/07 • Cutting armoured or laminated glass products **[3, 2006.01]**
33/08 • by fusing **[1, 2006.01]**
33/085 • • Tubes, rods or hollow products **[5, 2006.01]**
33/09 • by thermal shock **[3, 2006.01]**
33/095 • • Tubes, rods or hollow products **[5, 2006.01]**
33/10 • Glass-cutting tools, e.g. scoring tools **[1, 2006.01]**
33/12 • • Hand tools **[3, 2006.01]**
33/14 • • • specially adapted for cutting tubes, rods or hollow products **[5, 2006.01]**

35/00 Transporting of glass products during their manufacture [1, 2, 2006.01]
35/04 • Transporting of hot hollow glass products (C03B 35/26 takes precedence) **[3, 2006.01]**
35/06 • • Feeding of hot hollow glass products into annealing or heating kilns **[3, 2006.01]**
35/08 • • • using rotary means directly acting on the products **[3, 2006.01]**
35/10 • • • using reciprocating means directly acting on the products, e.g. pushers, stackers **[3, 2006.01]**
35/12 • • • by picking-up and depositing **[3, 2006.01]**
35/14 • Transporting hot glass sheets **[3, 2006.01]**
35/16 • • by roller conveyors **[3, 2006.01]**
35/18 • • • Construction of the conveyor rollers **[3, 2006.01]**
35/20 • • by gripping tongs or supporting frames **[3, 2006.01]**
35/22 • • on a fluid support bed, e.g. on molten metal **[3, 2006.01]**
35/24 • • • on a gas support bed **[3, 2006.01]**
35/26 • Transporting of glass tubes or rods **[3, 2006.01]**

37/00 Manufacture or treatment of flakes, fibres, or filaments from softened glass, minerals, or slags [1, 2006.01]
37/005 • Manufacture of flakes **[5, 2006.01]**
37/01 • Manufacture of glass fibres or filaments **[3, 2006.01]**
37/012 • • Manufacture of preforms for drawing fibres or filaments **[4, 2006.01]**
37/014 • • • made entirely or partially by chemical means **[4, 2006.01]**
37/016 • • • • by a liquid phase reaction process, e.g. through a gel phase **[4, 2006.01]**
37/018 • • • • by glass deposition on a glass substrate, e.g. by chemical vapour deposition (C03B 37/016 takes precedence; surface treatment of glass by coating with glass C03C 17/02) **[4, 2006.01]**
37/02 • • by drawing or extruding (C03B 37/04 takes precedence) **[1, 3, 2006.01]**
37/022 • • • from molten glass in which the resultant product consists of different sorts of glass or is characterised by shape, e.g. hollow fibres **[4, 2006.01]**
37/023 • • • • Fibres composed of different sorts of glass, e.g. fibre optics **[4, 2006.01]**
37/025 • • • from reheated softened tubes, rods, fibres or filaments **[3, 2006.01]**
37/026 • • • • Drawing fibres reinforced with a metal wire **[5, 2006.01]**
37/027 • • • • Fibres composed of different sorts of glass, e.g. fibre optics (C03B 37/028 takes precedence) **[4, 2006.01]**
37/028 • • • • Drawing fibre bundles, e.g. for making fibre bundles of multifibres **[4, 2006.01]**
37/029 • • • • Furnaces therefor **[5, 2006.01]**

37/03 • • • Drawing means, e.g. drawing drums **[3, 2006.01]**
37/035 • • • • having means for deflecting or stripping-off fibres **[3, 2006.01]**
37/04 • • by using centrifugal force **[1, 3, 2006.01]**
37/05 • • • by projecting on a rotating body having no radial orifices **[3, 2006.01]**
37/06 • • by blasting or blowing molten glass, e.g. for making staple fibres **[1, 3, 2006.01]**
37/065 • • • starting from tubes, rods, fibres, or filaments **[3, 2006.01]**
37/07 • Controlling or regulating **[3, 2006.01]**
37/075 • Manufacture of fibres or filaments consisting of different sorts of glass or characterised by shape, e.g. hollow fibres, undulated fibres (C03B 37/022, C03B 37/027, C03B 37/028 take precedence) **[3, 4, 2006.01]**
37/08 • Bushings; Spinnerettes; Nozzles; Nozzle plates **[1, 2006.01]**
37/081 • • Indirect-melting bushings **[5, 2006.01]**
37/083 • • Nozzles; Bushing nozzle plates (C03B 37/095 takes precedence) **[5, 2006.01]**
37/085 • • Feeding devices therefor **[3, 2006.01]**
37/09 • • electrically heated **[3, 2006.01]**
37/092 • • • Direct-resistance heating **[5, 2006.01]**
37/095 • • Use of materials therefor **[3, 2006.01]**
37/10 • Non-chemical treatment (C03C 25/00 takes precedence) **[1, 2006.01]**
37/12 • • of fibres or filaments during winding up **[3, 2006.01]**
37/14 • • Re-forming fibres or filaments (C03B 37/025 takes precedence) **[3, 2006.01]**
37/15 • • • with heat application, e.g. for making optical fibres (fusion-splicing of light guides G02B 6/255; treatment of light guides to shape optical elements G02B 6/287) **[5, 2006.01]**
37/16 • • Cutting or severing (light guides G02B 6/25) **[3, 5, 2006.01]**

40/00 Preventing adhesion between glass and glass or between glass and the means used to shape it [3, 2006.01]
40/02 • by lubrication; Use of materials as release or lubricating compositions **[3, 2006.01]**
40/027 • • Apparatus for applying lubricants to glass shaping moulds or tools **[5, 2006.01]**
40/033 • • Means for preventing adhesion between glass and glass **[5, 2006.01]**
40/04 • using gas **[3, 2006.01]**

C03C CHEMICAL COMPOSITION OF GLASSES, GLAZES, OR VITREOUS ENAMELS; SURFACE TREATMENT OF GLASS; SURFACE TREATMENT OF FIBRES OR FILAMENTS FROM GLASS, MINERALS OR SLAGS; JOINING GLASS TO GLASS OR OTHER MATERIALS

Subclass index

CHEMICAL COMPOSITION
For glasses....1/00, 3/00, 4/00, 6/00, 10/00-12/00
For glazes, for vitreous enamels....1/00, 8/00
For devitrified glass ceramics....10/00
For fibres or filaments....13/00
For glass containing a non-glass component....14/00
SURFACE TREATMENTS
By diffusion into the surface....21/00
By coating....17/00
Other treatments....15/00, 19/00, 23/00
Of fibres or filaments....25/00
JOINING....27/00, 29/00
GLASS OF SPECIAL STRUCTURE....10/00-12/00, 14/00

Chemical composition of glasses, glazes, or vitreous enamels

Note(s) [4]

In groups C03C 1/00-C03C 14/00, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

1/00 Ingredients generally applicable to manufacture of glasses, glazes or vitreous enamels [1, 2006.01]
1/02 • Pretreated ingredients **[1, 2006.01]**
1/04 • Opacifiers, e.g. fluorides or phosphates; Pigments **[1, 2006.01]**
1/06 • • to produce non-uniformly pigmented, e.g. speckled, marbled, or veined products **[1, 2006.01]**
1/08 • to produce crackled effects **[1, 2006.01]**
1/10 • to produce uniformly-coloured transparent products **[1, 2006.01]**

3/00 Glass compositions (glass batch compositions C03C 6/00) **[1, 4, 2006.01]**
3/04 • containing silica **[1, 4, 2006.01]**

Note(s) [4]

If silica is specified as being present in a percent range covered by two of the groups C03C 3/06, C03C 3/062 or C03C 3/076, classification is made in both groups. If the range is covered by the three groups, classification is made in group C03C 3/04 itself.

3/06 • • with more than 90% silica by weight, e.g. quartz **[1, 2006.01]**
3/062 • • with less than 40% silica by weight **[4, 2006.01]**
3/064 • • • containing boron **[4, 2006.01]**
3/066 • • • • containing zinc **[4, 2006.01]**
3/068 • • • • containing rare earths **[4, 2006.01]**
3/07 • • • containing lead **[4, 2006.01]**

3/072 • • • • containing boron **[4, 2006.01]**
3/074 • • • • • containing zinc **[4, 2006.01]**
3/076 • • with 40% to 90% silica by weight **[4, 2006.01]**
3/078 • • • containing an oxide of a divalent metal, e.g. an oxide of zinc **[4, 2006.01]**
3/083 • • • containing aluminium oxide or an iron compound **[4, 2006.01]**
3/085 • • • • containing an oxide of a divalent metal **[4, 2006.01]**
3/087 • • • • • containing calcium oxide, e.g. common sheet or container glass **[4, 2006.01]**
3/089 • • • containing boron **[4, 2006.01]**
3/091 • • • • containing aluminium **[4, 2006.01]**
3/093 • • • • • containing zinc or zirconium **[4, 2006.01]**
3/095 • • • containing rare earths **[4, 2006.01]**
3/097 • • • containing phosphorus, niobium or tantalum **[4, 2006.01]**
3/102 • • • containing lead **[4, 2006.01]**
3/105 • • • • containing aluminium **[4, 2006.01]**
3/108 • • • • containing boron **[4, 2006.01]**
3/11 • • • containing halogen or nitrogen **[4, 2006.01]**
3/112 • • • • containing fluorine **[4, 2006.01]**
3/115 • • • • • containing boron **[4, 2006.01]**
3/118 • • • • • • containing aluminium **[4, 2006.01]**
3/12 • Silica-free oxide glass compositions **[1, 4, 2006.01]**
3/14 • • containing boron **[1, 4, 2006.01]**
3/145 • • • containing aluminium or beryllium **[4, 2006.01]**
3/15 • • • containing rare earths **[4, 2006.01]**
3/155 • • • • containing zirconium, titanium, tantalum or niobium **[4, 2006.01]**
3/16 • • containing phosphorus **[1, 4, 2006.01]**
3/17 • • • containing aluminium or beryllium **[4, 2006.01]**
3/19 • • • containing boron **[4, 2006.01]**
3/21 • • • containing titanium, zirconium, vanadium, tungsten or molybdenum **[4, 2006.01]**
3/23 • • containing halogen and at least one oxide, e.g. oxide of boron **[4, 2006.01]**
3/247 • • • containing fluorine and phosphorus **[4, 2006.01]**
3/253 • • containing germanium **[4, 2006.01]**
3/32 • Non-oxide glass compositions, e.g. binary or ternary halides, sulfides, or nitrides of germanium, selenium or tellurium **[4, 2006.01]**

4/00 Compositions for glass with special properties [4, 2006.01]

Note(s) [4]

When classifying in group C03C 4/00, classification is also made in the appropriate subgroups of group C03C 3/00 according to the glass composition.

4/02 • for coloured glass **[4, 2006.01]**
4/04 • for photosensitive glass **[4, 2006.01]**
4/06 • • for phototropic or photochromic glass **[4, 2006.01]**
4/08 • for glass selectively absorbing radiation of specified wave lengths **[4, 2006.01]**
4/10 • for infra-red transmitting glass **[4, 2006.01]**
4/12 • for luminescent glass; for fluorescent glass **[4, 2006.01]**
4/14 • for electro-conductive glass **[4, 2006.01]**
4/16 • for dielectric glass **[4, 2006.01]**
4/18 • for ion-sensitive glass **[4, 2006.01]**
4/20 • for chemical resistant glass **[4, 2006.01]**

6/00 Glass batch compositions (single ingredients of batch compositions C03C 1/00) **[4, 2006.01]**

Note(s) [4]

This group covers also compositions which are intended to be heated sufficiently for their ingredients to fuse into a glass, e.g. glass furnace charges.

6/02 • containing silicates, e.g. cullet **[4, 2006.01]**
6/04 • containing uncombined silica, e.g. sand **[4, 2006.01]**
6/06 • containing halogen compounds **[4, 2006.01]**
6/08 • containing pellets or agglomerates **[4, 2006.01]**
6/10 • containing slag **[4, 2006.01]**

8/00 Enamels; Glazes (cold glazes for ceramics C04B 41/86)**; Fusion seal compositions being frit compositions having non-frit additions [4, 2006.01]**

8/02 • Frit compositions, i.e. in a powdered or comminuted form **[4, 2006.01]**
8/04 • • containing zinc **[4, 2006.01]**
8/06 • • containing halogen **[4, 2006.01]**
8/08 • • containing phosphorus **[4, 2006.01]**
8/10 • • containing lead **[4, 2006.01]**
8/12 • • • containing titanium or zirconium **[4, 2006.01]**
8/14 • Glass frit mixtures having non-frit additions, e.g. opacifiers, colorants, mill additions **[4, 2006.01]**
8/16 • • with vehicle or suspending agents, e.g. slip **[4, 2006.01]**
8/18 • • containing free metals **[4, 2006.01]**
8/20 • • containing titanium compounds; containing zirconium compounds **[4, 2006.01]**
8/22 • containing two or more distinct frits having different compositions **[4, 2006.01]**
8/24 • Fusion seal compositions being frit compositions having non-frit additions, i.e. for use as seals between dissimilar materials, e.g. glass and metal; Glass solders **[4, 2006.01]**

10/00 Devitrified glass ceramics, i.e. glass ceramics having a crystalline phase dispersed in a glassy phase and constituting at least 50% by weight of the total composition [4, 2006.01]

10/02 • Non-silica and non-silicate crystalline phase, e.g. spinel, barium titanate **[4, 2006.01]**
10/04 • Silicate or polysilicate crystalline phase, e.g. mullite, diopside, sphene, plagioclase **[4, 2006.01]**
10/06 • • Divalent metal oxide aluminosilicate crystalline phase, e.g. anorthite, slagcerams **[4, 2006.01]**
10/08 • • • Magnesium aluminosilicate, e.g. cordierite **[4, 2006.01]**
10/10 • • Alkali metal aluminosilicate crystalline phase **[4, 2006.01]**
10/12 • • • Lithium aluminosilicate, e.g. spodumene, eucryptite **[4, 2006.01]**
10/14 • Silica crystalline phase, e.g. stuffed quartz, cristobalite **[4, 2006.01]**
10/16 • Halogen-containing crystalline phase **[4, 2006.01]**

11/00 Multi-cellular glass [1, 2006.01]

12/00 Powdered glass (C03C 8/02 takes precedence)**; Bead compositions [1, 4, 2006.01]**

12/02 • Reflective beads **[4, 2006.01]**

13/00 Fibre or filament compositions (manufacture of fibres or filaments C03B 37/00) **[1, 2006.01]**

13/02 • containing compounds of titanium or zirconium **[4, 2006.01]**
13/04 • Fibre optics, e.g. core and clad fibre compositions **[4, 2006.01]**

13/06 • Mineral fibres, e.g. slag wool, mineral wool, rock wool **[4, 2006.01]**

14/00 Glass compositions containing a non-glass component, e.g. compositions containing fibres, filaments, whiskers, platelets, or the like, dispersed in a glass matrix (glass batch compositions C03C 6/00; devitrified glass-ceramics C03C 10/00) **[4, 2006.01]**

Surface treatment of glass; Surface treatment of fibres or filaments from glass, minerals or slags

Note(s) [4]

Treatment of materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone is classified in subclass C04B.

15/00 Surface treatment of glass, not in the form of fibres or filaments, by etching [1, 2, 2006.01]

15/02 • for making a smooth surface **[1, 2006.01]**

17/00 Surface treatment of glass, e.g. of devitrified glass, not in the form of fibres or filaments, by coating [1, 2006.01]

17/02 • with glass (C03C 17/34, C03C 17/44 take precedence) **[1, 3, 2006.01]**
17/04 • • by fritting glass powder **[1, 2006.01]**
17/06 • with metals (C03C 17/34, C03C 17/44 take precedence) **[1, 3, 2006.01]**
17/09 • • by deposition from the vapour phase **[3, 2006.01]**
17/10 • • by deposition from the liquid phase **[1, 2006.01]**
17/22 • with other inorganic material (C03C 17/34, C03C 17/44 take precedence) **[1, 3, 2006.01]**
17/23 • • Oxides (C03C 17/02 takes precedence) **[3, 2006.01]**
17/245 • • • by deposition from the vapour phase **[3, 2006.01]**
17/25 • • • by deposition from the liquid phase **[3, 2006.01]**
17/27 • • • by oxidation of a coating previously applied **[3, 2006.01]**
17/28 • with organic material (C03C 17/34, C03C 17/44 take precedence) **[1, 3, 2006.01]**
17/30 • • with silicon-containing compounds **[1, 2006.01]**
17/32 • • with synthetic or natural resins (C03C 17/30 takes precedence) **[1, 2006.01]**
17/34 • with at least two coatings having different compositions (C03C 17/44 takes precedence) **[3, 2006.01]**
17/36 • • at least one coating being a metal **[3, 2006.01]**
17/38 • • • at least one coating being a coating of an organic material **[3, 2006.01]**
17/40 • • • all coatings being metal coatings **[3, 2006.01]**
17/42 • • at least one coating of an organic material and at least one non-metal coating **[3, 2006.01]**
17/44 • Lustring **[3, 2006.01]**

19/00 Surface treatment of glass, not in the form of fibres or filaments, by mechanical means (sand-blasting, grinding, or polishing glass B24) **[1, 2006.01]**

21/00 Treatment of glass, not in the form of fibres or filaments, by diffusing ions or metals into the surface [1, 2006.01]

23/00 Other surface treatment of glass not in the form of fibres or filaments [1, 2006.01]

25/00 Surface treatment of fibres or filaments from glass, minerals, or slags [1, 2006.01]

25/10 • by coating **[7, 2006.01]**
25/12 • • General methods for coating; Devices therefor **[7, 2006.01]**
25/14 • • • Spraying **[7, 2006.01]**
25/16 • • • Dipping **[7, 2006.01]**
25/18 • • • using extrusion devices **[7, 2006.01]**
25/20 • • • Contacting the fibres with applicators, e.g. rolls **[7, 2006.01]**
25/22 • • • Deposition from the vapour phase **[7, 2006.01]**

Note(s) [7, 2006.01]

1. In groups C03C 25/24-C03C 25/48, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.
2. A coating composition, i.e. a mixture of two or more constituents, is classified in the last of groups C03C 25/24-C03C 25/42 that provides for at least one of these constituents.
3. When classifying in groups C03C 25/24-C03C 25/42 any individual constituent, i.e. compound or ingredient of a coating composition, which is not identified by the classification according to Note (2), and which itself is determined to be novel and non-obvious, must also be classified in the last appropriate place in groups C03C 25/24-C03C 25/42.
4. When classifying in groups C03C 25/24-C03C 25/42 any individual constituent of a coating composition which is not identified by the classification according to Note (2) or (3), and which is considered to represent information of interest for search, may also be classified in groups C03C 25/24-C03C 25/42. This can, for example, be the case when it is considered of interest to enable searching of coating compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

25/24 • • Coatings containing organic materials **[7, 2006.01]**
25/26 • • • Macromolecular compounds or prepolymers **[7, 2006.01]**
25/28 • • • • obtained by reactions involving only carbon-to-carbon unsaturated bonds, e.g. acrylic resins **[7, 2006.01]**
25/30 • • • • • Polyolefins **[7, 2006.01]**
25/32 • • • • obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds **[7, 2006.01]**
25/34 • • • • • Condensation polymers of aldehydes, e.g. with phenols, ureas, melamines, amides or amines **[7, 2006.01]**
25/36 • • • • • Epoxy resins **[7, 2006.01]**
25/38 • • • Organo-metallic compounds **[7, 2006.01]**
25/40 • • • Organo-silicon compounds **[7, 2006.01]**
25/42 • • Coatings containing inorganic materials **[7, 2006.01]**
25/44 • • • Carbon, e.g. graphite **[7, 2006.01]**
25/46 • • • Metals **[7, 2006.01]**
25/48 • • with two or more coatings having different compositions **[7, 2006.01]**

Note(s)

When classifying in this group, any individual coating which itself is determined to be novel and non-obvious must also be classified in groups C03C 25/24-C03C 25/42, according to Notes (1) to (4) before group C03C 25/24.

25/50 • • • Coatings containing organic materials only **[7, 2006.01]**

25/52 • • • Coatings containing inorganic materials only **[7, 2006.01]**

25/54 • • • Combinations of one or more coatings containing organic materials only with one or more coatings containing inorganic materials only **[7, 2006.01]**

25/60 • by diffusing ions or metals into the surface **[7, 2006.01]**

25/62 • by application of electric or wave energy or particle radiation, or by ion implantation (for drying or dehydration C03C 25/64) **[7, 2006.01]**

25/64 • Drying; Dehydration; Dehydroxylation **[7, 2006.01]**

25/66 • Chemical treatment, e.g. leaching, acid or alkali treatment (dehydroxylation C03C 25/64) **[7, 2006.01]**

25/68 • • by etching **[7, 2006.01]**

25/70 • Cleaning, e.g. for reuse (C03C 25/62-C03C 25/66 take precedence) **[7, 2006.01]**

Joining glass to glass or to other materials

Note(s)

Layered products classified in groups C03C 27/00 or C03C 29/00 are also classified in subclass B32B.

27/00 Joining pieces of glass to pieces of other inorganic material; Joining glass to glass other than by fusing (C03C 17/00takes precedence; fusion seal compositions C03C 8/24; wired glass C03B; joining glass to ceramics C04) **[1, 2006.01]**

27/02 • by fusing glass directly to metal **[1, 2006.01]**

27/04 • Joining glass to metal by means of an interlayer **[1, 2006.01]**

27/06 • Joining glass to glass by processes other than fusing **[1, 2006.01]**

27/08 • • with the aid of intervening metal **[1, 2006.01]**

27/10 • • with the aid of adhesive specially adapted for that purpose **[1, 2006.01]**

27/12 • • • Laminated glass (mechanical features in manufacture of glass laminates part of which is of plastic material B32B) **[1, 2006.01]**

29/00 Joining metals with the aid of glass [1, 2006.01]

C04 CEMENTS; CONCRETE; ARTIFICIAL STONE; CERAMICS; REFRACTORIES

Note(s)

This class does not cover mechanical features provided for elsewhere, e.g. mechanical working B28, kilns F27.

C04B LIME; MAGNESIA; SLAG; CEMENTS; COMPOSITIONS THEREOF, e.g. MORTARS, CONCRETE OR LIKE BUILDING MATERIALS; ARTIFICIAL STONE; CERAMICS (devitrified glass-ceramics C03C 10/00)**; REFRACTORIES** (alloys based on refractory metals C22C)**; TREATMENT OF NATURAL STONE [4]**

Note(s) [6]

In this subclass, the following terms or expressions are used with the meanings indicated:

- "fillers" includes pigments, aggregates and fibrous reinforcing materials;
- "active ingredients" includes processing aids or property improvers, e.g. grinding aids used after the burning process or used in the absence of a burning process;
- "mortars", "concrete" and "artificial stone" are to be considered as a single group of materials, and therefore, in the absence of an indication to be contrary, they include mortar, concrete and other cementitious compositions.

Subclass index

LIME, MAGNESIA; SLAG....2/00, 5/00
CEMENTS....7/00-12/00
MORTARS; CONCRETE; ARTIFICIAL STONE
Compositions....26/00-32/00
Fillers....14/00-20/00
Active ingredients....22/00, 24/00
Porous products....38/00
Influencing or modifying the properties of mortars....40/00
After-treatment....41/00
CERAMICS
Clay-wares....33/00
Other ceramics....35/00
Joining....37/00
Porous products....38/00
After-treatment....41/00
TREATMENT OF NATURAL STONE....41/00

Lime; Magnesia; Slag

2/00 Lime, magnesia or dolomite [4, 2006.01]
2/02 • Lime **[4, 2006.01]**
2/04 • • Slaking **[4, 2006.01]**
2/06 • • • with addition of substances, e.g. hydrophobic agents **[4, 2006.01]**
2/08 • • • Devices therefor **[4, 2006.01]**
2/10 • Preheating, burning, calcining or cooling (decarbonation during burning of cement raw materials C04B 7/43) **[4, 2006.01]**
2/12 • • in shaft or vertical furnaces **[4, 2006.01]**

5/00 Treatment of molten slag (manufacture of slag wool C03B; treatment of slag in or for the production of metals C21B, C22B)**; Artificial stone from molten slag [1, 4, 2006.01]**
5/02 • Granulating (granulating apparatus B01J 2/00); Dehydrating; Drying **[1, 2006.01]**
5/06 • Ingredients, other than water, added to the molten slag; Treatment with gases or gas generating material, e.g. to obtain porous slag **[4, 2006.01]**

Cements

Note(s) [4]

In groups C04B 7/00-C04B 32/00, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

7/00 Hydraulic cements [1, 2006.01]
7/02 • Portland cement **[1, 2006.01]**
7/04 • • using raw materials containing gypsum **[1, 2006.01]**
7/06 • • using alkaline raw materials **[1, 2006.01]**
7/12 • Natural pozzuolanas; Natural pozzuolana cements **[1, 4, 2006.01]**
7/13 • • Mixtures thereof with inorganic cementitious materials, e.g. Portland cements **[4, 2006.01]**
7/14 • Cements containing slag **[1, 2006.01]**
7/147 • • Metallurgical slag **[4, 2006.01]**
7/153 • • • Mixtures thereof with other inorganic cementitious materials or other activators **[4, 2006.01]**
7/17 • • • • with calcium oxide containing activators **[4, 2006.01]**
7/19 • • • • • Portland cements **[4, 2006.01]**
7/21 • • • • with calcium sulfate containing activators **[4, 2006.01]**
7/22 • Iron ore cements **[1, 2006.01]**
7/24 • Cements from oil shales, residues or waste other than slag **[1, 4, 2006.01]**
7/26 • • from raw materials containing flue dust **[1, 2006.01]**
7/28 • • from combustion residues (C04B 7/26 takes precedence) **[1, 4, 2006.01]**
7/30 • • from oil shale; from oil shale residues **[1, 4, 2006.01]**
7/32 • Aluminous cements **[1, 2006.01]**
7/34 • Hydraulic lime cements; Roman cements **[1, 2006.01]**
7/345 • Hydraulic cements not provided for in one of the groups C04B 7/02-C04B 7/34 **[4, 2006.01]**
7/36 • Manufacture of hydraulic cements in general **[1, 2006.01]**
7/38 • • Preparing or treating the raw materials individually or as batches **[1, 4, 2006.01]**
7/40 • • • Dehydrating; Forming, e.g. granulating (granulating apparatus B01J 2/00) **[1, 2006.01]**
7/42 • • • Active ingredients added before, or during, the burning process **[1, 2006.01]**
7/43 • • Heat treatment, e.g. precalcining, burning, melting; Cooling **[4, 2006.01]**
7/44 • • • Burning; Melting **[1, 4, 2006.01]**
7/45 • • • • in fluidised beds **[4, 2006.01]**
7/46 • • • • electric **[1, 4, 2006.01]**
7/47 • • • Cooling **[4, 2006.01]**
7/48 • • Clinker treatment (C04B 7/47 takes precedence) **[1, 4, 2006.01]**
7/51 • • • Hydrating **[4, 2006.01]**
7/52 • • • Grinding **[1, 2006.01]**
7/60 • • Methods for eliminating alkali metals or compounds thereof **[4, 2006.01]**

9/00 Magnesium cements or silimar cements [1, 2006.01]
9/02 • Magnesium cements containing chlorides, e.g. Sorel cement **[1, 2006.01]**
9/04 • Magnesium cements containing sulfates, nitrates, phosphates, or fluorides **[1, 2006.01]**
9/06 • Cements containing metal compounds other than magnesium compounds, e.g. compounds of zinc or lead **[1, 2006.01]**
9/11 • Mixtures thereof with other inorganic cementitious materials **[4, 2006.01]**
9/12 • • with hydraulic cements, e.g. Portland cements **[1, 4, 2006.01]**
9/20 • Manufacture, e.g. preparing the batches (preheating, burning, calcining or cooling lime stone, magnesite or dolomite C04B 2/10) **[1, 2006.01]**

11/00 Calcium sulfate cements [1, 2006.01]
11/02 • Dehydrating gypsum **[1, 2006.01]**
11/024 • • Ingredients added before, or during, the calcining process, e.g. calcination modifiers **[4, 2006.01]**
11/028 • • Devices therefor **[4, 2006.01]**
11/032 • • • for the wet process, e.g. dehydrating in solution or under saturated vapor conditions **[4, 2006.01]**
11/036 • • • for the dry process, e.g. dehydrating in a fluidised bed or in a rotary kiln **[4, 2006.01]**
11/05 • obtaining anhydrite (C04B 11/028 takes precedence) **[4, 2006.01]**
11/06 • starting from anhydrite **[1, 2006.01]**
11/26 • starting from phosphogypsum or from waste, e.g. purification products of smoke (C04B 11/02 takes precedence) **[4, 2006.01]**
11/28 • Mixtures thereof with other inorganic cementitious materials (C04B 7/04, C04B 7/153 take precedence) **[4, 2006.01]**
11/30 • • with hydraulic cements, e.g. Portland cements **[4, 2006.01]**

12/00 Cements not provided for in groups C04B 7/00-C04B 11/00 [4, 2006.01]
12/02 • Phosphate cements **[4, 2006.01]**
12/04 • Alkali metal or ammonium silicate cements **[4, 2006.01]**

Use of materials as fillers for mortars, concrete or artificial stone [4]

14/00 Use of inorganic materials as fillers, e.g. pigments, for mortars, concrete or artificial stone; Treatment of inorganic materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone (reinforcing elements for building E04C 5/00) **[4, 2006.01]**

14/02 • Granular materials **[4, 2006.01]**
14/04 • • Silica-rich materials; Silicates **[4, 2006.01]**
14/06 • • • Quartz; Sand **[4, 2006.01]**
14/08 • • • Diatomaceous earth **[4, 2006.01]**
14/10 • • • Clay **[4, 2006.01]**
14/12 • • • • Expanded clay **[4, 2006.01]**
14/14 • • • Minerals of vulcanic origin **[4, 2006.01]**
14/16 • • • • porous, e.g. pumice **[4, 2006.01]**
14/18 • • • • Perlite **[4, 2006.01]**
14/20 • • • Mica; Vermiculite **[4, 2006.01]**
14/22 • • • Glass **[4, 2006.01]**
14/24 • • • • porous, e.g. foamed glass **[4, 2006.01]**
14/26 • • Carbonates **[4, 2006.01]**
14/28 • • • of calcium **[4, 2006.01]**
14/30 • • Oxides other than silica **[4, 2006.01]**
14/32 • • Carbides; Nitrides; Borides **[4, 2006.01]**
14/34 • • Metals **[4, 2006.01]**
14/36 • • Inorganic materials not provided for in groups C04B 14/04-C04B 14/34 **[4, 2006.01]**
14/38 • Fibrous materials; Whiskers **[4, 2006.01]**
14/40 • • Asbestos **[4, 2006.01]**
14/42 • • Glass **[4, 2006.01]**
14/44 • • • Treatment for enhancing alkali resistance **[4, 2006.01]**
14/46 • • Rock wool **[4, 2006.01]**
14/48 • • Metal **[4, 2006.01]**

16/00 Use of organic materials as fillers, e.g. pigments, for mortars, concrete or artificial stone; Treatment of organic materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone (reinforcing elements for building E04C 5/00) **[4, 2006.01]**

16/02 • Cellulosic materials **[4, 2006.01]**
16/04 • Macromolecular compounds (C04B 16/02 takes precedence) **[4, 2006.01]**
16/06 • • fibrous **[4, 2006.01]**
16/08 • • porous, e.g. expanded polystyrene beads **[4, 2006.01]**
16/10 • • • Treatment for enhancing the mixability with the mortar **[4, 2006.01]**
16/12 • characterised by the shape (fibrous macromolecular compounds C04B 16/06; porous macromolecular compounds C04B 16/08) **[4, 2006.01]**

18/00 Use of agglomerated or waste materials or refuse as fillers for mortars, concrete or artificial stone; Treatment of agglomerated or waste materials or refuse, specially adapted to enhance their filling properties in mortars, concrete or artificial stone (reinforcing elements for building E04C 5/00) **[4, 2006.01]**

18/02 • Agglomerated materials **[4, 2006.01]**
18/04 • Waste materials; Refuse **[4, 2006.01]**
18/06 • • Combustion residues, e.g. purification products of smoke, fumes or exhaust gases **[4, 2006.01]**
18/08 • • • Flue dust **[4, 2006.01]**
18/10 • • • Burned refuse **[4, 2006.01]**
18/12 • • from quarries, mining or the like **[4, 2006.01]**
18/14 • • from metallurgical processes (treatment of molten slag C04B 5/00) **[4, 2006.01]**
18/16 • • from building or ceramic industry **[4, 2006.01]**
18/18 • • organic (C04B 18/10 takes precedence) **[4, 2006.01]**
18/20 • • • from macromolecular compounds **[4, 2006.01]**
18/22 • • • • Rubber **[4, 2006.01]**
18/24 • • • Vegetable refuse, e.g. rice husks, maize-ear refuse; Cellulosic materials, e.g. paper **[4, 2006.01]**
18/26 • • • • Wood, e.g. sawdust, wood shavings **[4, 2006.01]**
18/28 • • • • Mineralising; Compositions therefor **[4, 2006.01]**
18/30 • • Mixed waste; Waste of undefined composition, e.g. municipal waste (C04B 18/10 takes precedence) **[4, 2006.01]**

20/00 Use of materials as fillers for mortars, concrete or artificial stone according to more than one of groups C04B 14/00-C04B 18/00 and characterised by shape or grain distribution; Treatment of materials according to more than one of the groups C04B 14/00-C04B 18/00 specially adapted to enhance their filling properties in mortars, concrete or artificial stone; Expanding or defibrillating materials (reinforcing elements for building E04C 5/00) **[4, 2006.01]**

20/02 • Treatment **[4, 2006.01]**
20/04 • • Heat treatment **[4, 2006.01]**
20/06 • • • Expanding clay, perlite, vermiculite or like granular materials **[4, 2006.01]**
20/08 • • Defibrillating asbestos **[4, 2006.01]**
20/10 • Coating or impregnating **[4, 2006.01]**
20/12 • • Multiple coating or impregnating **[4, 2006.01]**

Use of materials as active ingredients [4]

Note(s) [4, 6]

1. Active ingredients which react with cement compounds for forming new or modified mineralogical phases and are added before the hardening process, as well as cements added as additives to other cements, are classified in groups C04B 7/00-C04B 12/00.
2. In groups C04B 22/00-C04B 24/00, it is desirable to add the indexing codes of group C04B 103/00.

22/00 Use of inorganic materials as active ingredients for mortars, concrete or artificial stone, e.g. accelerators [4, 2006.01]

22/02 • Elements **[4, 2006.01]**
22/04 • • Metals, e.g. aluminium used as blowing agent **[4, 2006.01]**
22/06 • Oxides; Hydroxides **[4, 2006.01]**
22/08 • Acids or salts thereof **[4, 2006.01]**
22/10 • • containing carbon in the anion, e.g. carbonates **[4, 2006.01]**
22/12 • • containing halogen in the anion, e.g. calcium chloride **[4, 2006.01]**
22/14 • • containing sulfur in the anion, e.g. sulfides **[4, 2006.01]**
22/16 • • containing phosphorus in the anion, e.g. phosphates **[4, 2006.01]**

24/00 Use of organic materials as active ingredients for mortars, concrete or artificial stone, e.g. plasticisers [4, 2006.01]

24/02 • Alcohols; Phenols; Ethers **[4, 2006.01]**

24/04 • Carboxylic acids; Salts, anhydrides or esters thereof **[4, 2006.01]**

24/06 • • containing hydroxy groups **[4, 2006.01]**

24/08 • Fats; Fatty oils; Ester type waxes; Higher fatty acids, i.e. having at least seven carbon atoms in an unbroken chain bound to a carboxyl group; Oxidised oils or fats **[4, 2006.01]**

24/10 • Carbohydrates or derivatives thereof **[4, 2006.01]**

24/12 • Nitrogen containing compounds **[4, 2006.01]**

24/14 • • Peptides; Proteins; Derivatives thereof **[4, 2006.01]**

24/16 • Sulfur-containing compounds **[4, 2006.01]**

24/18 • • Lignin sulfonic acid or derivatives thereof, e.g. sulfite lye **[4, 2006.01]**

24/20 • • Sulfonated aromatic compounds **[4, 2006.01]**

24/22 • • • Condensation products thereof **[4, 2006.01]**

24/24 • Macromolecular compounds (C04B 24/14 takes precedence; macromolecular compounds comprising sulfonate or sulfate groups C04B 24/16) **[4, 6, 2006.01]**

24/26 • • obtained by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**

24/28 • • obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**

24/30 • • • Condensation polymers of aldehydes or ketones **[4, 2006.01]**

24/32 • • • Polyethers, e.g. alkylphenol polyglycolether **[4, 2006.01]**

24/34 • • Natural resins, e.g. rosin **[4, 2006.01]**

24/36 • • Bituminous materials, e.g. tar, pitch **[4, 2006.01]**

24/38 • • Polysaccharides or derivatives thereof **[4, 2006.01]**

24/40 • Compounds containing silicon, titanium or zirconium **[4, 2006.01]**

24/42 • • Compounds having one or more carbon-to-silicon linkages **[4, 2006.01]**

Compositions of mortars, concrete or artificial stone [4]

Note(s) [4, 6, 2006.01]

1. Any ingredient of compositions of mortars, concrete or artificial stone, classified in groups C04B 26/00-C04B 32/00 according to the last place rule, and which itself is determined to be novel and non-obvious, must also be classified in the last appropriate place in groups C04B 7/00-C04B 24/00.
2. Any ingredient of compositions of mortars, concrete or artificial stone, which is not identified by the classification in groups C04B 26/00-C04B 32/00 according to the last place rule, and which is considered to represent information of particular interest for search, may also be classified in the last appropriate place in groups C04B 7/00-C04B 24/00. This can for example be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information". For example, a well defined Portland cement mortar mixture containing clay as an essential or characterising filler is classified in group C04B 28/04 and may also additionally be classified in group C04B 14/10.
3. In groups C04B 26/00-C04B 32/00, it is desirable to add the indexing codes of group C04B 111/00.

26/00 Compositions of mortars, concrete or artificial stone, containing only organic binders [4, 2006.01]

26/02 • Macromolecular compounds **[4, 2006.01]**

26/04 • • obtained by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**

26/06 • • • Acrylates **[4, 2006.01]**

26/08 • • • containing halogen **[4, 2006.01]**

26/10 • • obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**

26/12 • • • Condensation polymers of aldehydes or ketones **[4, 2006.01]**

26/14 • • • Polyepoxides **[4, 2006.01]**

26/16 • • • Polyurethanes **[4, 2006.01]**

26/18 • • • Polyesters; Polycarbonates **[4, 2006.01]**

26/20 • • • Polyamides **[4, 2006.01]**

26/22 • • Natural resins, e.g. rosin **[4, 2006.01]**

26/24 • • • Cellulosic waste liquor, e.g. sulfite lye **[4, 2006.01]**

26/26 • • Bituminous materials, e.g. tar, pitch **[4, 2006.01]**

26/28 • • Polysaccharides or derivatives thereof **[4, 2006.01]**

26/30 • Compounds having one or more carbon-to-metal or carbon-to-silicon linkages **[4, 2006.01]**

26/32 • • containing silicon **[4, 2006.01]**

28/00 Compositions of mortars, concrete or artificial stone, containing inorganic binders or the reaction product of an inorganic and an organic binder, e.g. polycarboxylate cements [4, 2006.01]

28/02 • containing hydraulic cements other than calcium sulfates **[4, 2006.01]**

28/04 • • Portland cements **[4, 2006.01]**

28/06 • • Aluminous cements **[4, 2006.01]**

28/08 • • Slag cements **[4, 2006.01]**

28/10 • • Lime cements or magnesium oxide cements **[4, 2006.01]**

28/12 • • • Hydraulic lime **[4, 2006.01]**

28/14 • containing calcium sulfate cements **[4, 2006.01]**

28/16 • • containing anhydrite **[4, 2006.01]**

28/18 • containing mixtures of the silica-lime type **[4, 2006.01]**

28/20 • • Sand-lime **[4, 2006.01]**

28/22 • • Lime and pozzuolanas **[4, 2006.01]**

28/24 • containing alkyl ammonium or alkali metal silicates; containing silica sols **[4, 2006.01]**

28/26 • • Silicates of the alkali metals **[4, 2006.01]**

28/28 • containing organic polyacids, e.g. polycarboxylate cements **[4, 2006.01]**
28/30 • containing magnesium cements (magnesium oxide cements C04B 28/10) **[4, 2006.01]**
28/32 • • Magnesium oxychloride cements, e.g. Sorel cement **[4, 2006.01]**
28/34 • containing cold phosphate binders **[4, 2006.01]**
28/36 • containing sulfur, sulfides or selenium **[4, 2006.01]**

30/00 Compositions for artificial stone, not containing binders (artificial stone from molten slag C04B 5/00) **[4, 2006.01]**
30/02 • containing fibrous materials **[4, 2006.01]**

32/00 Artificial stone not provided for in other groups of this subclass (artificial stone from molten slag C04B 5/00) **[4, 2006.01]**
32/02 • with reinforcements **[4, 2006.01]**

Ceramics

33/00 Clay-wares (monolithic refractories or refractory mortars C04B 35/66; porous products C04B 38/00) **[1, 2, 2006.01]**
33/02 • Preparing or treating the raw materials individually or as batches **[1, 2006.01]**
33/04 • • Clay; Kaolin **[1, 2006.01]**
33/06 • • • Rendering lime harmless **[1, 2006.01]**
33/08 • • • • Preventing efflorescence **[1, 2006.01]**
33/10 • • Eliminating iron or lime **[1, 2006.01]**
33/13 • • Compounding ingredients (C04B 33/36, C04B 35/71 take precedence) **[2, 2006.01]**
33/132 • • • Waste materials; Refuse (C04B 33/16 takes precedence) **[2006.01]**
33/135 • • • • Combustion residues, e.g fly ash, incineration waste **[2006.01]**
33/138 • • • • from metallurgical processes, e.g. slag, furnace dust, galvanic waste **[2006.01]**
33/14 • • • Colouring matters **[1, 2006.01]**
33/16 • • • Lean materials, e.g. grog, quartz **[1, 2006.01]**
33/18 • • • for liquefying the batches **[1, 2006.01]**
33/20 • • for dry-pressing (C04B 33/13 takes precedence) **[1, 2006.01]**
33/22 • Grog products **[1, 2006.01]**
33/24 • Manufacture of porcelain or white ware **[1, 2006.01]**
33/26 • • of porcelain for electrical insulation **[1, 2006.01]**
33/28 • Slip casting **[1, 2006.01]**
33/30 • Drying methods **[1, 2006.01]**
33/32 • Burning methods **[1, 2006.01]**
33/34 • • combined with glazing **[1, 2006.01]**
33/36 • Reinforced clay-wares **[2, 2006.01]**

35/00 Shaped ceramic products characterised by their composition; Ceramic compositions (containing free metal bonded to carbides, diamond, oxides, borides, nitrides, silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides, other than as macroscopic reinforcing agents C22C)**; Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products [1, 4, 2006.01]**

Note(s) [3, 6]

1. In this group, in the absence of an indication to the contrary, compositions are classified according to the constituent present in the highest proportion by weight.
2. In this group, magnesium is considered as an alkaline earth metal.
3. In this group, a composite is considered as a sintered mixture of different powdered materials, other than sintering aids, the materials being present as separate phases in the sintered product.
4. In this group, fine ceramics are considered as products having a polycrystalline fine-grained microstructure, e.g. of dimensions below 100 micrometers.
5. The production of ceramic powder is classified in this group in so far as it relates to the preparation of powder with specific characteristics.

35/01 • based on oxides **[6, 2006.01]**
35/03 • • based on magnesium oxide, calcium oxide or oxide mixtures derived from dolomite **[6, 2006.01]**
35/035 • • • Refractories from grain sized mixtures containing non-oxide refractory materials, e.g. carbon **[6, 2006.01]**
35/04 • • • based on magnesium oxide **[1, 6, 2006.01]**
35/043 • • • • Refractories from grain sized mixtures **[6, 2006.01]**
35/047 • • • • • containing chromium oxide or chrome ore **[6, 2006.01]**
35/05 • • • • Refractories by fusion casting **[6, 2006.01]**
35/053 • • • • Fine ceramics **[6, 2006.01]**
35/057 • • • based on calcium oxide **[6, 2006.01]**
35/06 • • • based on oxide mixtures derived from dolomite **[1, 2006.01]**
35/08 • • based on beryllium oxide **[1, 6, 2006.01]**
35/10 • • based on aluminium oxide **[1, 6, 2006.01]**
35/101 • • • Refractories from grain sized mixtures **[6, 2006.01]**
35/103 • • • • containing non-oxide refractory materials, e.g. carbon (C04B 35/106 takes precedence) **[6, 2006.01]**
35/105 • • • • containing chromium oxide or chrome ore **[6, 2006.01]**
35/106 • • • • containing zirconium oxide or zircon ($ZrSiO_4$) **[6, 2006.01]**
35/107 • • • Refractories by fusion casting **[6, 2006.01]**
35/109 • • • • containing zirconium oxide or zircon ($ZrSiO_4$) **[6, 2006.01]**
35/111 • • • Fine ceramics **[6, 2006.01]**
35/113 • • • • based on beta-aluminium oxide **[6, 2006.01]**
35/115 • • • • Translucent or transparent products **[6, 2006.01]**
35/117 • • • • Composites **[6, 2006.01]**
35/119 • • • • • with zirconium oxide **[6, 2006.01]**
35/12 • • based on chromium oxide (C04B 35/047, C04B 35/105 take precedence) **[1, 6, 2006.01]**
35/14 • • based on silica **[1, 6, 2006.01]**
35/16 • • based on silicates other than clay **[1, 6, 2006.01]**
35/18 • • • rich in aluminium oxide **[1, 6, 2006.01]**
35/185 • • • • Mullite **[6, 2006.01]**
35/19 • • • • Alkali metal aluminosilicates, e.g. spodumene **[6, 2006.01]**
35/195 • • • • Alkaline earth aluminosilicates, e.g. cordierite **[6, 2006.01]**
35/20 • • • rich in magnesium oxide **[1, 6, 2006.01]**
35/22 • • • rich in calcium oxide **[1, 6, 2006.01]**
35/26 • • based on ferrites **[1, 2, 6, 2006.01]**
35/28 • • • with nickel oxide as the principal oxide **[1, 2, 6, 2006.01]**
35/30 • • • • with zinc oxide **[1, 2, 6, 2006.01]**

35/32 • • • with cobalt oxide as the principal oxide **[1, 2, 6, 2006.01]**
35/34 • • • • with zinc oxide **[1, 2, 6, 2006.01]**
35/36 • • • with manganese oxide as the principal oxide **[1, 2, 6, 2006.01]**
35/38 • • • • with zinc oxide **[1, 2, 6, 2006.01]**
35/40 • • • with rare earth oxide **[1, 2, 6, 2006.01]**
35/42 • • based on chromites (C04B 35/047, C04B 35/105 take precedence) **[1, 2, 6, 2006.01]**
35/44 • • based on aluminates **[1, 2, 6, 2006.01]**
35/443 • • • Magnesium aluminate spinel **[6, 2006.01]**
35/447 • • based on phosphates **[6, 2006.01]**
35/45 • • based on copper oxide or solid solutions thereof with other oxides **[6, 2006.01]**
35/453 • • based on zinc, tin or bismuth oxides or solid solutions thereof with other oxides, e.g. zincates, stannates or bismuthates **[6, 2006.01]**
35/457 • • • based on tin oxides or stannates **[6, 2006.01]**
35/46 • • based on titanium oxides or titanates (containing also zirconium or hafnium oxides, zirconates or hafnates C04B 35/49) **[1, 6, 2006.01]**
35/462 • • • based on titanates **[6, 2006.01]**
35/465 • • • • based on alkaline earth metal titanates **[6, 2006.01]**
35/468 • • • • • based on barium titanates **[6, 2006.01]**
35/47 • • • • • based on strontium titanates **[6, 2006.01]**
35/472 • • • • based on lead titanates **[6, 2006.01]**
35/475 • • • • based on bismuth titanates **[6, 2006.01]**
35/478 • • • • based on aluminium titanates **[6, 2006.01]**
35/48 • • based on zirconium or hafnium oxides or zirconates or hafnates **[1, 6, 2006.01]**
35/482 • • • Refractories from grain sized mixtures **[6, 2006.01]**
35/484 • • • Refractories by fusion casting **[6, 2006.01]**
35/486 • • • Fine ceramics **[6, 2006.01]**
35/488 • • • • Composites **[6, 2006.01]**
35/49 • • • containing also titanium oxide or titanates **[3, 6, 2006.01]**
35/491 • • • • based on lead zirconates and lead titanates **[6, 2006.01]**
35/493 • • • • • containing also other lead compounds **[6, 2006.01]**
35/495 • • based on vanadium, niobium, tantalum, molybdenum or tungsten oxides or solid solutions thereof with other oxides, e.g. vanadates, niobates, tantalates, molybdates or tungstates **[6, 2006.01]**
35/497 • • • based on solid solutions with lead oxide **[6, 2006.01]**
35/499 • • • • containing also titanates **[6, 2006.01]**
35/50 • based on rare earth compounds **[1, 2006.01]**
35/505 • • based on yttrium oxide **[6, 2006.01]**
35/51 • based on compounds of actinides **[2, 2006.01]**
35/515 • based on non-oxides (C04B 35/50, C04B 35/51 take precedence) **[6, 2006.01]**
35/52 • • based on carbon, e.g. graphite **[1, 6, 2006.01]**
35/524 • • • obtained from polymer precursors, e.g. glass-like carbon material **[6, 2006.01]**
35/528 • • • obtained from carbonaceous particles with or without other non-organic components **[6, 2006.01]**
35/532 • • • • containing a carbonisable binder **[6, 2006.01]**
35/536 • • • based on expanded graphite **[6, 2006.01]**
35/547 • • based on sulfides or selenides **[6, 2006.01]**
35/553 • • based on fluorides **[6, 2006.01]**
35/56 • • based on carbides **[1, 4, 2006.01]**
35/563 • • • based on boron carbide **[6, 2006.01]**
35/565 • • • based on silicon carbide **[6, 2006.01]**
35/567 • • • • Refractories from grain sized mixtures **[6, 2006.01]**
35/569 • • • • Fine ceramics **[6, 2006.01]**
35/571 • • • • • obtained from polymer precursors **[6, 2006.01]**
35/573 • • • • • obtained by reaction sintering **[6, 2006.01]**
35/575 • • • • • obtained by pressure sintering **[6, 2006.01]**
35/576 • • • • • obtained by sintering without pressure **[6, 2006.01]**
35/577 • • • • • Composites **[6, 2006.01]**
35/58 • • based on borides, nitrides or silicides **[1, 4, 6, 2006.01]**
35/581 • • • based on aluminium nitride **[6, 2006.01]**
35/582 • • • • Composites **[6, 2006.01]**
35/583 • • • based on boron nitride **[6, 2006.01]**
35/5831 • • • • based on cubic boron nitride **[6, 2006.01]**
35/5833 • • • • based on hexagonal boron nitride **[6, 2006.01]**
35/5835 • • • • Composites **[6, 2006.01]**
35/584 • • • based on silicon nitride **[6, 2006.01]**
35/586 • • • • Refractories from grain sized mixtures **[6, 2006.01]**
35/587 • • • • Fine ceramics **[6, 2006.01]**
35/589 • • • • • obtained from polymer precursors **[6, 2006.01]**
35/591 • • • • • obtained by reaction sintering **[6, 2006.01]**
35/593 • • • • • obtained by pressure sintering (C04B 35/594 takes precedence) **[6, 2006.01]**
35/594 • • • • • obtained by sintering a reaction-sintered product, with or without pressure **[6, 2006.01]**
35/596 • • • • • Composites **[6, 2006.01]**
35/597 • • • based on silicon oxynitrides **[6, 2006.01]**
35/599 • • • • based on silicon aluminium oxynitrides (SIALONS) **[6, 2006.01]**
35/622 • Forming processes; Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products **[6, 2006.01]**
35/624 • • Sol-gel processing **[6, 2006.01]**
35/626 • • Preparing or treating the powders individually or as batches **[6, 2006.01]**
35/628 • • • Coating the powders **[6, 2006.01]**
35/63 • • • using additives specially adapted for forming the products **[6, 2006.01]**
35/632 • • • • Organic additives **[6, 2006.01]**
35/634 • • • • • Polymers (C04B 35/636 takes precedence) **[6, 2006.01]**
35/636 • • • • • Polysaccharides or derivatives thereof **[6, 2006.01]**
35/638 • • • • Removal thereof **[6, 2006.01]**
35/64 • • Burning or sintering processes (C04B 33/32 takes precedence) **[1, 6, 2006.01]**
35/645 • • • Pressure sintering **[6, 2006.01]**
35/65 • • • Reaction sintering of free metal- or free silicon-containing compositions **[3, 2006.01]**
35/653 • • Processes involving a melting step **[6, 2006.01]**
35/657 • • • for manufacturing refractories (C04B 35/05, C04B 35/107, C04B 35/484 take precedence) **[6, 2006.01]**

35/66 • Monolithic refractories or refractory mortars, including those whether or not containing clay **[1, 2006.01]**

Note(s) [2006.01]

Any ingredient of a refractory mortar composition containing a hydraulic cement, e.g. aluminous cement, classified in group C04B 35/66, which is considered to represent information of interest for search, may also be classified in the last appropriate place in groups C04B 7/00-C04B 24/00. This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information". For example, such an additional classification in group C04B 24/00 may be given for an organic retarder added to the mortar composition.

35/71 • Ceramic products containing macroscopic reinforcing agents (C04B 35/66 takes precedence) **[3, 4, 2006.01]**

35/74 • • containing shaped metallic materials **[2, 2006.01]**

35/76 • • • Fibres, filaments, whiskers, platelets, or the like **[2, 2006.01]**

35/78 • • containing non-metallic materials **[2, 2006.01]**

35/80 • • • Fibres, filaments, whiskers, platelets, or the like **[2, 2006.01]**

35/81 • • • • Whiskers **[6, 2006.01]**

35/82 • • • • Asbestos; Glass; Fused silica **[2, 2006.01]**

35/83 • • • • Carbon fibres in a carbon matrix **[6, 2006.01]**

Note(s) [6]

The products covered by this group are usually referred to as "carbon-carbon composites".

35/84 • • • Impregnated or coated materials **[2, 2006.01]**

37/00 Joining burned ceramic articles with other burned ceramic articles or other articles by heating [1, 2006.01]

37/02 • with metallic articles **[1, 2006.01]**

37/04 • with articles made from glass **[1, 2006.01]**

38/00 Porous mortars, concrete, artificial stone or ceramic ware; Preparation thereof (treating slag with gases or gas generating material C04B 5/06) **[4, 6, 2006.01]**

Note(s) [4]

Porous mortars, concrete, artificial stone or ceramic ware characterised by the ingredients or compositions are also classified in groups C04B 2/00-C04B 35/00.

38/02 • by adding chemical blowing agents **[4, 2006.01]**

38/04 • by dissolving-out added substances **[4, 2006.01]**

38/06 • by burning-out added substances **[4, 2006.01]**

38/08 • by adding porous substances **[4, 2006.01]**

38/10 • by using foaming agents (C04B 38/02 takes precedence) **[4, 2006.01]**

40/00 Processes, in general, for influencing or modifying the properties of mortars, concrete or artificial stone compositions, e.g. their setting or hardening ability (by selecting active ingredients C04B 22/00-C04B 24/00; hardening of a well-defined composition C04B 26/00-C04B 28/00; making porous, cellular or lightening C04B 38/00) **[4, 6, 2006.01]**

40/02 • Selection of the hardening environment **[4, 2006.01]**

40/04 • Preventing evaporation of the mixing water (permanent coverings C04B 41/00) **[4, 2006.01]**

40/06 • Inhibiting the setting, e.g. mortars of the deferred action type containing water in breakable containers **[4, 2006.01]**

41/00 After-treatment of mortars, concrete, artificial stone or ceramics; Treatment of natural stone (glazes, other than cold glazes, C03C 8/00) **[1, 3, 2006.01]**

Note(s) [4, 6]

1. In this group, the following terms or expressions are used with the meanings indicated:
   - "mortars", "concrete" and "artificial stone" cover materials after primary shaping.
2. Treating, e.g. coating or impregnating, a material with the same material or with a substance which ultimately is transformed into the same material is not considered after-treatment for this group but is classified as preparation of the material, e.g. a carbon body impregnated with a carbonisable substance is classified in C04B 35/52.
3. In groups C04B 41/45-C04B 41/80, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

41/45 • Coating or impregnating **[4, 2006.01]**

41/46 • • with organic materials **[4, 2006.01]**

41/47 • • • Oils, fats or waxes **[4, 2006.01]**

41/48 • • • Macromolecular compounds **[4, 2006.01]**

41/49 • • • Compounds having one or more carbon-to-metal or carbon-to-silicon linkages **[4, 2006.01]**

41/50 • • with inorganic materials **[4, 2006.01]**

41/51 • • • Metallising **[4, 2006.01]**

41/52 • • Multiple coating or impregnating **[4, 2006.01]**

41/53 • involving the removal of part of the materials of the treated article **[4, 2006.01]**

41/60 • of only artificial stone **[4, 2006.01]**

41/61 • • Coating or impregnating **[4, 2006.01]**

41/62 • • • with organic materials **[4, 2006.01]**

41/63 • • • • Macromolecular compounds **[4, 2006.01]**

41/64 • • • • Compounds having one or more carbon-to-metal or carbon-to-silicon linkages **[4, 2006.01]**

41/65 • • • with inorganic materials **[4, 2006.01]**

41/66 • • • • Fluorides, e.g. ocratation **[4, 2006.01]**

41/67 • • • • Phosphates **[4, 2006.01]**

41/68 • • • • Silicic acid; Silicates **[4, 2006.01]**

41/69 • • • • Metals **[4, 2006.01]**

41/70 • • • for obtaining at least two superposed coatings having different compositions **[4, 2006.01]**

41/71 • • • • at least one coating being an organic material **[4, 2006.01]**

41/72 • • involving the removal of part of the materials of the treated articles, e.g. etching **[4, 2006.01]**

41/80 • of only ceramics **[4, 2006.01]**

41/81 • • Coating or impregnating **[4, 2006.01]**

41/82 • • • with organic materials **[4, 2006.01]**

41/83 • • • • Macromolecular compounds **[4, 2006.01]**

41/84 • • • • Compounds having one or more carbon-to-metal or carbon-to-silicon linkages **[4, 2006.01]**

41/85 • • • with inorganic materials **[4, 2006.01]**

41/86 • • • • Glazes; Cold glazes **[4, 2006.01]**

41/87 • • • • Ceramics **[4, 2006.01]**

41/88 • • • • Metals **[4, 2006.01]**

41/89 • • • for obtaining at least two superposed coatings having different compositions **[4, 2006.01]**
41/90 • • • • at least one coating being a metal **[4, 2006.01]**
41/91 • • involving the removal of part of the materials of the treated articles, e.g. etching **[4, 2006.01]**

Indexing scheme associated with groups C04B 22/00 and C04B 24/00, relating to the function or property of the active ingredients. [6]

103/00 Function or property of the active ingredients [6, 2006.01]

103/10 • Accelerators **[6, 2006.01]**
103/12 • • Set accelerators **[6, 2006.01]**
103/14 • • Hardening accelerators **[6, 2006.01]**
103/20 • Retarders **[6, 2006.01]**
103/22 • • Set retarders **[6, 2006.01]**
103/24 • • Hardening retarders **[6, 2006.01]**
103/30 • Water reducers, plasticisers, air-entrainers **[6, 2006.01]**
103/32 • • Superplasticisers **[6, 2006.01]**
103/40 • Surface-active agents, dispersants **[6, 2006.01]**
103/42 • Pore formers **[6, 2006.01]**
103/44 • Thickening, gelling or viscosity increasing agents **[6, 2006.01]**
103/46 • Water-loss reducers, hygroscopic or hydrophilic agents **[6, 2006.01]**
103/48 • Foam stabilisers **[6, 2006.01]**
103/50 • Defoamers, air detrainers **[6, 2006.01]**
103/52 • Grinding aids **[6, 2006.01]**
103/54 • Pigments; Dyes **[6, 2006.01]**
103/56 • Opacifiers **[6, 2006.01]**
103/60 • Agents for protection against chemical, physical or biological attack **[6, 2006.01]**
103/61 • • Corrosion inhibitors **[6, 2006.01]**
103/63 • • Flame-proofing agents **[6, 2006.01]**
103/65 • • Water proofers or repellants **[6, 2006.01]**
103/67 • • Biocides **[6, 2006.01]**
103/69 • • • Fungicides **[6, 2006.01]**

Indexing scheme associated with groups C04B 26/00-C04B 32/00, relating to the function, property or use of the mortars, concrete or artificial stone. [6]

111/00 Function, property or use of the mortars, concrete or artificial stone [6, 2006.01]

111/10 • Compositions characterised by the absence of a specified material **[6, 2006.01]**
111/12 • • Absence of asbestos, e.g. cement-asbestos substitutes **[6, 2006.01]**
111/20 • Resistance against chemical, physical or biological attack **[6, 2006.01]**
111/21 • • Efflorescence resistance **[6, 2006.01]**
111/22 • • Carbonation resistance **[6, 2006.01]**
111/23 • • Acid resistance **[6, 2006.01]**
111/24 • • Sea water resistance **[6, 2006.01]**
111/25 • • Graffiti resistance **[6, 2006.01]**
111/26 • • Corrosion of reinforcement resistance **[6, 2006.01]**
111/27 • • Water resistance, i.e. waterproof or water repellant materials **[6, 2006.01]**
111/28 • • Fire resistance **[6, 2006.01]**
111/30 • Nailable or sawable materials **[6, 2006.01]**
111/32 • Expansion inhibited materials **[6, 2006.01]**
111/34 • Non-shrinking materials **[6, 2006.01]**
111/40 • Porous or lightweight materials **[6, 2006.01]**
111/42 • • Floating materials **[6, 2006.01]**
111/50 • Flexible or elastic materials **[6, 2006.01]**
111/52 • Sound insulating materials **[6, 2006.01]**
111/54 • Substitutes for natural stone, e.g. artificial marble **[6, 2006.01]**
111/56 • Compositions suited for fabrication of pipes, e.g. by centrifugal casting **[6, 2006.01]**
111/60 • Flooring materials **[6, 2006.01]**
111/62 • • Self-levelling compositions **[6, 2006.01]**
111/70 • Grouts **[6, 2006.01]**
111/72 • Compositions used for repairing existing buildings or building materials **[6, 2006.01]**
111/74 • Underwater applications **[6, 2006.01]**
111/76 • Use at sub-zero temperatures **[6, 2006.01]**
111/80 • Optical properties, e.g. transparency **[6, 2006.01]**
111/82 • • Coloured materials **[6, 2006.01]**
111/90 • Electrical properties **[6, 2006.01]**
111/92 • • Electrically insulating materials **[6, 2006.01]**
111/94 • • Electrically conducting materials **[6, 2006.01]**

C05 FERTILISERS; MANUFACTURE THEREOF

Note(s) [2006.01]

1. An ingredient in a mixture of fertilisers, or a single fertiliser which contains more than one of the chemical elements on which the subdivision into subclasses is based, is classified only in the first of the appropriate subclasses. Thus, a nitrophosphate or an ammoniated superphosphate is classified in C05B but not in C05C, magnesium phosphate is classified in C05B but not in C05D, and calcium cyanamide in C05C but not in C05D.
2. Any ingredient in a mixture, which is considered to represent information of interest for search, may also additionally be classified according to Note (1). This can, for example, be the case when it is considered of interest to enable searching of mixtures using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

C05B PHOSPHATIC FERTILISERS

Subclass index

SUPERPHOSPHATES.....1/00
PRODUCED BY WET TREATMENTS.....11/00
PRODUCED BY PYROGENIC PROCESSES.....13/00
OTHER INORGANIC FERTILISERS.....3/00-9/00, 17/00
ORGANIC FERTILISERS.....15/00, 17/00
GRANULATION; PELLETISATION.....19/00
MIXTURES OF PHOSPHATIC FERTILISERS.....21/00

1/00 Superphosphates, i.e. fertilisers produced by reacting rock or bone phosphates with sulfuric or phosphoric acid in such amounts and concentrations as to yield solid products directly [1, 2006.01]

1/02 • Superphosphates **[1, 2006.01]**

1/04 • Double-superphosphate; Triple-superphosphate Other fertilisers based essentially on monocalcium phosphate **[1, 2006.01]**

1/06 • Ammoniation of superphosphates (fertilisers based essentially on ammonium orthophosphate C05B 7/00) **[1, 2006.01]**

1/10 • Apparatus for the manufacture of superphosphates **[1, 2006.01]**

3/00 Fertilisers based essentially on di-calcium phosphate (C05B 11/00 takes precedence) **[1, 2006.01]**

5/00 Thomas phosphate; Other slag phosphates [1, 2006.01]

7/00 Fertilisers based essentially on alkali or ammonium orthophosphates (C05B 11/00 takes precedence) **[1, 2006.01]**

9/00 Fertilisers based essentially on phosphates or double phosphates of magnesium (C05B 11/00 takes precedence) **[1, 2006.01]**

11/00 Fertilisers produced by wet-treating or leaching raw materials either with acids in such amounts and concentrations as to yield solutions followed by neutralisation, or with alkaline lyes [1, 2006.01]

11/02 • Pretreatment **[1, 2006.01]**

11/04 • using mineral acid **[1, 2006.01]**

11/06 • • using nitric acid (nitrophosphates) **[1, 2006.01]**

11/08 • • using sulfuric acid **[1, 2006.01]**

11/10 • • using orthophosphoric acid **[1, 2006.01]**

11/12 • • using aqueous hydrochloric acid **[1, 2006.01]**

11/14 • • using wet gaseous acids **[1, 2006.01]**

11/16 • using alkaline lyes **[1, 2006.01]**

13/00 Fertilisers produced by pyrogenic processes from phosphatic materials [1, 2006.01]

13/02 • from rock phosphates (C05B 13/06 takes precedence) **[1, 2006.01]**

13/04 • from metallic phosphorus compounds, e.g. ferro-phosphorus **[1, 2006.01]**

13/06 • Alkali or alkaline earth meta- or polyphosphate fertilisers **[1, 2006.01]**

15/00 Organic phosphatic fertilisers (bone meal C05B 17/00) **[1, 2006.01]**

17/00 Other phosphatic fertilisers, e.g. soft rock phosphates, bone meal [1, 2006.01]

17/02 • containing manganese **[1, 2006.01]**

19/00 Granulation or pelletisation of phosphatic fertilisers other than slag [1, 2006.01]

19/02 • of superphosphates or mixtures containing them **[1, 2006.01]**

21/00 Mixtures of phosphatic fertilisers covered by more than one of main groups C05B 1/00-C05B 19/00 [1, 2006.01]

C05C NITROGENOUS FERTILISERS

Subclass index

BASED ON NITRATES.....1/00, 5/00
BASED ON AMMONIUM SALTS, AMMONIA.....1/00, 3/00
BASED ON CYANAMIDE.....7/00
BASED ON UREA.....9/00
OTHER FERTILISERS.....11/00
MIXTURES OF NITROGENOUS FERTILISERS.....13/00

1/00 Ammonium nitrate fertilisers [1, 2006.01]

1/02 • Granulation; Pelletisation; Stabilisation; Colouring **[1, 2006.01]**

3/00 Fertilisers containing other salts of ammonia or ammonia itself, e.g. gas liquor [1, 2006.01]

5/00 Fertilisers containing other nitrates [1, 2006.01]

5/02 • containing sodium or potassium nitrate **[1, 2006.01]**

5/04 • containing calcium nitrate **[1, 2006.01]**

7/00 Fertilisers containing calcium or other cyanamides [1, 2006.01]

7/02 • Granulation; Pelletisation; De-gassing; Hydrating; Hardening; Stabilisation; Oiling **[1, 2006.01]**

9/00 Fertilisers containing urea or urea compounds [1, 2006.01]

9/02 • containing urea-formaldehyde condensates **[1, 2006.01]**

11/00 Other nitrogenous fertilisers [1, 2006.01]

13/00 Mixtures of nitrogenous fertilisers covered by more than one of main groups C05C 1/00-C05C 11/00 [1, 2006.01]

C05D INORGANIC FERTILISERS NOT COVERED BY SUBCLASSES C05B, C05C; FERTILISERS PRODUCING CARBON DIOXIDE

1/00 Fertilisers containing potassium (C05D 7/00 takes precedence) **[1, 2006.01]**

1/02 • Manufacture from potassium chloride or sulfate or double or mixed salts thereof **[1, 2006.01]**

1/04 • from minerals or volcanic rocks **[1, 2006.01]**

3/00 Calcareous fertilisers (C05D 7/00 takes precedence) **[1, 2006.01]**

3/02 • from limestone, calcium carbonate, calcium hydrate, slaked lime, calcium oxide, waste calcium compounds **[1, 2006.01]**

3/04 • from blast-furnace slag or other slags containing lime or calcium silicates **[1, 2006.01]**

5/00 Fertilisers containing magnesium (C05D 7/00 takes precedence) **[1, 2006.01]**

7/00 Fertilisers producing carbon dioxide [1, 2006.01]

9/00 Other inorganic fertilisers [1, 2006.01]

9/02 • containing trace elements **[1, 2006.01]**

11/00 Mixtures of fertilisers covered by more than one of main groups C05D 1/00-C05D 9/00 [1, 2006.01]

C05F ORGANIC FERTILISERS NOT COVERED BY SUBCLASSES C05B, C05C, e.g. FERTILISERS FROM WASTE OR REFUSE

Note(s) [5]

Processes where the composting step is the characterising feature, or apparatus therefor, are classified in group C05F 17/00.

1/00 Fertilisers made from animal corpses, or parts thereof [1, 2006.01]

1/02 • Apparatus for their manufacture **[1, 2006.01]**

3/00 Fertilisers from human or animal excrements, e.g. manure [1, 2006.01]

3/02 • Guano **[1, 2006.01]**

3/04 • from human faecal masses **[1, 2006.01]**

3/06 • Apparatus for their manufacture **[1, 2006.01]**

5/00 Fertilisers from distillery wastes, molasses, vinasses, sugar plant, or similar wastes or residues [1, 2006.01]

7/00 Fertilisers from waste water, sewage sludge, sea slime, ooze or similar masses [1, 2006.01]

7/02 • from sulfite liquor or other waste lyes from the manufacture of cellulose **[1, 2006.01]**

7/04 • from waste liquors in the potash industry **[1, 2006.01]**

9/00 Fertilisers from household or town refuse [1, 2006.01]

9/02 • Apparatus for the manufacture **[1, 2006.01]**

9/04 • Biological compost **[1, 2006.01]**

11/00 Other organic fertilisers [1, 2006.01]

11/02 • from peat, brown coal, or similar vegetable deposits **[1, 2006.01]**

11/04 • • Horticultural earth ("Gärtnerische Erden") from peat **[1, 2006.01]**

11/06 • • Apparatus for their manufacture **[1, 2006.01]**

11/08 • Organic fertilisers containing added bacterial cultures, mycelia or the like **[1, 2006.01]**

11/10 • Fertilisers containing plant vitamins or hormones **[1, 2006.01]**

15/00 Mixtures of fertilisers covered by more than one of main groups C05F 1/00-C05F 11/00; Fertilisers from mixtures of starting materials, all the starting materials being covered by this subclass but not by the same main group [5, 2006.01]

17/00 Preparation of fertilisers characterised by the composting step [5, 2006.01]

17/02 • Apparatus therefor **[5, 2006.01]**

C05G **MIXTURES OF FERTILISERS COVERED INDIVIDUALLY BY DIFFERENT SUBCLASSES OF CLASS C05; MIXTURES OF ONE OR MORE FERTILISERS WITH MATERIALS NOT HAVING A SPECIFIC FERTILISING ACTIVITY, e.g. PESTICIDES, SOIL-CONDITIONERS, WETTING AGENTS** (organic fertilisers containing added bacterial cultures, mycelia, or the like C05F 11/08; organic fertilisers containing plant vitamins or hormones C05F 11/10)**; FERTILISERS CHARACTERISED BY THEIR FORM [4]**

Note(s) [6]

1. This subclass covers mixtures of fertilisers with soil-conditioning or soil-stabilising materials characterised by their fertilising activity.
2. This subclass does not cover mixtures of fertilisers with soil-conditioning or soil-stabilising materials characterised by their soil-conditioning or soil-stabilising activity, which are covered by group C09K 17/00.

1/00 **Mixtures of fertilisers covered individually by different subclasses of class C05 [1, 2006.01]**

1/02 • of superphosphates with ammonium nitrate **[1, 2006.01]**

1/04 • of Thomas phosphate with potassium compounds **[1, 2006.01]**

1/06 • of alkali or ammonium orthophosphates with ammonium nitrate or ammonium sulfate or other nitrates or potassium compounds **[1, 2006.01]**

1/08 • of ammonium nitrate with limestone or calcium carbonate **[1, 2006.01]**

1/10 • of ammonium sulfate with potassium compounds **[1, 2006.01]**

3/00 **Mixtures of one or more fertilisers with materials not having a specifically fertilising activity [1, 2006.01]**

3/02 • with pesticides **[1, 2006.01]**

3/04 • with soil conditioners **[1, 2006.01]**

3/06 • with wetting agents **[1, 2006.01]**

3/08 • with agents affecting the nitrification of ammonium compounds or urea in the soil **[1, 2006.01]**

3/10 • with dust-preventing coatings **[4, 2006.01]**

5/00 **Fertilisers characterised by their form** (granulating fertilisers characterised by their chemical constitution, see the relevant groups in C05B-C05G) **[4, 2006.01]**

C06 EXPLOSIVES; MATCHES

C06B **EXPLOSIVE OR THERMIC COMPOSITIONS** (blasting F42D)**; MANUFACTURE THEREOF; USE OF SINGLE SUBSTANCES AS EXPLOSIVES [2]**

Note(s) [2]

1. This subclass covers:
   - compositions which are:
     a. explosive: compositions included are those containing both a fuel and sufficient oxidiser so that, upon initiation, they are capable of undergoing a chemical change of a relatively high rate of speed, resulting in the production of usable force for blasting, firearms, propelling missiles, or the like;
     b. thermic: compositions included have (i) a consumable fuel component which consists of any element which is a metal, B, Si, Se or Te, or mixtures, intercompounds, or hydrides thereof; and (ii) in combination an oxidant component which is either a metal oxide or a salt (organic or inorganic) capable of yielding a metal oxide on decomposition;
     c. fuels for rocket engines and intended for reaction with an oxidant, excluding air, in order to provide thrust for motive power purposes;
     d. for use in affecting the explosion environment, e.g. for neutralising the poisonous gases of explosives, for cooling the explosion gases, or the like;
   - methods or apparatus for preparing or treating such compositions not otherwise provided for;
   - methods of using single substances as explosives.
2. In this subclass, the following term is used with the meaning indicated:
   - "nitrated" covers compounds having a nitro group or a nitrate ester group.
3. Methods or apparatus for preparing or treating such compositions are classified according to the particular components of the compositions.

Subclass index

EXPLOSIVE OR THERMIC COMPOSITIONS
Containing nitrated derivatives
inorganic.....31/00
organic.....25/00, 41/00
Containing nitrides or fulminates.....35/00, 37/00
Containing chlorates or perchlorates.....29/00
Containing metal.....27/00, 33/00
Containing phosphorus.....39/00
Other compositions.....23/00, 43/00
Compositions defined by the structure or arrangement of the components.....45/00, 47/00

USE OF A SINGLE SUBSTANCE AS AN EXPLOSIVE.....49/00
MANUFACTURE.....21/00

21/00 Apparatus or methods for working-up explosives, e.g. forming, cutting, drying [1, 2006.01]

Note(s) [2]

In groups C06B 23/00-C06B 49/00, in the absence of an indication to the contrary, a composition is classified in the last place that provides for an ingredient.

23/00 Compositions characterised by non-explosive or non-thermic constituents [2, 2006.01]

23/02 • for neutralising poisonous gases from explosives produced during blasting **[2, 2006.01]**

23/04 • for cooling the explosion gases **[2, 2006.01]**

25/00 Compositions containing a nitrated organic compound [2, 2006.01]

25/02 • the nitrated compound being starch or sugar **[2, 2006.01]**

25/04 • the nitrated compound being an aromatic **[2, 2006.01]**

25/06 • • with two or more nitrated aromatic compounds present **[2, 2006.01]**

25/08 • • • at least one of which is nitrated toluene **[2, 2006.01]**

25/10 • the compound being nitroglycerine **[2, 2006.01]**

25/12 • • with other nitrated organic compound **[2, 2006.01]**

25/14 • • • the other compound being a nitrated aliphatic diol **[2, 2006.01]**

25/16 • • • the other compound being a nitrated aromatic **[2, 2006.01]**

25/18 • the compound being nitrocellulose present as 10% or more by weight of the total composition **[2, 2006.01]**

25/20 • • with a non-explosive or a non-thermic component **[2, 2006.01]**

25/22 • • with a nitrated aromatic compound **[2, 2006.01]**

25/24 • • with nitroglycerine **[2, 2006.01]**

25/26 • • • with an organic non-explosive or an organic non-thermic component **[2, 2006.01]**

25/28 • the compound being nitrocellulose present as less than 10% by weight of the total composition **[2, 2006.01]**

25/30 • • with nitroglycerine **[2, 2006.01]**

25/32 • the compound being nitrated pentaerythritol **[2, 2006.01]**

25/34 • the compound being a nitrated acyclic, alicyclic or heterocyclic amine **[2, 2006.01]**

25/36 • the compound being a nitroparaffin **[2, 2006.01]**

25/38 • • with other nitrated organic compound **[2, 2006.01]**

25/40 • • with two or more nitroparaffins present **[2, 2006.01]**

27/00 Compositions containing a metal, boron, silicon, selenium or tellurium or mixtures, intercompounds or hydrides thereof, and hydrocarbons or halogenated hydrocarbons [2, 2006.01]

29/00 Compositions containing an inorganic oxygen-halogen salt, e.g. chlorate, perchlorate [2, 2006.01]

29/02 • of an alkali metal **[2, 2006.01]**

29/04 • • with an inorganic non-explosive or an inorganic non-thermic component **[2, 2006.01]**

29/06 • • • the component being a cyanide; the component being an oxide of iron, chromium or manganese **[2, 2006.01]**

29/08 • • with an organic non-explosive or an organic non-thermic component **[2, 2006.01]**

29/10 • • • the component being a dye or a colouring agent **[2, 2006.01]**

29/12 • • with carbon or sulfur **[2, 2006.01]**

29/14 • • with iodine or an iodide **[2, 2006.01]**

29/16 • • with a nitrated organic compound **[2, 2006.01]**

29/18 • • • the compound being nitrated toluene or a nitrated phenol **[2, 2006.01]**

29/20 • • • the compound being nitrocellulose **[2, 2006.01]**

29/22 • the salt being ammonium perchlorate **[2, 2006.01]**

31/00 Compositions containing an inorganic nitrogen-oxygen salt [2, 2006.01]

31/02 • the salt being an alkali metal or an alkaline earth metal nitrate **[2, 2006.01]**

31/04 • • with carbon or sulfur **[2, 2006.01]**

31/06 • • • with an organic non-explosive or an organic non-thermic component **[2, 2006.01]**

31/08 • • with a metal oxygen-halogen salt, e.g. inorganic chlorate, inorganic perchlorate **[2, 2006.01]**

31/10 • • • with carbon or sulfur **[2, 2006.01]**

31/12 • • with a nitrated organic compound **[2, 2006.01]**

31/14 • • • the compound being an aromatic **[2, 2006.01]**

31/16 • • • • the compound being a nitrated toluene **[2, 2006.01]**

31/18 • • • • the compound being a nitrated phenol, e.g. picric acid **[2, 2006.01]**

31/20 • • • the compound being nitroglycerine **[2, 2006.01]**

31/22 • • • the compound being nitrocellulose **[2, 2006.01]**

31/24 • • • • with other explosive or thermic component **[2, 2006.01]**

31/26 • • • • • the other component being nitroglycerine **[2, 2006.01]**

31/28 • the salt being ammonium nitrate **[2, 2006.01]**

31/30 • • with vegetable matter; with resin; with rubber **[2, 2006.01]**

31/32 • • with a nitrated organic compound **[2, 2006.01]**

31/34 • • • the nitrated compound being starch or sugar **[2, 2006.01]**

31/36 • • • • with other explosive or thermic component **[2, 2006.01]**

31/38 • • • the nitrated compound being an aromatic **[2, 2006.01]**

31/40 • • • • with an organic non-explosive or an organic non-thermic component **[2, 2006.01]**

31/42 • • • • with other explosive or thermic component **[2, 2006.01]**

31/44 • • • the compound being nitroglycerine **[2, 2006.01]**

31/46 • • • • with a vegetable matter component, e.g. wood pulp, sawdust **[2, 2006.01]**

31/48 • • • • with other explosive or thermic component **[2, 2006.01]**

31/50 • • • • • the other component being a nitrated organic compound **[2, 2006.01]**

31/52 • • • the compound being nitrocellulose present as 10% or more by weight of the total composition **[2, 2006.01]**

31/54 • • • • with other nitrated organic compound **[2, 2006.01]**

31/56 • • • the compound being nitrocellulose present as less than 10% by weight of the total composition **[2, 2006.01]**

33/00 Compositions containing particulate metal, alloy, boron, silicon, selenium or tellurium with at least one oxygen supplying material which is either a metal oxide or a salt, organic or inorganic, capable of yielding a metal oxide [2, 2006.01]

33/02 • with an organic non-explosive or an organic non-thermic component **[2, 2006.01]**

33/04 • the material being an inorganic nitrogen-oxygen salt **[2, 2006.01]**

33/06 • the material being an inorganic oxygen-halogen salt **[2, 2006.01]**

33/08 • with a nitrated organic compound **[2, 2006.01]**

33/10 • • the compound being an aromatic **[2, 2006.01]**

33/12 • the material being two or more oxygen-yielding compounds **[2, 2006.01]**

33/14 • • at least one being an inorganic nitrogen-oxygen salt **[2, 2006.01]**

35/00 Compositions containing a metal azide [2, 2006.01]

37/00 Compositions containing a metal fulminate [2, 2006.01]

37/02 • with a nitrated organic compound or an inorganic oxygen-halogen salt **[2, 2006.01]**

39/00 Compositions containing free phosphorus or a binary compound of phosphorus, except with oxygen [2, 2006.01]

39/02 • with an inorganic oxygen-halogen salt **[2, 2006.01]**

39/04 • • with a binary compound of phosphorus, except with oxygen **[2, 2006.01]**

39/06 • with free metal, alloy, boron, silicon, selenium or tellurium **[2, 2006.01]**

41/00 Compositions containing a nitrated metallo-organic compound [2, 2006.01]

41/02 • the compound containing lead **[2, 2006.01]**

41/04 • • with an organic explosive or an organic thermic component **[2, 2006.01]**

41/06 • • • with an inorganic explosive or an inorganic thermic component **[2, 2006.01]**

41/08 • • with a metal azide or a metal fulminate **[2, 2006.01]**

41/10 • • with other nitrated metallo-organic compound **[2, 2006.01]**

43/00 Compositions characterised by explosive or thermic constituents not provided for in groups C06B 25/00-C06B 41/00 [2, 2006.01]

45/00 Compositions or products which are defined by structure or arrangement of component or product (explosive charges of particular form or shape F42B 1/00, F42B 3/00) **[2, 2006.01]**

45/02 • comprising particles of diverse size or shape **[2, 2006.01]**

45/04 • comprising solid particles dispersed in solid solution or matrix **[2, 2006.01]**

45/06 • • the solid solution or matrix containing an organic component **[2, 2006.01]**

45/08 • • • the dispersed solid containing an inorganic explosive or an inorganic thermic component **[2, 2006.01]**

45/10 • • • the organic component containing a resin **[2, 2006.01]**

45/12 • having contiguous layers or zones **[2, 2006.01]**

45/14 • • a layer or zone containing an inorganic explosive or an inorganic thermic component **[2, 2006.01]**

45/16 • • • the layer or zone containing at least one inorganic component from the group of azide, fulminate, phosphorus and phosphide **[2, 2006.01]**

45/18 • comprising a coated component (particles dispersed in a matrix C06B 45/04; coated explosive charges F42B) **[2, 2006.01]**

45/20 • • the component base containing an organic explosive or an organic thermic component **[2, 2006.01]**

45/22 • • • the coating containing an organic compound **[2, 2006.01]**

45/24 • • • • the compound being an organic explosive or an organic thermic component **[2, 2006.01]**

45/26 • • • • • the compound being a nitrated toluene **[2, 2006.01]**

45/28 • • • the component base containing nitrocellulose and nitroglycerine **[2, 2006.01]**

45/30 • • the component base containing an inorganic explosive or an inorganic thermic component **[2, 2006.01]**

45/32 • • • the coating containing an organic compound **[2, 2006.01]**

45/34 • • • • the compound being an organic explosive or an organic thermic component **[2, 2006.01]**

45/36 • • the component base containing both an organic explosive or thermic component and an inorganic explosive or thermic component **[2, 2006.01]**

47/00 Compositions in which the components are separately stored until the moment of burning or explosion, e.g. "Sprengel"-type explosives; Suspensions of solid component in a normally non-explosive liquid phase, including a thickened aqueous phase [2, 2006.01]

47/02 • the components comprising a binary propellant **[2, 2006.01]**

47/04 • • a component containing a nitrogen oxide or acid thereof **[2, 2006.01]**

47/06 • • a component being a liquefied normally gaseous material supplying oxygen (C06B 47/04 takes precedence) **[2, 2006.01]**

47/08 • • a component containing hydrazine or a hydrazine derivative **[2, 2006.01]**

47/10 • • a component containing free boron, an organic borane or a binary compound of boron, except with oxygen **[2, 2006.01]**

47/12 • • a component being a liquefied normally gaseous fuel **[2, 2006.01]**

47/14 • comprising a solid component and an aqueous phase **[2, 2006.01]**

49/00 Use of single substances as explosives [2, 2006.01]

C06C DETONATING OR PRIMING DEVICES; FUSES; CHEMICAL LIGHTERS; PYROPHORIC COMPOSITIONS [2]

5/00 Fuses, e.g. fuse cords [1, 2006.01]
5/04 • Detonating fuses **[1, 2006.01]**
5/06 • Fuse igniting means; Fuse connectors **[1, 2006.01]**
5/08 • Devices for the manufacture of fuses **[1, 2006.01]**

7/00 Non-electric detonators; Blasting caps; Primers [1, 2006.01]
7/02 • Manufacture; Packing **[1, 2006.01]**

9/00 Chemical contact igniters; Chemical lighters [1, 2006.01]

15/00 Pyrophoric compositions; Flints (chemical lighters C06C 9/00) **[1, 2006.01]**

C06D MEANS FOR GENERATING SMOKE OR MIST; GAS-ATTACK COMPOSITIONS; GENERATION OF GAS FOR BLASTING OR PROPULSION (CHEMICAL PART) [2]

3/00 Generation of smoke or mist (chemical part) (compositions used as biocides, pest repellants or attractants, or plant growth regulators A01N 25/18) **[1, 2006.01]**

5/00 Generation of pressure gas, e.g. for blasting cartridges, starting cartridges, rockets (explosive compositions containing an oxidizer, fuels for rocket engines intended for reaction with an oxidant other than air C06B) **[1, 2006.01]**
5/02 • by decompressing compressed, liquefied, or solidified gases **[1, 2006.01]**
5/04 • by auto-decomposition of single substances **[1, 2006.01]**
5/06 • by reaction of two or more solids **[1, 2006.01]**
5/08 • by reaction of two or more liquids **[1, 2006.01]**
5/10 • by reaction of solids with liquids **[1, 2006.01]**

7/00 Compositions for gas-attacks [1, 2006.01]

C06F MATCHES; MANUFACTURE OF MATCHES

1/00 Mechanical manufacture of matches [1, 2006.01]
1/02 • Cutting match splints **[1, 2006.01]**
1/04 • Filling match splints into carrier bars; Discharging matches **[1, 2006.01]**
1/06 • Dipping, coating, impregnating, or drying of matches **[1, 2, 2006.01]**
1/08 • Carrier bars **[1, 2006.01]**
1/10 • • Guiding means for carrier bars **[1, 2006.01]**
1/12 • Filling matches into boxes **[1, 2006.01]**
1/14 • Manufacture of ignition strips **[1, 2006.01]**
1/16 • Manufacture of matches connected together, e.g. in bands or blocks **[1, 2006.01]**
1/18 • Printing on matches or match-boxes when combined with match manufacture **[1, 2006.01]**
1/20 • Applying strike-surfaces, e.g. on match-boxes, on match-books **[1, 2006.01]**
1/22 • Manufacturing of match-books, match packs or match packages **[1, 2006.01]**
1/24 • Safety devices against fire **[1, 2006.01]**
1/26 • Production lines for complete match manufacture **[1, 2006.01]**

3/00 Chemical features in the manufacture of matches [1, 2006.01]
3/02 • Wooden strip for matches or substitute therefor **[1, 2006.01]**
3/04 • • Chemical treatment before or after dipping, e.g. dyeing, impregnating **[1, 2006.01]**
3/08 • Strike-surface compositions **[1, 2006.01]**

5/00 Matches (match-books A24F 27/12) **[1, 2006.01]**
5/02 • Permanent matches **[1, 2006.01]**
5/04 • Wax matches **[1, 2006.01]**

C07 ORGANIC CHEMISTRY

Note(s) [2, 4, 5, 2006.01, 2012.01]

1. In this class, the following term is used with the meaning indicated:
   - "preparation" covers purification, separation, stabilisation or use of additives, unless a separate place is provided therefor.
2. Biocidal, pest repellant, pest attractant or plant growth regulatory activity of compounds or preparations is further classified in subclass A01P.
3. In subclasses C07C-C07K, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, and with the exception referred to below, a compound is classified in the last appropriate place. For example, 2-butyl-pyridine, which contains an acyclic chain and a heterocyclic ring, is classified only as a heterocyclic compound, in subclass C07D. In general, and in the absence of an indication to the contrary (such as groups C07C 59/58, C07C 59/70), the terms "acyclic" and "aliphatic" are used to describe compounds in which there is no ring; and, if a ring were present, the compound would be taken by the "last place" rule to a later group for cycloaliphatic or aromatic compounds, if such a group exists. Where a compound or an entire group of compounds exists in tautomeric forms, it is classified as though existing in the form which is classified last in the system, unless the other form is specifically mentioned earlier in the system.

4. Chemical compounds and their preparation are classified in the groups for the type of compound prepared. The processes of preparation are also classified in places for the types of reaction employed, if of interest. Examples of such places outside this class are:
   C12P.....Fermentation or enzyme-using processes to synthesise a desired chemical compound or composition or to separate optical isomers from a racemic mixture
   C25B 3/00.....Electrolytic production of organic compounds
   C25B 7/00.....Electrophoretic production of compounds
5. General processes for the preparation of a class of compounds falling into more than one main group are classified in the groups for the processes employed, when such groups exist. The compounds prepared are also classified in the groups for the types of compound prepared, if of interest.
6. In this class, in the absence of an indication to the contrary, the compounds containing carboxyl or thiocarboxyl groups are classified as the relevant carboxylic or thiocarboxylic acids, unless the "last place rule" (see Note (3), above) dictates otherwise; a carboxyl group being a carbon atom having three bonds, and no more than three, to hetero atoms, other than nitrogen atoms of nitro or nitroso groups, with at least one multiple bond to the same hetero atom and a thiocarboxyl group being a carboxyl group having at least one bond to a sulfur atom, e.g. amides or nitriles of carboxylic acids, are classified with the corresponding acids.
7. Salts of a compound, unless specifically provided for, are classified as that compound, e.g. aniline hydrochloride is classified as containing carbon, hydrogen and nitrogen only (in group C07C 211/46), sodium malonate is classified as malonic acid (in C07C 55/08), and a mercaptide is classified as the mercaptan. Metal chelates are dealt with in the same way. Similarly, metal alcoholates and metal phenates are classified in subclass C07C and not in subclass C07F, the alcoholates in groups C07C 31/28-C07C 31/32 and the phenates as the corresponding phenols in group C07C 39/235 or C07C 39/44. Salts, adducts or complexes formed between two or more organic compounds are classified according to all compounds forming the salts, adducts or complexes.

C07B GENERAL METHODS OF ORGANIC CHEMISTRY; APPARATUS THEREFOR (preparation of carboxylic acid esters by telomerisation C07C 67/47; processes for preparing macromolecular compounds, e.g. telomerisation C08F, C08G)

Note(s) [4, 2006.01]

1. In this subclass, a functional group which is already present in some residue being introduced and is not substantially involved in a chemical reaction, is not considered as the functional group which is formed or introduced as a result of the chemical reaction.
2. In this subclass, the following term is used with the meaning indicated:
   - "separation" means separation only for the purposes of recovering organic compounds.
3. When classifying in this subclass, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.
4. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place according to the type of reaction employed, noting the bond or the functional group which is formed or introduced as a result of the chemical reaction.

Subclass index

REDUCTION IN GENERAL.....31/00
OXIDATION IN GENERAL.....33/00
REACTIONS WITHOUT FORMATION OR INTRODUCTION OF FUNCTIONAL GROUPS CONTAINING HETERO ATOMS
Change of bond type between carbon atoms already directly linked.....35/00
Formation of new or disconnection of existing carbon-to-carbon bonds.....37/00
REACTIONS WITH FORMATION OR INTRODUCTION OF FUNCTIONAL GROUPS CONTAINING HETERO ATOMS
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Oxygen-containing groups.....41/00
Nitrogen-containing groups.....43/00
Sulfur-containing groups.....45/00
Other groups.....47/00
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INTRODUCTION OF PROTECTING OR ACTIVATING GROUPS NOT COVERED BY THE PRECEDING GROUPS.....51/00
ASYMMETRIC SYNTHESES.....53/00
RACEMISATION, INVERSION.....55/00
SEPARATION, PURIFICATION, STABILISATION, USE OF ADDITIVES.....57/00, 63/00
INTRODUCTION OF ISOTOPES.....59/00
GENERATION OF ORGANIC FREE RADICALS.....60/00
OTHER GENERAL METHODS.....61/00

31/00 Reduction in general [4, 2006.01]

33/00 Oxidation in general [4, 2006.01]

Reactions without formation or introduction of functional groups containing hetero atoms [4]

35/00 Reactions without formation or introduction of functional groups containing hetero atoms, involving a change in the type of bonding between two carbon atoms already directly linked [4, 2006.01]

35/02 • Reduction **[4, 2006.01]**
35/04 • Dehydrogenation **[4, 2006.01]**
35/06 • Decomposition, e.g. elimination of halogens, water or hydrogen halides **[4, 2006.01]**
35/08 • Isomerisation **[4, 2006.01]**

37/00 Reactions without formation or introduction of functional groups containing hetero atoms, involving either the formation of a carbon-to-carbon bond between two carbon atoms not directly linked already or the disconnection of two directly linked carbon atoms [4, 2006.01]

37/02 • Addition **[4, 2006.01]**
37/04 • Substitution **[4, 2006.01]**
37/06 • Decomposition, e.g. elimination of carbon dioxide **[4, 2006.01]**
37/08 • Isomerisation **[4, 2006.01]**
37/10 • Cyclisation **[4, 2006.01]**
37/12 • • Diels-Alder reactions **[4, 2006.01]**

Reactions with formation or introduction of functional groups containing hetero atoms [4]

39/00 Halogenation [4, 2006.01]

41/00 Formation or introduction of functional groups containing oxygen [4, 2006.01]

41/02 • of hydroxy or O-metal groups **[4, 2006.01]**
41/04 • of ether, acetal or ketal groups **[4, 2006.01]**
41/06 • of carbonyl groups **[4, 2006.01]**
41/08 • of carboxyl groups or salts, halides or anhydrides thereof **[4, 2006.01]**
41/10 • • Salts, halides or anhydrides of carboxyl groups **[4, 2006.01]**
41/12 • of carboxylic acid ester groups **[4, 2006.01]**
41/14 • of peroxy or hydroperoxy groups **[4, 2006.01]**

43/00 Formation or introduction of functional groups containing nitrogen [4, 2006.01]

43/02 • of nitro or nitroso groups **[4, 2006.01]**
43/04 • of amino groups **[4, 2006.01]**
43/06 • of amide groups **[4, 2006.01]**
43/08 • of cyano groups **[4, 2006.01]**
43/10 • of isocyanate groups **[4, 2006.01]**

45/00 Formation or introduction of functional groups containing sulfur [4, 2006.01]

45/02 • of sulfo or sulfonyldioxy groups **[4, 2006.01]**
45/04 • of sulfonyl or sulfinyl groups **[4, 2006.01]**
45/06 • of mercapto or sulfide groups **[4, 2006.01]**

47/00 Formation or introduction of functional groups not provided for in groups C07B 39/00-C07B 45/00 [4, 2006.01]

49/00 Grignard reactions [4, 2006.01]

51/00 Introduction of protecting groups or activating groups, not provided for in groups C07B 31/00-C07B 49/00 [4, 2006.01]

53/00 Asymmetric syntheses [4, 2006.01]

55/00 Racemisation; Complete or partial inversion [4, 2006.01]

57/00 Separation of optically-active organic compounds [4, 2006.01]

59/00 Introduction of isotopes of elements into organic compounds [4, 2006.01]

60/00 Generation of organic free radicals [2011.01]

61/00 Other general methods [4, 2006.01]

Purification; Separation; Stabilisation [4]

63/00 Purification; Separation specially adapted for the purpose of recovering organic compounds (separation of optically-active organic compounds C07B 57/00)**; Stabilisation; Use of additives [4, 2006.01]**

63/02 • by treatment giving rise to a chemical modification **[4, 2006.01]**
63/04 • Use of additives **[4, 2006.01]**

C07C ACYCLIC OR CARBOCYCLIC COMPOUNDS (macromolecular compounds C08; production of organic compounds by electrolysis or electrophoresis C25B 3/00, C25B 7/00)

Note(s) [3, 5, 7, 2006.01]

1. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "bridged" means the presence of at least one fusion other than ortho, peri or spiro;
   - two rings are "condensed" if they share at least one ring member, i.e. "spiro" and "bridged" are considered as condensed;
   - "condensed ring system" is a ring system in which all rings are condensed among themselves;
   - "number of rings" in a condensed ring system equals the number of scissions necessary to convert the ring system into one acyclic chain;
   - "quinones" are compounds derived from compounds containing a six-membered aromatic ring or a system comprising six-membered aromatic rings (which system may be condensed or not condensed) by replacing two or four ›CH groups of the six-membered aromatic rings by › C=O groups, and by removing one or two carbon-to-carbon double bonds, respectively, and rearranging the remaining carbon-to-carbon double bonds to give a ring or ring system with alternating double bonds, including the carbon-to-oxygen bonds; this means that acenaphthenequinone or camphorquinone are not considered as quinones.
2. Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C-C07K and within these subclasses.

3. Therapeutic activity of compounds is further classified in subclass A61P.
4. When classifying in this subclass, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.
5. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a process is classified in the last appropriate place.
6. In this subclass, in the absence of an indication to the contrary, "quaternary ammonium compounds" are classified with the corresponding "non-quaternised nitrogen compounds".
7. For the classification of compounds in groups C07C 1/00-C07C 71/00 and C07C 401/00-C07C 409/00:
   - a compound is classified considering the molecule as a whole (rule of the "whole molecule approach");
   - a compound is considered to be saturated if it does not contain carbon atoms bound to each other by multiple bonds;
   - a compound is considered to be unsaturated if it contains carbon atoms bound to each other by multiple bonds, which includes a six-membered aromatic ring,

unless otherwise specified or implicitly derivable from the subdivision, as in group C07C 69/00, e.g. C07C 69/712.

8. For the classification of compounds in groups C07C 201/00-C07C 395/00, i.e. after the functional group has been determined according to the "last place rule", a compound is classified according to the following principles:
   - compounds are classified in accordance with the nature of the carbon atom to which the functional group is attached;
   - a carbon skeleton is a carbon atom, other than a carbon atom of a carboxyl group, or a chain of carbon atoms bound to each other; a carbon skeleton is considered to be terminated by every bond to an element other than carbon or to a carbon atom of a carboxyl group;
   - when the molecule contains several functional groups, only functional groups linked to the same carbon skeleton as the one first determined are considered;
   - a carbon skeleton is considered to be saturated if it does not contain carbon atoms bound to each other by multiple bonds;
   - a carbon skeleton is considered to be unsaturated if it contains carbon atoms bound to each other by multiple bonds, which includes a six-membered aromatic ring.

Subclass index

COMPOUNDS CONTAINING CARBON AND HYDROGEN ONLY
- Preparation....1/00, 2/00, 4/00, 5/00, 6/00
- Purification, separation, stabilisation....7/00
- Compounds
  - aliphatic....9/00, 11/00
  - cycloaliphatic, aromatic....13/00, 15/00

COMPOUNDS CONTAINING CARBON AND HALOGENS, WITH OR WITHOUT HYDROGEN
- Preparation....17/00
- Compounds
  - aliphatic....19/00, 21/00
  - cycloaliphatic, aromatic....22/00, 23/00, 25/00

COMPOUNDS CONTAINING CARBON AND OXYGEN, WITH OR WITHOUT HYDROGEN OR HALOGENS
- Preparation
  - simultaneous production of more than one class of oxygen- containing compounds....27/00
  - of alcohols; of phenols....29/00, 37/00
  - of ethers or acetals; of oxo compounds....41/00, 45/00
  - of quinones....46/00
  - of carboxylic acids, their salts or anhydrides....51/00
  - of esters of carboxylic acids....67/00
  - of esters of carbonic or haloformic acids....68/00
- Compounds
  - with OH group(s): aliphatically bound....31/00, 33/00
  - cycloaliphatically bound....35/00
  - with OH group(s) aromatically bound....39/00
  - Ethers, acetals, orthoesters; aldehydes; ketones....43/00, 47/00, 49/00
  - Quinones....50/00
  - carboxylic acids
    - acyclic....53/00, 55/00, 57/00, 59/00
    - cyclic....61/00, 62/00, 63/00, 65/00, 66/00
  - Esters....69/00, 71/00

COMPOUNDS CONTAINING CARBON AND NITROGEN, WITH OR WITHOUT HYDROGEN, HALOGENS, OR OXYGEN
- Preparation
  - of amines....209/00
  - of hydroxy amines, aminoethers, or aminoesters....213/00
  - of aminoaldehydes, aminoketones, aminoquinones....221/00
  - of aminocarboxylic acids....227/00
  - of amides of carboxylic acids....231/00

of nitriles of carboxylic acids....253/00
of derivatives of hydrazine....241/00
of compounds containing carbon- to-nitrogen double bonds, e.g. imines, hydrazones, isocyanates....249/00, 263/00
of derivatives of carbamic acids....269/00
of urea or derivatives....273/00
of guanidines or derivatives....277/00
of nitro or nitroso compounds, or esters of nitric or nitrous acids....201/00
Compounds
having nitrogen bound to carbon or to carbon and hydrogen
Amines....211/00
Hydroxy amines; Aminoethers; Aminoesters....215/00, 217/00, 219/00
Aminoaldehydes, aminoketones, aminoquinones....223/00, 225/00
Amino carboxylic acids....229/00
Amides of carboxylic acids....233/00, 235/00, 237/00
Compounds containing one or more carbon-to-nitrogen double bonds, e.g. imines....251/00
Nitriles of carboxylic acids....255/00
Amidines, imino-ethers....257/00
Hydroxamic acids....259/00
Derivatives of cyanic or isocyanic acid....261/00, 265/00
Carbodiimides....267/00
Carbamic acids....271/00
Ureas....275/00
Guanidines....279/00
having nitrogen bound to halogens....239/00
having nitrogen bound to oxygen
Nitro or nitroso compounds....205/00, 207/00
Nitrites or nitrates....203/00
Hydroxylamines....239/00
Oximes....251/00
having nitrogen bound to another nitrogen
Hydrazines, hydrazides....243/00
Semicarbazates, semicarbazides....281/00
Azo compounds, diazo compounds....245/00
Hydrazones, hydrazidines....251/00, 257/00
Semicarbazones....281/00
N-nitro or N-nitroso compounds....243/00
containing chains of three nitrogen atoms bound together
Triazenes....245/00
Azides....247/00
Other compounds containing nitrogen....291/00
COMPOUNDS CONTAINING CARBON, TOGETHER WITH SULFUR, SELENIUM, OR TELLURIUM, WITH OR WITHOUT HYDROGEN, HALOGENS, OXYGEN, OR NITROGEN
Preparation
of derivatives of sulfuric or sulfonic acids....303/00
of mercaptans, thiophenols, sulfides, or polysulfides....319/00
of sulfones or sulfoxides....315/00
Compounds
having sulfur bound to oxygen
Esters of sulfurous or sulfuric acids....301/00, 305/00
Sulfonic acids or derivatives....309/00
Sulfenic or sulfinic acids or derivatives....313/00
Sulfones, sulfoxides....317/00
having sulfur bound to carbon
Mercaptans, thiophenols, sulfides or polysulfides....321/00, 323/00
Thioaldehydes, thioketones....325/00
Thiocarboxylic acids or derivatives....327/00
Thiocarbonic acids or derivatives....329/00
Thiocyanates, isothiocyanates....331/00
Thiocarbamic acids or derivatives....333/00

Thioureas.....335/00
Thiosemicarbazides or thiosemicarbazones.....337/00
having sulfur bound to nitrogen
Sulfonamides.....311/00
Sulfenamides, sulfinamides, sulfenylcarbamates or sulfenylureas.....313/00
Amides of sulfuric acids.....307/00
Other compounds containing sulfur.....381/00
Compounds containing selenium.....391/00
Compounds containing tellurium.....395/00
IRRADIATION PRODUCTS OF CHOLESTEROL.....401/00
DERIVATIVES OF CYCLOHEXANE OR OF A CYCLOHEXENE HAVING AN UNSATURATED SIDE-CHAIN WITH AT LEAST FOUR CARBON ATOMS.....403/00
PROSTAGLANDINS OR DERIVATIVES.....405/00
PEROXIDES; PEROXYACIDS
Preparation.....407/00
Compounds.....409/00

Hydrocarbons [3]

1/00 Preparation of hydrocarbons from one or more compounds, none of them being a hydrocarbon [1, 2006.01]

1/02 • from oxides of carbon (preparation of liquid hydrocarbon mixtures of undefined composition C10G 2/00; of synthetic natural gas C10L 3/06) **[1, 5, 2006.01]**
1/04 • • from carbon monoxide with hydrogen **[1, 2006.01]**
1/06 • • • in the presence of organic compounds, e.g. hydrocarbons **[1, 2006.01]**
1/08 • • • Isosyntheses **[1, 2006.01]**
1/10 • • from carbon monoxide with water vapour **[1, 2006.01]**
1/12 • • from carbon dioxide with hydrogen **[1, 2006.01]**
1/20 • starting from organic compounds containing only oxygen atoms as hetero atoms **[1, 2006.01]**
1/207 • • from carbonyl compounds **[5, 2006.01]**
1/213 • • • by splitting of esters **[5, 2006.01]**
1/22 • • by reduction **[1, 2006.01]**
1/24 • • by elimination of water **[1, 2006.01]**
1/247 • • by splitting of cyclic ethers **[3, 2006.01]**
1/26 • starting from organic compounds containing only halogen atoms as hetero atoms **[1, 2006.01]**
1/28 • • by ring closure **[1, 2006.01]**
1/30 • • by splitting-off the elements of hydrogen halide from a single molecule **[1, 2006.01]**
1/32 • starting from compounds containing hetero atoms other than, or in addition to, oxygen or halogen **[3, 2006.01]**
1/34 • • reacting phosphines with aldehydes or ketones, e.g. Wittig reaction **[3, 2006.01]**
1/36 • by splitting of esters (C07C 1/213, C07C 1/30 take precedence) **[3, 5, 2006.01]**

2/00 Preparation of hydrocarbons from hydrocarbons containing a smaller number of carbon atoms [3, 2006.01]

2/02 • by addition between unsaturated hydrocarbons **[3, 2006.01]**
2/04 • • by oligomerisation of well-defined unsaturated hydrocarbons without ring formation **[3, 2006.01]**
2/06 • • • of alkenes, i.e. acyclic hydrocarbons having only one carbon-to-carbon double bond **[3, 2006.01]**
2/08 • • • • Catalytic processes **[3, 2006.01]**
2/10 • • • • • with metal oxides **[3, 2006.01]**
2/12 • • • • • with crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
2/14 • • • • • with inorganic acids; with salts or anhydrides of acids **[3, 2006.01]**
2/16 • • • • • • Acids of sulfur; Salts thereof; Sulfur oxides **[3, 2006.01]**
2/18 • • • • • • Acids of phosphorus; Salts thereof; Phosphorus oxides **[3, 2006.01]**
2/20 • • • • • • Acids of halogen; Salts thereof **[3, 2006.01]**
2/22 • • • • • • • Metal halides; Complexes thereof with organic compounds **[3, 2006.01]**
2/24 • • • • • with metals **[3, 2006.01]**
2/26 • • • • • with hydrides or organic compounds (C07C 2/22 takes precedence) **[3, 2006.01]**
2/28 • • • • • • with ion-exchange resins **[3, 2006.01]**
2/30 • • • • • • containing a metal-to-carbon bond; Metal hydrides **[3, 2006.01]**
2/32 • • • • • • as complexes, e.g. acetyl-acetonates **[3, 2006.01]**
2/34 • • • • • • • Metal-hydrocarbon complexes **[3, 2006.01]**
2/36 • • • • • • as phosphines, arsines, stilbines or bismuthines **[3, 2006.01]**
2/38 • • • of dienes or alkynes **[3, 2006.01]**
2/40 • • • • of conjugated dienes **[3, 2006.01]**
2/42 • • homo- or co-oligomerisation with ring formation, not being a Diels-Alder conversion **[3, 2006.01]**
2/44 • • • of conjugated dienes only **[3, 2006.01]**
2/46 • • • • Catalytic processes **[3, 2006.01]**
2/48 • • • of only hydrocarbons containing a carbon-to-carbon triple bond **[3, 2006.01]**
2/50 • • Diels-Alder conversion **[3, 2006.01]**
2/52 • • • Catalytic processes **[3, 2006.01]**
2/54 • by addition of unsaturated hydrocarbons to saturated hydrocarbons, or to hydrocarbons containing a six-membered aromatic ring with no unsaturation outside the aromatic ring **[3, 2006.01]**
2/56 • • Addition to acyclic hydrocarbons **[3, 2006.01]**
2/58 • • • Catalytic processes **[3, 2006.01]**
2/60 • • • • with halides **[3, 2006.01]**

2/62 • • • • with acids **[3, 2006.01]**
2/64 • • Addition to a carbon atom of a six-membered aromatic ring **[3, 2006.01]**
2/66 • • • Catalytic processes **[3, 2006.01]**
2/68 • • • • with halides **[3, 2006.01]**
2/70 • • • • with acids **[3, 2006.01]**
2/72 • • Addition to a non-aromatic carbon atom of hydrocarbons containing a six-membered aromatic ring **[3, 2006.01]**
2/74 • by addition with simultaneous hydrogenation **[3, 2006.01]**
2/76 • by condensation of hydrocarbons with partial elimination of hydrogen **[3, 2006.01]**
2/78 • • Processes with partial combustion **[3, 2006.01]**
2/80 • • Processes with the aid of electrical means **[3, 2006.01]**
2/82 • • oxidative coupling **[3, 2006.01]**
2/84 • • • catalytic **[3, 2006.01]**
2/86 • by condensation between a hydrocarbon and a non-hydrocarbon **[3, 2006.01]**
2/88 • • Growth and elimination reactions **[3, 2006.01]**

4/00 Preparation of hydrocarbons from hydrocarbons containing a larger number of carbon atoms [3, 2006.01]

4/02 • by cracking a single hydrocarbon or a mixture of individually defined hydrocarbons or a normally gaseous hydrocarbon fraction **[3, 2006.01]**
4/04 • • Thermal processes **[3, 2006.01]**
4/06 • • Catalytic processes **[3, 2006.01]**
4/08 • by splitting-off an aliphatic or cycloaliphatic part from the molecule **[3, 2006.01]**
4/10 • • from acyclic hydrocarbons **[3, 2006.01]**
4/12 • • from hydrocarbons containing a six-membered aromatic ring, e.g. propyltoluene to vinyltoluene **[3, 2006.01]**
4/14 • • • splitting taking place at an aromatic-aliphatic bond **[3, 2006.01]**
4/16 • • • • Thermal processes **[3, 2006.01]**
4/18 • • • • Catalytic processes **[3, 2006.01]**
4/20 • • • • Hydrogen being formed <u>in situ</u>, e.g. from steam **[3, 2006.01]**
4/22 • by depolymerisation to the original monomer, e.g. dicyclopentadiene to cyclopentadiene **[3, 2006.01]**
4/24 • by splitting polyarylsubstituted aliphatic compounds at an aliphatic-aliphatic bond, e.g. 1,4-diphenylbutane to styrene **[3, 2006.01]**
4/26 • by splitting polyaryl compounds at a bond between uncondensed six-membered aromatic rings, e.g. biphenyl to benzene **[3, 2006.01]**

5/00 Preparation of hydrocarbons from hydrocarbons containing the same number of carbon atoms [1, 2006.01]

5/02 • by hydrogenation **[1, 2006.01]**
5/03 • • of non-aromatic carbon-to-carbon double bonds **[3, 2006.01]**
5/05 • • • Partial hydrogenation **[3, 2006.01]**
5/08 • • of carbon-to-carbon triple bonds **[1, 2006.01]**
5/09 • • • to carbon-to-carbon double bonds **[3, 2006.01]**
5/10 • • of aromatic six-membered rings **[1, 2006.01]**
5/11 • • • Partial hydrogenation **[3, 2006.01]**
5/13 • • with simultaneous isomerisation **[3, 2006.01]**
5/22 • by isomerisation (with simultaneous hydrogenation C07C 5/13) **[1, 2006.01]**
5/23 • • Rearrangement of carbon-to-carbon unsaturated bonds **[3, 2006.01]**
5/25 • • • Migration of carbon-to-carbon double bonds **[3, 2006.01]**
5/27 • • Rearrangement of carbon atoms in the hydrocarbon skeleton **[3, 2006.01]**
5/29 • • • changing the number of carbon atoms in a ring while maintaining the number of rings **[3, 2006.01]**
5/31 • • • changing the number of rings **[3, 2006.01]**
5/32 • by dehydrogenation with formation of free hydrogen **[2, 2006.01]**
5/327 • • Formation of non-aromatic carbon-to-carbon double bonds only **[3, 2006.01]**
5/333 • • • Catalytic processes **[3, 2006.01]**
5/35 • • Formation of carbon-to-carbon triple bonds only **[3, 2006.01]**
5/367 • • Formation of an aromatic six-membered ring from an existing six-membered ring, e.g. dehydrogenation of ethylcyclohexane to ethylbenzene **[3, 2006.01]**
5/373 • • with simultaneous isomerisation **[3, 2006.01]**
5/387 • • • of cyclic compounds containing no six-membered ring to compounds containing a six-membered aromatic ring **[3, 2006.01]**
5/393 • • • with cyclisation to an aromatic six-membered ring, e.g. dehydrogenation of n-hexane to benzene **[3, 2006.01]**
5/41 • • • • Catalytic processes **[3, 2006.01]**
5/42 • by dehydrogenation with a hydrogen acceptor **[2, 2006.01]**

<u>Note(s) [3]</u>

1. In this group:
   - the catalyst is considered as forming part of the acceptor system in case of simultaneous catalyst reduction;
   - compounds added for binding the reduced acceptor system are not considered as belonging to the acceptor system.
2. The acceptor system is classified according to the supplying substances in case of <u>in situ</u> formation of the acceptor system or of <u>in situ</u> regeneration of the reduced acceptor system.

5/44 • • with a halogen or a halogen-containing compound as an acceptor **[2, 2006.01]**
5/46 • • with sulfur or a sulfur-containing compound as an acceptor **[2, 2006.01]**
5/48 • • with oxygen as an acceptor **[2, 2006.01]**
5/50 • • with an organic compound as an acceptor **[2, 2006.01]**
5/52 • • • with a hydrocarbon as an acceptor, e.g. hydrocarbon disproportionation, i.e. $2\ C_nH_p \rightarrow C_nH_{p+q} + C_nH_{p-q}$ **[2, 2006.01]**
5/54 • • with an acceptor system containing at least two compounds provided for in more than one of groups C07C 5/44-C07C 5/50 **[3, 2006.01]**
5/56 • • • containing only oxygen and either halogens or halogen-containing compounds **[3, 2006.01]**

6/00 Preparation of hydrocarbons from hydrocarbons containing a different number of carbon atoms by redistribution reactions [3, 2006.01]

6/02 • Metathesis reactions at an unsaturated carbon-to-carbon bond **[3, 2006.01]**
6/04 • • at a carbon-to-carbon double bond **[3, 2006.01]**
6/06 • • • at a cyclic carbon-to-carbon double bond **[3, 2006.01]**

6/08 • by conversion at a saturated carbon-to-carbon bond **[3, 2006.01]**
6/10 • • in hydrocarbons containing no six-membered aromatic rings **[3, 2006.01]**
6/12 • • of exclusively hydrocarbons containing a six-membered aromatic ring **[3, 2006.01]**

7/00 Purification, separation or stabilisation of hydrocarbons; Use of additives [1, 5, 2006.01]
7/04 • by distillation **[1, 3, 2006.01]**
7/05 • • with the aid of auxiliary compounds **[3, 2006.01]**
7/06 • • • by azeotropic distillation **[1, 2006.01]**
7/08 • • • by extractive distillation **[1, 2006.01]**
7/09 • by fractional condensation **[3, 2006.01]**
7/10 • by extraction, i.e. purification or separation of liquid hydrocarbons with the aid of liquids **[1, 3, 2006.01]**
7/11 • by absorption, i.e. purification or separation of gaseous hydrocarbons with the aid of liquids **[3, 2006.01]**
7/12 • by adsorption, i.e. purification or separation of hydrocarbons with the aid of solids, e.g. with ion-exchangers **[1, 3, 2006.01]**
7/13 • • by molecular-sieve technique **[2, 3, 2006.01]**
7/135 • by gas-chromatography **[3, 2006.01]**
7/14 • by crystallisation; Purification or separation of the crystals **[1, 3, 2006.01]**
7/144 • using membranes, e.g. selective permeation **[3, 2006.01]**
7/148 • by treatment giving rise to a chemical modification of at least one compound **[3, 2006.01]**
7/152 • • by forming adducts or complexes **[3, 2006.01]**
7/156 • • • with solutions of copper salts **[3, 2006.01]**
7/163 • • by hydrogenation **[3, 2006.01]**
7/167 • • • for removal of compounds containing a triple carbon-to-carbon bond **[3, 2006.01]**
7/17 • • with acids or sulfur oxides **[3, 2006.01]**
7/171 • • • Sulfuric acid or oleum **[7, 2006.01]**
7/173 • • with the aid of organo-metallic compounds **[3, 2006.01]**
7/177 • • by selective oligomerisation or selective polymerisation of at least one compound of the mixture **[3, 2006.01]**
7/20 • Use of additives, e.g. for stabilisation **[3, 2006.01]**

9/00 Acyclic saturated hydrocarbons [1, 2006.01]
9/02 • with one to four carbon atoms **[1, 5, 2006.01]**
9/04 • • Methane (production by treatment of sewage C02F 11/04) **[1, 5, 2006.01]**
9/06 • • Ethane **[1, 2006.01]**
9/08 • • Propane **[1, 2006.01]**
9/10 • • with four carbon atoms **[1, 5, 2006.01]**
9/12 • • • Iso-butane **[1, 2006.01]**
9/14 • with five to fifteen carbon atoms **[1, 2006.01]**
9/15 • • Straight-chain hydrocarbons **[3, 2006.01]**
9/16 • • Branched-chain hydrocarbons **[1, 2006.01]**
9/18 • • • with five carbon atoms **[1, 5, 2006.01]**
9/21 • • • 2,2,4-Trimethylpentane **[3, 2006.01]**
9/22 • with more than fifteen carbon atoms **[1, 2006.01]**

11/00 Acyclic unsaturated hydrocarbons [1, 2006.01]
11/02 • Alkenes **[1, 2006.01]**
11/04 • • Ethene **[1, 2006.01]**
11/06 • • Propene **[1, 2006.01]**
11/08 • • with four carbon atoms **[1, 5, 2006.01]**
11/09 • • • Isobutene **[3, 2006.01]**
11/10 • • with five carbon atoms **[1, 5, 2006.01]**
11/107 • • with six carbon atoms **[5, 2006.01]**
11/113 • • • Methylpentenes **[3, 2006.01]**
11/12 • Alkadienes **[1, 2006.01]**
11/14 • • Allene **[1, 2006.01]**
11/16 • • with four carbon atoms **[1, 2006.01]**
11/167 • • • 1,3-Butadiene **[3, 2006.01]**
11/173 • • with five carbon atoms **[3, 2006.01]**
11/18 • • • Isoprene **[1, 3, 2006.01]**
11/20 • • • 1,3-Pentadiene **[1, 3, 2006.01]**
11/21 • Alkatrienes; Alkatetraenes; Other alkapolyenes **[2, 3, 2006.01]**
11/22 • containing carbon-to-carbon triple bonds **[1, 2006.01]**
11/24 • • Acetylene (production of acetylene gas by wet methods C10H) **[1, 5, 2006.01]**
11/28 • containing carbon-to-carbon double bonds and carbon-to-carbon triple bonds **[1, 2006.01]**
11/30 • • Butenyne **[1, 2006.01]**

13/00 Cyclic hydrocarbons containing rings other than, or in addition to, six-membered aromatic rings [1, 2006.01]
13/02 • Monocyclic hydrocarbons or acyclic hydrocarbon derivatives thereof **[1, 2006.01]**
13/04 • • with a three-membered ring **[1, 2006.01]**
13/06 • • with a four-membered ring **[1, 2006.01]**
13/08 • • with a five-membered ring **[1, 2006.01]**
13/10 • • • with a cyclopentane ring **[1, 2006.01]**
13/11 • • • • substituted by unsaturated hydrocarbon groups **[2, 2006.01]**
13/12 • • • with a cyclopentene ring **[1, 2006.01]**
13/15 • • • with a cyclopentadiene ring **[3, 2006.01]**
13/16 • • with a six-membered ring **[1, 2006.01]**
13/18 • • • with a cyclohexane ring **[1, 2006.01]**
13/19 • • • • substituted by unsaturated hydrocarbon groups **[2, 2006.01]**
13/20 • • • with a cyclohexene ring **[1, 2006.01]**
13/21 • • • • Menthadienes **[2, 2006.01]**
13/23 • • • with a cyclohexadiene ring **[3, 2006.01]**
13/24 • • with a seven-membered ring **[1, 2006.01]**
13/26 • • with an eight-membered ring **[1, 2006.01]**
13/263 • • • with a cyclo-octene or cyclo-octadiene ring **[3, 2006.01]**
13/267 • • • with a cyclo-octatriene or cyclo-octatetraene ring **[3, 2006.01]**
13/271 • • with a nine- to eleven-membered ring **[3, 2006.01]**
13/273 • • with a twelve-membered ring **[3, 2006.01]**
13/275 • • • the twelve-membered ring being unsaturated **[3, 2006.01]**
13/277 • • • • with a cyclododecatriene ring **[3, 2006.01]**
13/28 • Polycyclic hydrocarbons or acyclic hydrocarbon derivatives thereof **[1, 2006.01]**

Note(s) [3]

Ring systems consisting only of condensed six-membered rings with maximum number of non-cumulative double bonds are classified in group C07C 15/00.

13/32 • • with condensed rings **[1, 2006.01]**
13/34 • • • with a bicyclo ring system containing four carbon atoms **[1, 2006.01]**
13/36 • • • with a bicyclo ring system containing five carbon atoms **[1, 2006.01]**
13/38 • • • with a bicyclo ring system containing six carbon atoms **[1, 2006.01]**

13/39 • • • with a bicyclo ring system containing seven carbon atoms **[3, 2006.01]**
13/40 • • • • with a bicycloheptane ring structure **[1, 3, 2006.01]**
13/42 • • • • with a bicycloheptene ring structure **[1, 3, 2006.01]**
13/43 • • • • • substituted by unsaturated acyclic hydrocarbon groups **[3, 2006.01]**
13/44 • • • with a bicyclo ring system containing eight carbon atoms **[1, 2006.01]**
13/45 • • • with a bicyclo ring system containing nine carbon atoms **[3, 2006.01]**
13/465 • • • • Indenes; Completely or partially hydrogenated indenes **[3, 2006.01]**
13/47 • • • with a bicyclo ring system containing ten carbon atoms **[3, 2006.01]**
13/48 • • • • Completely or partially hydrogenated naphthalenes **[1, 3, 2006.01]**
13/50 • • • • • Decahydronaphthalenes **[1, 3, 2006.01]**
13/52 • • • • Azulenes; Completely or partially hydrogenated azulenes **[1, 3, 2006.01]**
13/54 • • • with three condensed rings **[1, 2006.01]**
13/547 • • • • at least one ring not being six-membered, the other rings being at the most six-membered **[3, 2006.01]**
13/553 • • • • • Indacenes; Completely or partially hydrogenated indacenes **[3, 2006.01]**
13/567 • • • • • Fluorenes; Completely or partially hydrogenated fluorenes **[3, 2006.01]**
13/573 • • • • with three six-membered rings **[3, 2006.01]**
13/58 • • • • • Completely or partially hydrogenated anthracenes **[1, 3, 2006.01]**
13/60 • • • • • Completely or partially hydrogenated phenanthrenes **[1, 3, 2006.01]**
13/605 • • • • with a bridged ring system **[3, 2006.01]**
13/61 • • • • • Bridged indenes, e.g. dicyclopentadiene **[3, 2006.01]**
13/615 • • • • • Adamantanes **[3, 2006.01]**
13/62 • • • with more than three condensed rings **[1, 2006.01]**
13/64 • • • • with a bridged ring system **[3, 2006.01]**
13/66 • • • • the condensed ring system contains only four rings **[3, 2006.01]**
13/68 • • • • • with a bridged ring system **[3, 2006.01]**
13/70 • • • with a condensed ring system consisting of at least two mutually uncondensed aromatic ring systems, linked by an annular structure formed by carbon chains on non-adjacent positions of the aromatic ring, e.g. cyclophanes **[3, 2006.01]**
13/72 • • • Spiro hydrocarbons **[3, 2006.01]**

15/00 Cyclic hydrocarbons containing only six-membered aromatic rings as cyclic part [1, 2, 2006.01]
15/02 • Monocyclic hydrocarbons **[1, 2006.01]**
15/04 • • Benzene **[1, 2006.01]**
15/06 • • Toluene **[1, 2006.01]**
15/067 • • C_8H_{10} hydrocarbons **[3, 2006.01]**
15/073 • • • Ethylbenzene **[3, 2006.01]**
15/08 • • • Xylenes **[1, 3, 2006.01]**
15/085 • • Isopropylbenzene **[3, 2006.01]**
15/107 • • having a saturated side-chain containing at least six carbon atoms, e.g. detergent alkylates **[3, 2006.01]**
15/113 • • • having at least two saturated side-chains, each containing at least six carbon atoms **[3, 2006.01]**
15/12 • Polycyclic non-condensed hydrocarbons **[1, 2006.01]**
15/14 • • all phenyl groups being directly linked **[1, 3, 2006.01]**
15/16 • • containing at least two phenyl groups linked by one single acyclic carbon atom **[1, 2006.01]**
15/18 • • containing at least one group with formula **[1, 2006.01]**
15/20 • Polycyclic condensed hydrocarbons **[1, 2006.01]**
15/24 • • containing two rings **[1, 2006.01]**
15/27 • • containing three rings **[3, 2006.01]**
15/28 • • • Anthracenes **[1, 3, 2006.01]**
15/30 • • • Phenanthrenes **[1, 3, 2006.01]**
15/38 • • containing four rings **[3, 2006.01]**
15/40 • substituted by unsaturated hydrocarbon radicals **[3, 2006.01]**
15/42 • • monocyclic **[3, 2006.01]**
15/44 • • • the hydrocarbon substituent containing a carbon-to-carbon double bond **[3, 2006.01]**
15/46 • • • • Styrene; Ring-alkylated styrenes **[3, 2006.01]**
15/48 • • • the hydrocarbon substituent containing a carbon-to-carbon triple bond **[3, 2006.01]**
15/50 • • polycyclic non-condensed **[3, 2006.01]**
15/52 • • • containing a group with formula **[3, 2006.01]**
15/54 • • • containing a group with formula **[3, 2006.01]**
15/56 • • polycyclic condensed **[3, 2006.01]**
15/58 • • • containing two rings **[3, 2006.01]**
15/60 • • • containing three rings **[3, 2006.01]**
15/62 • • • containing four rings **[3, 2006.01]**

Compounds containing carbon and halogens with or without hydrogen

17/00 Preparation of halogenated hydrocarbons [1, 2006.01]
17/007 • from carbon or carbides and halogens **[6, 2006.01]**
17/013 • by addition of halogens **[6, 2006.01]**
17/02 • • to unsaturated hydrocarbons **[1, 6, 2006.01]**
17/04 • • to unsaturated halogenated hydrocarbons **[1, 6, 2006.01]**
17/06 • • combined with replacement of hydrogen atoms by halogens **[1, 2006.01]**
17/07 • by addition of hydrogen halides **[6, 2006.01]**
17/08 • • to unsaturated hydrocarbons **[1, 6, 2006.01]**
17/087 • • to unsaturated halogenated hydrocarbons **[6, 2006.01]**
17/093 • by replacement by halogens **[6, 2006.01]**
17/10 • • of hydrogen atoms (combined with addition of halogens to unsaturated hydrocarbons C07C 17/06) **[1, 6, 2006.01]**
17/12 • • • in the ring of aromatic compounds **[1, 6, 2006.01]**
17/14 • • • in the side-chain of aromatic compounds **[1, 6, 2006.01]**
17/15 • • with oxygen as auxiliary reagent, e.g. oxychlorination **[2, 6, 2006.01]**
17/152 • • • of hydrocarbons **[3, 6, 2006.01]**
17/154 • • • • of saturated hydrocarbons **[3, 6, 2006.01]**
17/156 • • • • of unsaturated hydrocarbons **[3, 6, 2006.01]**
17/158 • • • of halogenated hydrocarbons **[3, 6, 2006.01]**
17/16 • • of hydroxyl groups **[1, 3, 6, 2006.01]**

17/18 • • of oxygen atoms of carbonyl groups **[1, 6, 2006.01]**
17/20 • • of halogen atoms by other halogen atoms **[1, 6, 2006.01]**
17/21 • • • with simultaneous increase of the number of halogen atoms **[6, 2006.01]**
17/23 • by dehalogenation **[6, 2006.01]**
17/25 • by splitting-off hydrogen halides from halogenated hydrocarbons **[6, 2006.01]**
17/26 • by reactions involving an increase in the number of carbon atoms in the skeleton **[1, 2006.01]**
17/263 • • by condensation reactions **[6, 2006.01]**
17/266 • • • of hydrocarbons and halogenated hydrocarbons **[6, 2006.01]**
17/269 • • • of only halogenated hydrocarbons **[6, 2006.01]**
17/272 • • by addition reactions **[6, 2006.01]**
17/275 • • • of hydrocarbons and halogenated hydrocarbons **[6, 2006.01]**
17/278 • • • of only halogenated hydrocarbons **[6, 2006.01]**
17/281 • • • • of only one compound **[6, 2006.01]**
17/30 • • by a Diels-Alder synthesis **[1, 2006.01]**
17/32 • • by introduction of halogenated alkyl groups into ring compounds **[1, 2006.01]**
17/35 • by reactions not affecting the number of carbon or halogen atoms in the molecules **[6, 2006.01]**
17/354 • • by hydrogenation **[6, 2006.01]**
17/357 • • by dehydrogenation **[6, 2006.01]**
17/358 • • by isomerisation **[6, 2006.01]**
17/361 • by reactions involving a decrease in the number of carbon atoms **[6, 2006.01]**
17/363 • • by elimination of carboxyl groups **[6, 2006.01]**
17/367 • • by depolymerisation **[6, 2006.01]**
17/37 • by disproportionation of halogenated hydrocarbons **[6, 2006.01]**
17/38 • Separation; Purification; Stabilisation; Use of additives **[1, 2006.01]**
17/383 • • by distillation **[6, 2006.01]**
17/386 • • • with auxiliary compounds **[6, 2006.01]**
17/389 • • by adsorption on solids **[6, 2006.01]**
17/392 • • by crystallisation; Purification or separation of the crystals **[6, 2006.01]**
17/395 • • by treatment giving rise to a chemical modification of at least one compound **[6, 2006.01]**
17/42 • • Use of additives, e.g. for stabilisation **[1, 3, 6, 2006.01]**

19/00 Acyclic saturated compounds containing halogen atoms [1, 5, 2006.01]
19/01 • containing chlorine **[6, 2006.01]**
19/03 • • Chloromethanes **[6, 2006.01]**
19/04 • • • Chloroform **[1, 6, 2006.01]**
19/041 • • • Carbon tetrachloride **[6, 2006.01]**
19/043 • • Chloroethanes **[6, 2006.01]**
19/045 • • • Dichloroethanes **[3, 6, 2006.01]**
19/05 • • • Trichloroethanes **[3, 6, 2006.01]**
19/055 • • • Tetrachloroethanes **[3, 6, 2006.01]**
19/07 • containing iodine **[2, 2006.01]**
19/075 • containing bromine **[6, 2006.01]**
19/08 • containing fluorine **[1, 2006.01]**
19/10 • • and chlorine **[6, 2006.01]**
19/12 • • • having two carbon atoms **[6, 2006.01]**
19/14 • • and bromine **[6, 2006.01]**
19/16 • • and iodine **[6, 2006.01]**

21/00 Acyclic unsaturated compounds containing halogen atoms [1, 5, 2006.01]
21/02 • containing carbon-to-carbon double bonds **[1, 2006.01]**
21/04 • • Chloro-alkenes **[1, 2006.01]**
21/06 • • • Vinyl chloride **[1, 2006.01]**
21/067 • • • Allyl chloride; Methallyl chloride **[3, 2006.01]**
21/073 • • • Dichloro-alkenes **[3, 2006.01]**
21/08 • • • • Vinylidene chloride **[1, 3, 2006.01]**
21/09 • • • • Dichloro-butenes **[3, 2006.01]**
21/10 • • • Trichloro-ethylene **[1, 2006.01]**
21/12 • • • Tetrachloro-ethylene **[1, 2006.01]**
21/14 • • containing bromine **[1, 2006.01]**
21/16 • • • Crotyl bromide **[1, 2006.01]**
21/17 • • containing iodine **[5, 2006.01]**
21/18 • • containing fluorine **[1, 2006.01]**
21/185 • • • Tetrafluoroethene **[5, 2006.01]**
21/19 • • Halogenated dienes **[3, 2006.01]**
21/20 • • • Halogenated butadienes **[1, 3, 2006.01]**
21/21 • • • • Chloroprene **[3, 2006.01]**
21/215 • • Halogenated polyenes with more than two carbon-to-carbon double bonds **[3, 2006.01]**
21/22 • containing carbon-to-carbon triple bonds **[1, 2006.01]**

22/00 Cyclic compounds containing halogen atoms bound to an acyclic carbon atom [5, 2006.01]
22/02 • having unsaturation in the rings **[5, 2006.01]**
22/04 • • containing six-membered aromatic rings **[5, 2006.01]**
22/06 • • • Trichloromethylbenzene **[5, 2006.01]**
22/08 • • • containing fluorine **[5, 2006.01]**

23/00 Compounds containing at least one halogen atom bound to a ring other than a six-membered aromatic ring [1, 2006.01]
23/02 • Monocyclic halogenated hydrocarbons **[1, 2006.01]**
23/04 • • with a three-membered ring **[1, 2006.01]**
23/06 • • with a four-membered ring **[1, 2006.01]**
23/08 • • with a five-membered ring **[1, 2006.01]**
23/10 • • with a six-membered ring **[1, 2006.01]**
23/12 • • • Hexachlorocyclohexanes **[1, 2006.01]**
23/14 • • with a seven-membered ring **[1, 2006.01]**
23/16 • • with an eight-membered ring **[1, 2006.01]**
23/18 • Polycyclic halogenated hydrocarbons **[1, 2006.01]**
23/20 • • with condensed rings none of which is aromatic **[1, 2006.01]**
23/22 • • • with a bicyclo ring system containing four carbon atoms **[1, 2006.01]**
23/24 • • • with a bicyclo ring system containing five carbon atoms **[1, 2006.01]**
23/26 • • • with a bicyclo ring system containing six carbon atoms **[1, 2006.01]**
23/27 • • • with a bicyclo ring system containing seven carbon atoms **[5, 2006.01]**
23/28 • • • • Saturated bicyclo ring system **[1, 5, 2006.01]**
23/30 • • • • Mono-unsaturated bicyclo ring system **[1, 5, 2006.01]**
23/32 • • • with a bicyclo ring system containing eight carbon atoms **[1, 2006.01]**
23/34 • • • Halogenated completely or partially hydrogenated indenes **[1, 2006.01]**
23/36 • • • Halogenated completely or partially hydrogenated naphthalenes **[1, 2006.01]**
23/38 • • • with three condensed rings **[1, 2006.01]**

23/40 • • • • Halogenated completely or partially hydrogenated fluorenes **[1, 2006.01]**
23/42 • • • • Halogenated completely or partially hydrogenated anthracenes **[1, 2006.01]**
23/44 • • • • Halogenated completely or partially hydrogenated phenanthrenes **[1, 2006.01]**
23/46 • • • with more than 3 condensed rings **[1, 2006.01]**

25/00 Compounds containing at least one halogen atom bound to a six-membered aromatic ring [1, 2006.01]
25/02 • Monocyclic aromatic halogenated hydrocarbons **[1, 2006.01]**
25/06 • • Monochloro-benzene **[1, 3, 2006.01]**
25/08 • • Dichloro-benzenes **[1, 3, 2006.01]**
25/10 • • Trichloro-benzenes **[1, 3, 2006.01]**
25/12 • • Hexachloro-benzene **[1, 3, 2006.01]**
25/125 • • Halogenated xylenes **[2, 3, 2006.01]**
25/13 • • containing fluorine **[2, 3, 2006.01]**
25/18 • Polycyclic aromatic halogenated hydrocarbons **[1, 2006.01]**
25/20 • • Dichloro-diphenyl-trichloro-ethane **[1, 2006.01]**
25/22 • • with condensed rings **[1, 2006.01]**
25/24 • Halogenated aromatic hydrocarbons with unsaturated side chains **[1, 2006.01]**
25/28 • • Halogenated styrenes **[1, 3, 2006.01]**

Compounds containing carbon and oxygen, with or without hydrogen or halogens [2]

27/00 Processes involving the simultaneous production of more than one class of oxygen-containing compounds [1, 2006.01]
27/02 • Saponification of organic acid esters **[1, 2006.01]**
27/04 • by reduction of oxygen-containing compounds (C07C 29/14 takes precedence) **[1, 2006.01]**
27/06 • • by hydrogenation of oxides of carbon **[1, 2006.01]**
27/08 • • • with moving catalysts **[1, 2006.01]**
27/10 • by oxidation of hydrocarbons **[1, 2006.01]**
27/12 • • with oxygen **[1, 2006.01]**
27/14 • • • wholly gaseous reactions **[1, 2006.01]**
27/16 • • with other oxidising agents **[1, 2006.01]**
27/18 • by addition of alkynes to aldehydes, ketones, or alkylene oxides **[1, 2006.01]**
27/20 • by oxo-reaction **[1, 2006.01]**
27/22 • • with the use of catalysts which are specific for this process **[1, 2006.01]**
27/24 • • with moving catalysts **[1, 2006.01]**
27/26 • Purification; Separation; Stabilisation **[1, 2006.01]**
27/28 • • by distillation **[1, 2006.01]**
27/30 • • • by azeotropic distillation **[1, 2006.01]**
27/32 • • • by extractive distillation **[1, 2006.01]**
27/34 • • by extraction **[1, 2006.01]**

29/00 Preparation of compounds having hydroxy or O-metal groups bound to a carbon atom not belonging to a six-membered aromatic ring [1, 2006.01]
29/03 • by addition of hydroxy groups to unsaturated carbon-to-carbon bonds, e.g. with the aid of H_2O_2 **[3, 2006.01]**
29/04 • • by hydration of carbon-to-carbon double bonds **[1, 2006.01]**
29/05 • • • with formation of absorption products in mineral acids and their hydrolysis **[3, 2006.01]**
29/06 • • • • the acid being sulfuric acid **[1, 3, 2006.01]**
29/08 • • • • the acid being phosphoric acid **[1, 3, 2006.01]**
29/09 • by hydrolysis (of esters of organic acids C07C 27/02) **[3, 2006.01]**
29/10 • • of ethers, including cyclic ethers, e.g. oxiranes **[1, 2006.01]**
29/12 • • of esters of mineral acids **[1, 3, 2006.01]**
29/124 • • • of halides **[3, 2006.01]**
29/128 • by alcoholysis (of esters of organic acids C07C 27/02) **[3, 2006.01]**
29/132 • by reduction of an oxygen-containing functional group **[3, 2006.01]**
29/136 • • of ›C=O containing groups, e.g. —COOH **[3, 2006.01]**
29/14 • • • of a —CHO group **[1, 3, 2006.01]**
29/141 • • • • with hydrogen or hydrogen-containing gases **[5, 2006.01]**
29/143 • • • of ketones **[5, 2006.01]**
29/145 • • • • with hydrogen or hydrogen-containing gases **[5, 2006.01]**
29/147 • • • of carboxylic acids or derivatives thereof **[5, 2006.01]**
29/149 • • • • with hydrogen or hydrogen-containing gases **[5, 2006.01]**
29/15 • by reduction of oxides of carbon exclusively **[3, 2006.01]**
29/151 • • with hydrogen or hydrogen-containing gases **[5, 2006.01]**
29/152 • • • characterised by the reactor used **[5, 2006.01]**
29/153 • • • characterised by the catalyst used **[5, 2006.01]**
29/154 • • • • containing copper, silver, gold, or compounds thereof **[5, 2006.01]**
29/156 • • • • containing iron group metals, platinum group metals, or compounds thereof **[5, 2006.01]**
29/157 • • • • • containing platinum group metals or compounds thereof **[5, 2006.01]**
29/158 • • • • • • containing rhodium or compounds thereof **[5, 2006.01]**
29/159 • • with reducing agents other than hydrogen or hydrogen-containing gases **[5, 2006.01]**
29/16 • by oxo-reaction combined with reduction **[1, 2006.01]**
29/17 • by hydrogenation of carbon-to-carbon double or triple bonds **[3, 2006.01]**
29/19 • • in six-membered aromatic rings **[3, 2006.01]**
29/20 • • • in non-condensed rings substituted with hydroxy groups **[1, 3, 2006.01]**
29/32 • increasing the number of carbon atoms by reactions without formation of hydroxy groups **[3, 2006.01]**
29/34 • • by condensation involving hydroxy groups or the mineral ester groups derived therefrom, e.g. Guerbet reaction **[3, 2006.01]**
29/36 • increasing the number of carbon atoms by reactions with formation of hydroxy groups, which may occur via intermediates being derivatives of hydroxy groups, e.g. O-metal **[3, 2006.01]**
29/38 • • by reaction with aldehydes or ketones **[3, 2006.01]**
29/40 • • • with compounds containing carbon-to-metal bonds **[3, 2006.01]**
29/42 • • • with compounds containing triple carbon-to-carbon bonds, e.g. with metal-alkynes **[3, 2006.01]**
29/44 • increasing the number of carbon atoms by addition reactions, i.e. reactions involving at least one carbon-to-carbon double or triple bond (C07C 29/16 takes precedence) **[3, 2006.01]**

29/46 • • by diene-synthesis **[3, 2006.01]**
29/48 • by oxidation reactions with formation of hydroxy groups **[3, 2006.01]**
29/50 • • with molecular oxygen only **[3, 2006.01]**
29/52 • • • in the presence of mineral boron compounds with, when necessary, hydrolysis of the intermediate formed **[3, 2006.01]**
29/54 • • • starting from compounds containing carbon-to-metal bonds and followed by conversion of the O-metal to hydroxy groups **[3, 2006.01]**
29/56 • by isomerisation **[3, 2006.01]**
29/58 • by elimination of halogen, e.g. by hydrogenolysis, splitting-off (C07C 29/124 takes precedence) **[3, 2006.01]**
29/60 • by elimination of hydroxy groups, e.g. by dehydration (C07C 29/34 takes precedence) **[3, 2006.01]**
29/62 • by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3, 2006.01]**
29/64 • by simultaneous introduction of hydroxy groups and halogens **[3, 2006.01]**
29/66 • • by addition of hypohalogenous acids, which may be formed in situ, to carbon-to-carbon unsaturated bonds **[3, 2006.01]**
29/68 • Preparation of metal-alcoholates (C07C 29/42, C07C 29/54 take precedence) **[3, 2006.01]**
29/70 • • by converting hydroxy groups to O-metal groups **[3, 2006.01]**
29/72 • • by oxidation of carbon-to-metal bonds **[3, 2006.01]**
29/74 • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**
29/76 • • by physical treatment **[3, 2006.01]**
29/78 • • • by condensation or crystallisation **[3, 2006.01]**
29/80 • • • by distillation **[3, 2006.01]**
29/82 • • • • by azeotropic distillation **[3, 2006.01]**
29/84 • • • • by extractive distillation **[3, 2006.01]**
29/86 • • • by liquid-liquid treatment **[3, 2006.01]**
29/88 • • by treatment giving rise to a chemical modification of at least one compound (chemisorption C07C 29/76) **[3, 2006.01]**
29/90 • • • using hydrogen only **[3, 2006.01]**
29/92 • • • by a consecutive conversion and reconstruction **[3, 2006.01]**
29/94 • • Use of additives, e.g. for stabilisation **[3, 2006.01]**

31/00 Saturated compounds having hydroxy or O-metal groups bound to acyclic carbon atoms [1, 2006.01]

31/02 • Monohydroxylic acyclic alcohols **[1, 2006.01]**
31/04 • • Methanol **[1, 2006.01]**
31/08 • • Ethanol **[1, 2006.01]**
31/10 • • containing three carbon atoms **[1, 2006.01]**
31/12 • • containing four carbon atoms **[1, 2006.01]**
31/125 • • containing five to twenty-two carbon atoms **[3, 2006.01]**
31/13 • Monohydroxylic alcohols containing saturated rings **[2, 3, 2006.01]**
31/133 • • monocyclic **[3, 2006.01]**
31/135 • • • with five- or six-membered rings; Naphthenic alcohols **[3, 2006.01]**
31/137 • • polycyclic with condensed ring systems **[3, 2006.01]**
31/18 • Polyhydroxylic acyclic alcohols **[1, 2006.01]**
31/20 • • Dihydroxylic alcohols **[1, 2006.01]**
31/22 • • Trihydroxylic alcohols, e.g. glycerol **[1, 3, 2006.01]**
31/24 • • Tetrahydroxylic alcohols, e.g. pentaerythritol **[1, 3, 2006.01]**
31/26 • • Hexahydroxylic alcohols **[1, 2006.01]**
31/27 • Polyhydroxylic alcohols containing saturated rings **[3, 2006.01]**
31/28 • Metal alcoholates **[1, 2006.01]**
31/30 • • Alkali-metal or alkaline-earth-metal alcoholates **[1, 2006.01]**
31/32 • • Aluminium alcoholates **[1, 2006.01]**
31/34 • Halogenated alcohols **[1, 2006.01]**
31/36 • • the halogen not being fluorine **[3, 2006.01]**
31/38 • • containing only fluorine as halogen **[3, 2006.01]**
31/40 • • perhalogenated **[3, 2006.01]**
31/42 • • Halogenated polyhydroxylic acyclic alcohols **[3, 2006.01]**
31/44 • • Halogenated alcohols containing saturated rings **[3, 2006.01]**

33/00 Unsaturated compounds having hydroxy or O-metal groups bound to acyclic carbon atoms [1, 2006.01]

Note(s) [3]

In this group, in condensed ring systems of six-membered aromatic rings and other rings, the double bond belonging to a benzene ring is not considered as unsaturated for the non-aromatic ring condensed thereon, e.g. the 1,2,3,4-tetrahydro- naphthalene ring is considered to be saturated outside the aromatic ring.

33/02 • Acyclic alcohols with carbon-to-carbon double bonds **[1, 2006.01]**
33/025 • • with only one double bond **[3, 2006.01]**
33/03 • • • in beta-position, e.g. allyl alcohol, methallyl alcohol **[3, 2006.01]**
33/035 • • • Alkenediols **[3, 2006.01]**
33/04 • Acyclic alcohols with carbon-to-carbon triple bonds **[1, 2006.01]**
33/042 • • with only one triple bond **[3, 2006.01]**
33/044 • • • Alkynediols **[3, 2006.01]**
33/046 • • • • Butynediols **[3, 2006.01]**
33/048 • • with double and triple bonds **[3, 2006.01]**
33/05 • Alcohols containing rings other than six-membered aromatic rings **[2, 2006.01]**
33/12 • • containing five-membered rings **[3, 2006.01]**
33/14 • • containing six-membered rings **[3, 2006.01]**
33/16 • • containing rings with more than six ring members **[3, 2006.01]**
33/18 • Monohydroxylic alcohols containing only six-membered aromatic rings as cyclic part **[3, 2006.01]**
33/20 • • monocyclic **[3, 2006.01]**
33/22 • • • Benzylalcohol; Phenylethyl alcohol **[3, 2006.01]**
33/24 • • polycyclic without condensed ring systems **[3, 2006.01]**
33/26 • Polyhydroxylic alcohols containing only six-membered aromatic rings as cyclic part **[3, 2006.01]**
33/28 • Alcohols containing only six-membered aromatic rings as cyclic part with unsaturation outside the aromatic rings **[3, 2006.01]**
33/30 • • monocyclic **[3, 2006.01]**
33/32 • • • Cinnamyl alcohol **[3, 2006.01]**
33/34 • Monohydroxylic alcohols containing six-membered aromatic rings and other rings **[3, 2006.01]**
33/36 • Polyhydroxylic alcohols containing six-membered aromatic rings and other rings **[3, 2006.01]**

33/38 • Alcohols containing six-membered aromatic rings and other rings and having unsaturation outside the aromatic rings **[3, 2006.01]**
33/40 • Halogenated unsaturated alcohols **[3, 2006.01]**
33/42 • • acyclic **[3, 2006.01]**
33/44 • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
33/46 • • containing only six-membered aromatic rings as cyclic part **[3, 2006.01]**
33/48 • • • with unsaturation outside the aromatic rings **[3, 2006.01]**
33/50 • • containing six-membered aromatic rings and other rings **[3, 2006.01]**

35/00 Compounds having at least one hydroxy or O-metal group bound to a carbon atom of a ring other than a six-membered aromatic ring [1, 2, 2006.01]
35/02 • monocyclic **[1, 2006.01]**
35/04 • • containing three- or four-membered rings **[1, 2006.01]**
35/06 • • containing five-membered rings **[1, 2006.01]**
35/08 • • containing six-membered rings **[1, 2006.01]**
35/12 • • • Menthol **[1, 2006.01]**
35/14 • • • with more than one hydroxy group bound to the ring **[1, 2006.01]**
35/16 • • • • Inositol **[1, 2006.01]**
35/17 • • • with unsaturation only outside the ring **[3, 2006.01]**
35/18 • • • with unsaturation at least in the ring **[1, 3, 2006.01]**
35/20 • • containing seven- or eight-membered rings **[1, 2006.01]**
35/205 • • containing nine- to twelve-membered rings, e.g. cyclododecanols **[3, 2006.01]**
35/21 • polycyclic, at least one hydroxy group bound to a non-condensed ring **[2, 2006.01]**
35/22 • polycyclic, at least one hydroxy group bound to a condensed ring system **[1, 2, 2006.01]**
35/23 • • with a hydroxy group on a condensed ring system having two rings **[3, 2006.01]**
35/24 • • • the condensed ring system containing five carbon atoms **[1, 3, 2006.01]**
35/26 • • • • Bicyclopentadienols **[1, 3, 2006.01]**
35/27 • • • the condensed ring system containing six carbon atoms **[3, 2006.01]**
35/28 • • • the condensed ring system containing seven carbon atoms **[1, 3, 2006.01]**
35/29 • • • • being a [2.2.1] system **[3, 2006.01]**
35/30 • • • • • Borneol; Isoborneol **[1, 3, 2006.01]**
35/31 • • • the condensed ring system containing eight carbon atoms **[3, 2006.01]**
35/32 • • • the condensed ring system being a [4.3.0] system, e.g. indenols **[1, 3, 2006.01]**
35/34 • • • the condensed ring system being a [5.3.0] system, e.g. azulenols **[1, 3, 2006.01]**
35/36 • • • the condensed ring system being a [4.4.0] system, e.g. hydrogenated naphthols **[1, 3, 2006.01]**
35/37 • • with a hydroxy group on a condensed ring system having three rings **[3, 2006.01]**
35/38 • • • derived from the fluorene skeleton **[1, 3, 2006.01]**
35/40 • • • derived from the anthracene skeleton **[1, 3, 2006.01]**
35/42 • • • derived from the phenanthrene skeleton **[1, 3, 2006.01]**
35/44 • • with a hydroxy group on a condensed ring system having more than three rings **[1, 2006.01]**
35/46 • O-metal derivatives of the cyclically bound hydroxy groups **[3, 2006.01]**
35/48 • Halogenated derivatives **[3, 2006.01]**
35/50 • • Alcohols with at least two rings **[3, 2006.01]**
35/52 • • Alcohols with a condensed ring system **[3, 2006.01]**

37/00 Preparation of compounds having hydroxy or O-metal groups bound to a carbon atom of a six-membered aromatic ring [1, 2006.01]
37/01 • by replacing functional groups bound to a six-membered aromatic ring by hydroxy groups, e.g. by hydrolysis **[3, 2006.01]**
37/02 • • by substitution of halogen **[1, 3, 2006.01]**
37/04 • • by substitution of SO_3H groups or a derivative thereof **[1, 3, 2006.01]**
37/045 • • by substitution of a group bound to the ring by nitrogen **[3, 2006.01]**
37/05 • • • by substitution of a NH_2 group **[3, 2006.01]**
37/055 • • by substitution of a group bound to the ring by oxygen, e.g. ether group **[3, 2006.01]**
37/06 • by conversion of non-aromatic six-membered rings or of such rings formed in situ into aromatic six-membered rings, e.g. by dehydrogenation **[1, 2006.01]**
37/07 • • with simultaneous reduction of C=O group in that ring **[3, 2006.01]**
37/08 • by decomposition of hydroperoxides, e.g. cumene hydroperoxide **[1, 2006.01]**
37/11 • by reactions increasing the number of carbon atoms **[3, 2006.01]**
37/14 • • by addition reactions, i.e. reactions involving at least one carbon-to-carbon unsaturated bond **[1, 3, 2006.01]**
37/16 • • by condensation involving hydroxy groups of phenols or alcohols or the ether or mineral ester group derived therefrom **[1, 3, 2006.01]**
37/18 • • by condensation involving halogen atoms of halogenated compounds **[1, 2006.01]**
37/20 • • using aldehydes or ketones **[1, 2006.01]**
37/48 • by exchange of hydrocarbon groups which may be substituted, from other compounds, e.g. transalkylation **[3, 2006.01]**
37/50 • by reactions decreasing the number of carbon atoms (C07C 37/01, C07C 37/08, C07C 37/48 take precedence) **[3, 2006.01]**
37/52 • • by splitting polyaromatic compounds, e.g. polyphenolalkanes **[3, 2006.01]**
37/54 • • • by hydrolysis of lignin or sulfite waste liquor **[3, 2006.01]**
37/56 • • by replacing a carboxyl or aldehyde group by a hydroxy group **[3, 2006.01]**
37/58 • by oxidation reactions introducing directly a hydroxy group on a CH-group belonging to a six-membered aromatic ring with the aid of molecular oxygen **[3, 2006.01]**
37/60 • by oxidation reactions introducing directly a hydroxy group on a CH-group belonging to a six-membered aromatic ring with the aid of other oxidants than molecular oxygen or their mixtures with molecular oxygen **[3, 2006.01]**
37/62 • by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3, 2006.01]**

37/64 • Preparation of O-metal compounds with the O-metal group linked to a carbon atom belonging to a six-membered aromatic ring **[3, 2006.01]**

37/66 • • by conversion of hydroxy groups to O-metal groups **[3, 2006.01]**

37/68 • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**

37/70 • • by physical treatment **[3, 2006.01]**

37/72 • • • by liquid-liquid treatment **[3, 2006.01]**

37/74 • • • by distillation **[3, 2006.01]**

37/76 • • • • by steam distillation **[3, 2006.01]**

37/78 • • • • by azeotropic distillation **[3, 2006.01]**

37/80 • • • • by extractive distillation **[3, 2006.01]**

37/82 • • • by solid-liquid treatment; by chemisorption **[3, 2006.01]**

37/84 • • • by crystallisation **[3, 2006.01]**

37/86 • • by treatment giving rise to a chemical modification (by chemisorption C07C 37/82) **[3, 2006.01]**

37/88 • • Use of additives, e.g. for stabilisation **[3, 2006.01]**

39/00 Compounds having at least one hydroxy or O-metal group bound to a carbon atom of a six-membered aromatic ring [1, 2006.01]

Note(s) [3]

In this group, in condensed ring systems of six-membered aromatic rings and other rings, the double bond belonging to the benzene ring is not considered as unsaturated for the non-aromatic ring condensed thereon.

39/02 • monocyclic with no unsaturation outside the aromatic ring **[1, 2006.01]**

39/04 • • Phenol **[1, 2006.01]**

39/06 • • Alkylated phenols **[1, 2006.01]**

39/07 • • • containing only methyl groups as alkyl groups, e.g. cresols, xylenols **[3, 2006.01]**

39/08 • • Dihydroxy benzenes; Alkylated derivatives thereof **[1, 2006.01]**

39/10 • • Polyhydroxy benzenes; Alkylated derivatives thereof (C07C 39/08 takes precedence) **[1, 2006.01]**

39/11 • • Alkylated hydroxy benzenes containing also acyclically bound hydroxy groups, e.g. saligenol **[3, 2006.01]**

39/12 • polycyclic with no unsaturation outside the aromatic rings **[1, 2006.01]**

39/14 • • with at least one hydroxy group on a condensed ring system containing two rings **[1, 3, 2006.01]**

39/15 • • with all hydroxy groups on non-condensed rings **[3, 2006.01]**

39/16 • • • Bis(hydroxy phenyl)alkanes; Tris(hydroxy phenyl)alkanes **[1, 3, 2006.01]**

39/17 • • containing other rings in addition to the six-membered aromatic rings **[2, 2006.01]**

39/18 • monocyclic with unsaturation outside the aromatic ring **[1, 2006.01]**

39/19 • • containing carbon-to-carbon double bonds but no carbon-to-carbon triple bonds **[3, 2006.01]**

39/20 • • • Hydroxy styrenes **[1, 3, 2006.01]**

39/205 • polycyclic, containing only six-membered aromatic rings as cyclic part, with unsaturation outside the rings **[3, 2006.01]**

39/21 • • with at least one hydroxy group on a non-condensed ring **[3, 2006.01]**

39/215 • • • containing the structure, e.g. diethylstilbestrol **[3, 2006.01]**

39/225 • • with at least one hydroxy group on a condensed ring system **[3, 2006.01]**

39/23 • polycyclic, containing six-membered aromatic rings and other rings, with unsaturation outside the aromatic rings **[3, 2006.01]**

39/235 • Metal derivatives of a hydroxy group bound to a six-membered aromatic ring **[3, 2006.01]**

39/24 • Halogenated derivatives **[1, 2006.01]**

39/26 • • monocyclic monohydroxylic containing halogen bound to ring carbon atoms **[1, 2006.01]**

39/27 • • • all halogen atoms being attached to the ring **[1, 2006.01]**

39/28 • • • • the halogen being one chlorine atom **[1, 2006.01]**

39/30 • • • • the halogen being two chlorine atoms **[1, 2006.01]**

39/32 • • • • the halogen being three chlorine atoms **[1, 2006.01]**

39/34 • • • • the halogen being four chlorine atoms **[1, 2006.01]**

39/36 • • • • Pentachlorophenol **[1, 2006.01]**

39/367 • • polycyclic non-condensed, containing only six-membered aromatic rings, e.g. halogenated poly-(hydroxy-phenyl)alkanes **[3, 2006.01]**

39/373 • • with all hydroxy groups on non-condensed rings and with unsaturation outside the aromatic rings **[3, 2006.01]**

39/38 • • with at least one hydroxy group on a condensed ring system containing two rings **[1, 2006.01]**

39/40 • • with at least one hydroxy group on a condensed ring system containing more than two rings **[3, 2006.01]**

39/42 • • containing six-membered aromatic rings and other rings **[3, 2006.01]**

39/44 • • Metal derivatives of a hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3, 2006.01]**

41/00 Preparation of ethers; Preparation of compounds having **groups,** **groups or** **groups [1, 3, 2006.01]**

41/01 • Preparation of ethers **[3, 2006.01]**

41/02 • • from oxiranes **[1, 3, 2006.01]**

41/03 • • • by reaction of an oxirane ring with a hydroxy group **[3, 2006.01]**

41/05 • • by addition of compounds to unsaturated compounds **[3, 2006.01]**

41/06 • • • by addition of organic compounds only **[1, 3, 2006.01]**

41/08 • • • • to carbon-to-carbon triple bonds **[1, 3, 2006.01]**

41/09 • • by dehydration of compounds containing hydroxy groups **[3, 2006.01]**

41/14 • • by exchange of organic parts on the ether-oxygen for other organic parts, e.g. by trans-etherification **[3, 2006.01]**

41/16 • • by reaction of esters of mineral or organic acids with hydroxy or O-metal groups **[3, 2006.01]**

41/18 • • by reactions not forming ether-oxygen bonds **[3, 2006.01]**

41/20 • • • by hydrogenation of carbon-to-carbon double or triple bonds **[3, 2006.01]**

41/22 • • • by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3, 2006.01]**

41/24 • • • by elimination of halogen, e.g. elimination of HCl **[3, 2006.01]**

41/26 • • • by introduction of hydroxy or O-metal groups **[3, 2006.01]**

41/28 • • • from acetals, e.g. by dealcoholysis **[3, 2006.01]**

41/30 • • • by increasing the number of carbon atoms, e.g. by oligomerisation **[3, 2006.01]**

41/32 • • by isomerisation **[3, 2006.01]**

41/34 • • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**

41/36 • • • by solid-liquid treatment; by chemisorption **[3, 2006.01]**

41/38 • • • by liquid-liquid treatment **[3, 2006.01]**

41/40 • • • by change of physical state, e.g. by crystallisation **[3, 2006.01]**

41/42 • • • • by distillation **[3, 2006.01]**

41/44 • • • by treatment giving rise to a chemical modification (by chemisorption C07C 41/36) **[3, 2006.01]**

41/46 • • • Use of additives, e.g. for stabilisation **[3, 2006.01]**

41/48 • Preparation of compounds having groups **[3, 2006.01]**

41/50 • • by reactions producing groups **[3, 2006.01]**

41/52 • • • by substitution of halogen only **[3, 2006.01]**

41/54 • • • by addition of compounds to unsaturated carbon-to-carbon bonds **[3, 2006.01]**

41/56 • • • by condensation of aldehydes, paraformaldehyde, or ketones **[3, 2006.01]**

41/58 • • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**

41/60 • Preparation of compounds having groups or groups **[3, 2006.01]**

43/00 Ethers; Compounds having **groups,** **groups or** **groups [1, 2006.01]**

43/02 • Ethers **[1, 2006.01]**

43/03 • • having all ether-oxygen atoms bound to acyclic carbon atoms **[3, 2006.01]**

43/04 • • • Saturated ethers **[1, 3, 2006.01]**

43/06 • • • • Diethyl ether **[1, 3, 2006.01]**

43/10 • • • • of polyhydroxy compounds **[1, 3, 2006.01]**

43/11 • • • • • Polyethers containing —O—(C—C—O—)$_n$ units with $2 \leq n \leq 10$ **[2, 3, 2006.01]**

43/115 • • • containing carbocyclic rings **[3, 2006.01]**

43/12 • • • • containing halogen **[1, 3, 2006.01]**

43/13 • • • • containing hydroxy or O-metal groups (C07C 43/11 takes precedence) **[3, 2006.01]**

43/14 • • • Unsaturated ethers **[1, 3, 2006.01]**

43/15 • • • • containing only non-aromatic carbon-to-carbon double bonds **[3, 2006.01]**

43/16 • • • • • Vinyl ethers **[1, 3, 2006.01]**

43/162 • • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**

43/164 • • • • containing six-membered aromatic rings **[3, 2006.01]**

43/166 • • • • • having unsaturation outside the aromatic rings **[3, 2006.01]**

43/168 • • • • • containing six-membered aromatic rings and other rings **[3, 2006.01]**

43/17 • • • • containing halogen **[2, 3, 2006.01]**

43/172 • • • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**

43/174 • • • • • containing six-membered aromatic rings **[3, 2006.01]**

43/176 • • • • • • having unsaturation outside the aromatic rings **[3, 2006.01]**

43/178 • • • • containing hydroxy or O-metal groups **[3, 2006.01]**

43/18 • • having an ether-oxygen atom bound to a carbon atom of a ring other than a six-membered aromatic ring **[1, 2006.01]**

43/184 • • • to a carbon atom of a non-condensed ring **[3, 2006.01]**

43/188 • • • Unsaturated ethers **[3, 2006.01]**

43/192 • • • containing halogen **[3, 2006.01]**

43/196 • • • containing hydroxy or O-metal groups **[3, 2006.01]**

43/20 • • having an ether-oxygen atom bound to a carbon atom of a six-membered aromatic ring **[1, 2006.01]**

43/205 • • • the aromatic ring being a non-condensed ring **[3, 2006.01]**

43/21 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**

43/215 • • • having unsaturation outside the six-membered aromatic rings **[3, 2006.01]**

43/225 • • • containing halogen **[3, 2006.01]**

43/23 • • • containing hydroxy or O-metal groups **[3, 2006.01]**

43/235 • • having an ether-oxygen atom bound to a carbon atom of a six-membered aromatic ring and to a carbon atom of a ring, other than a six-membered aromatic ring **[3, 2006.01]**

43/243 • • • having unsaturation outside the six-membered aromatic rings **[3, 2006.01]**

43/247 • • • containing halogen **[3, 2006.01]**

43/253 • • • containing hydroxy or O-metal groups **[3, 2006.01]**

43/257 • • having an ether-oxygen atom bound to carbon atoms both belonging to six-membered aromatic rings **[3, 2006.01]**

43/263 • • • the aromatic rings being non-condensed **[3, 2006.01]**

43/267 • • • containing other rings **[3, 2006.01]**

43/275 • • • having all ether-oxygen atoms bound to carbon atoms of six-membered aromatic rings **[3, 2006.01]**

43/285 • • • having unsaturation outside the six-membered aromatic rings **[3, 2006.01]**

43/29 • • • containing halogen **[3, 2006.01]**

43/295 • • • containing hydroxy or O-metal groups **[3, 2006.01]**

43/30 • Compounds having groups **[1, 2006.01]**

Note(s) [3]

In this group, the acetal carbon atom is the carbon of the $>C<^{O-}_{O-C}$ group.

43/303 • • having acetal carbon atoms bound to acyclic carbon atoms **[3, 2006.01]**

43/305 • • having acetal carbon atoms as ring members or bound to carbon atoms of rings other than six-membered aromatic rings **[3, 2006.01]**

43/307 • • having acetal carbon atoms bound to carbon atoms of six-membered aromatic rings **[3, 2006.01]**

43/313 • • containing halogen **[3, 2006.01]**

43/315 • • containing oxygen atoms singly bound to carbon atoms not being acetal carbon atoms **[3, 2006.01]**

43/317 • • having $>C<^{O-X}_{O-C}$ groups, X being hydrogen or metal **[3, 2006.01]**

43/32 • Compounds having $-C(O-)(O-C)(O-C)$ groups or $C(O-C)(O-C)(O-C)$ groups **[1, 2006.01]**

45/00 Preparation of compounds having >C=O groups bound only to carbon or hydrogen atoms; Preparation of chelates of such compounds [1, 2, 2006.01]

45/26 • by hydration of carbon-to-carbon triple bonds **[3, 2006.01]**

45/27 • by oxidation **[3, 2006.01]**

45/28 • • of —CH_x-moieties **[3, 2006.01]**

45/29 • • of hydroxy groups **[3, 2006.01]**

45/30 • • with halogen containing compounds, e.g. hypohalogenation **[3, 2006.01]**

45/31 • • with compounds containing mercury atoms, which may be regenerated in situ, e.g. by oxygen **[3, 2006.01]**

45/32 • • with molecular oxygen **[3, 2006.01]**

45/33 • • • of CH_x-moieties **[3, 2006.01]**

45/34 • • • • in unsaturated compounds **[3, 2006.01]**

45/35 • • • • • in propene or isobutene **[3, 2006.01]**

45/36 • • • • • in compounds containing six-membered aromatic rings **[3, 2006.01]**

45/37 • • • of >C—O— functional groups to >C=O groups **[3, 2006.01]**

45/38 • • • • being a primary hydroxy group **[3, 2006.01]**

45/39 • • • • being a secondary hydroxy group **[3, 2006.01]**

45/40 • by oxidation with ozone; by ozonolysis **[3, 2006.01]**

45/41 • by hydrogenolysis or reduction of carboxylic groups or functional derivatives thereof **[3, 2006.01]**

45/42 • by hydrolysis **[3, 2006.01]**

45/43 • • of $>CX_2$ groups, X being halogen **[3, 2006.01]**

45/44 • by reduction and hydrolysis of nitriles **[3, 2006.01]**

45/45 • by condensation **[3, 2006.01]**

45/46 • • Friedel-Crafts reactions **[3, 2006.01]**

45/47 • • using phosgene **[3, 2006.01]**

45/48 • • involving decarboxylation **[3, 2006.01]**

45/49 • by reaction with carbon monoxide **[3, 2006.01]**

45/50 • • by oxo-reactions **[3, 2006.01]**

45/51 • by pyrolysis, rearrangement or decomposition **[3, 2006.01]**

45/52 • • by dehydration and rearrangement involving two hydroxy groups in the same molecule **[3, 2006.01]**

45/53 • • of hydroperoxides **[3, 2006.01]**

45/54 • • of compounds containing doubly bound oxygen atoms, e.g. esters **[3, 2006.01]**

45/55 • • of oligo- or polymeric oxo-compounds **[3, 2006.01]**

45/56 • from heterocyclic compounds (C07C 45/55 takes precedence) **[3, 2006.01]**

45/57 • • with oxygen as the only hetero atom **[3, 2006.01]**

45/58 • • • in three-membered rings **[3, 2006.01]**

45/59 • • • in five-membered rings (from ozonides C07C 45/40) **[3, 2006.01]**

45/60 • • • in six-membered rings **[3, 2006.01]**

45/61 • by reactions not involving the formation of >C=O groups **[3, 2006.01]**

45/62 • • by hydrogenation of carbon-to-carbon double or triple bonds **[3, 2006.01]**

45/63 • • by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3, 2006.01]**

45/64 • • by introduction of functional groups containing oxygen only in singly bound form **[3, 2006.01]**

45/65 • • by splitting-off hydrogen atoms or functional groups; by hydrogenolysis of functional groups **[3, 2006.01]**

45/66 • • • by dehydration **[3, 2006.01]**

45/67 • • by isomerisation; by change of size of the carbon skeleton **[3, 2006.01]**

45/68 • • • by increase in the number of carbon atoms **[3, 2006.01]**

45/69 • • • • by addition to carbon-to-carbon double or triple bonds **[3, 2006.01]**

45/70 • • • • by reaction with functional groups containing oxygen only in singly bound form **[3, 2006.01]**

45/71 • • • • • being hydroxy groups **[3, 2006.01]**

45/72 • • • • by reaction of compounds containing >C=O groups with the same or other compounds containing >C=O groups **[3, 2006.01]**

45/73 • • • • • combined with hydrogenation **[3, 2006.01]**

45/74 • • • • • combined with dehydration **[3, 2006.01]**

45/75 • • • • • Reactions with formaldehyde **[3, 2006.01]**

45/76 • • • with the aid of ketenes **[3, 2006.01]**

45/77 • Preparation of chelates of aldehydes or ketones **[3, 2006.01]**

45/78 • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**

45/79 • • by solid-liquid treatment; by chemisorption **[3, 2006.01]**

45/80 • • by liquid-liquid treatment **[3, 2006.01]**

45/81 • • by change in the physical state, e.g. crystallisation **[3, 2006.01]**

45/82 • • • by distillation **[3, 2006.01]**

45/83 • • • • by extractive distillation **[3, 2006.01]**

45/84 • • • • by azeotropic distillation **[3, 2006.01]**

45/85 • • by treatment giving rise to a chemical modification **[3, 2006.01]**

45/86 • • Use of additives, e.g. for stabilisation **[3, 2006.01]**

45/87 • Preparation of ketenes or dimeric ketenes **[3, 2006.01]**

45/88 • • from ketones **[3, 2006.01]**

45/89 • • from carboxylic acids, their anhydrides, esters or halides **[3, 2006.01]**

45/90 • • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**

46/00 Preparation of quinones [3, 2006.01]
46/02 • by oxidation giving rise to quinoid structures **[3, 2006.01]**
46/04 • • of unsubstituted ring carbon atoms in six-membered aromatic rings **[3, 2006.01]**
46/06 • • of at least one hydroxy group on a six-membered aromatic ring **[3, 2006.01]**
46/08 • • • with molecular oxygen **[3, 2006.01]**
46/10 • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**

47/00 Compounds having —CHO groups [1, 2006.01]
47/02 • Saturated compounds having —CHO groups bound to acyclic carbon atoms or to hydrogen **[1, 2006.01]**
47/04 • • Formaldehyde **[1, 2006.01]**
47/042 • • • Preparation from carbon monoxide **[3, 2006.01]**
47/045 • • • Preparation by depolymerisation **[3, 2006.01]**
47/048 • • • Preparation by oxidation of hydrocarbons **[3, 2006.01]**
47/052 • • • Preparation by oxidation of methanol **[3, 2006.01]**
47/055 • • • • using noble metals or compounds thereof as catalysts **[3, 2006.01]**
47/058 • • • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**
47/06 • • Acetaldehyde **[1, 2006.01]**
47/07 • • • Preparation by oxidation **[3, 2006.01]**
47/09 • • • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**
47/105 • • containing rings **[3, 2006.01]**
47/11 • • • monocyclic **[3, 2006.01]**
47/115 • • • containing condensed ring systems **[3, 2006.01]**
47/12 • • containing more than one —CHO group **[1, 2006.01]**
47/127 • • • Glyoxal **[3, 2006.01]**
47/133 • • • containing rings **[3, 2006.01]**
47/14 • • containing halogen **[1, 2006.01]**
47/16 • • • Trichloroacetaldehyde **[1, 2006.01]**
47/17 • • • containing rings **[3, 2006.01]**
47/19 • • containing hydroxy groups **[2, 3, 2006.01]**
47/192 • • • containing rings **[3, 2006.01]**
47/195 • • • containing halogen **[3, 2006.01]**
47/198 • • containing ether groups, groups, groups, or groups **[3, 2006.01]**
47/20 • Unsaturated compounds having —CHO groups bound to acyclic carbon atoms **[1, 2006.01]**
47/21 • • with only carbon-to-carbon double bonds as unsaturation **[3, 2006.01]**
47/22 • • • Acrylaldehyde; Methacrylaldehyde **[1, 3, 2006.01]**
47/222 • • with only carbon-to-carbon triple bonds as unsaturation **[3, 2006.01]**
47/225 • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
47/228 • • containing six-membered aromatic rings, e.g. phenylacetaldehyde **[3, 2006.01]**
47/23 • • • polycyclic **[3, 2006.01]**
47/232 • • • having unsaturation outside the aromatic rings **[3, 2006.01]**
47/235 • • containing six-membered aromatic rings and other rings **[3, 2006.01]**
47/238 • • • having unsaturation outside the aromatic rings **[3, 2006.01]**
47/24 • • containing halogen **[1, 2006.01]**
47/26 • • containing hydroxy groups **[1, 3, 2006.01]**
47/263 • • • acyclic **[3, 2006.01]**
47/267 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
47/27 • • • containing six-membered aromatic rings **[3, 2006.01]**
47/273 • • • containing halogen **[3, 2006.01]**
47/277 • • containing ether groups, groups, groups, or groups **[3, 2006.01]**
47/28 • Saturated compounds having —CHO groups bound to carbon atoms of rings other than six-membered aromatic rings **[1, 2006.01]**
47/293 • • with a three- or four-membered ring **[3, 2006.01]**
47/30 • • with a five-membered ring **[1, 2006.01]**
47/32 • • with a six-membered ring **[1, 2006.01]**
47/33 • • with a seven- to twelve-membered ring **[3, 2006.01]**
47/34 • • polycyclic **[1, 2006.01]**
47/347 • • • having a —CHO group on a condensed ring system **[3, 2006.01]**
47/353 • • containing halogen **[3, 2006.01]**
47/36 • • containing hydroxy groups **[1, 2006.01]**
47/37 • • containing ether groups, groups, groups, or groups **[3, 2006.01]**
47/38 • Unsaturated compounds having —CHO groups bound to carbon atoms of rings other than six-membered aromatic rings **[1, 2006.01]**
47/395 • • with a three- or four-membered ring **[3, 2006.01]**
47/40 • • with a five-membered ring **[1, 3, 2006.01]**
47/42 • • with a six-membered ring **[1, 3, 2006.01]**
47/43 • • with a seven- to twelve-membered ring **[3, 2006.01]**
47/44 • • polycyclic **[1, 3, 2006.01]**
47/445 • • • containing a condensed ring system **[3, 2006.01]**
47/45 • • having unsaturation outside the rings **[2, 2006.01]**
47/453 • • containing six-membered aromatic rings **[3, 2006.01]**
47/457 • • containing halogen **[3, 2006.01]**
47/46 • • containing hydroxy groups **[1, 2006.01]**
47/47 • • containing ether groups, groups, groups, or groups **[3, 2006.01]**
47/52 • Compounds having —CHO groups bound to carbon atoms of six-membered aromatic rings **[1, 2006.01]**
47/54 • • Benzaldehyde **[1, 2006.01]**
47/542 • • Alkylated benzaldehydes **[3, 2006.01]**
47/544 • • Diformyl-benzenes; Alkylated derivatives thereof **[3, 2006.01]**
47/546 • • polycyclic **[3, 2006.01]**

47/548 • • having unsaturation outside the six-membered aromatic rings **[3, 2006.01]**
47/55 • • containing halogen **[2, 2006.01]**
47/56 • • containing hydroxy groups **[1, 2006.01]**
47/565 • • • all hydroxy groups bound to the ring **[3, 2006.01]**
47/57 • • • polycyclic **[3, 2006.01]**
47/575 • • containing ether groups, groups, groups, or groups **[3, 2006.01]**
47/58 • • • Vanillin **[1, 2006.01]**

49/00 Ketones; Ketenes; Dimeric ketenes; Ketonic chelates [1, 2006.01]
49/04 • Saturated compounds containing keto groups bound to acyclic carbon atoms **[1, 2006.01]**
49/08 • • Acetone **[1, 3, 2006.01]**
49/10 • • Methyl-ethyl ketone **[1, 3, 2006.01]**
49/105 • • containing rings **[3, 2006.01]**
49/11 • • • monocyclic **[3, 2006.01]**
49/115 • • • containing condensed ring systems **[3, 2006.01]**
49/12 • • Ketones containing more than one keto group **[1, 2006.01]**
49/14 • • • Acetylacetone, i.e. 2,4-pentanedione **[1, 2006.01]**
49/15 • • • containing rings **[3, 2006.01]**
49/16 • • containing halogen **[1, 2006.01]**
49/163 • • • containing rings **[3, 2006.01]**
49/167 • • • containing only fluorine as halogen **[3, 2006.01]**
49/17 • • containing hydroxy groups **[2, 2006.01]**
49/172 • • • containing rings **[3, 2006.01]**
49/173 • • • containing halogen **[3, 2006.01]**
49/175 • • containing ether groups, groups, groups, or groups **[2, 3, 2006.01]**
49/185 • • containing —CHO groups **[3, 2006.01]**
49/20 • Unsaturated compounds containing keto groups bound to acyclic carbon atoms **[1, 2006.01]**
49/203 • • with only carbon-to-carbon double bonds as unsaturation **[3, 2006.01]**
49/205 • • • Methyl-vinyl ketone **[3, 2006.01]**
49/207 • • with only carbon-to-carbon triple bonds as unsaturation **[3, 2006.01]**
49/21 • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
49/213 • • containing six-membered aromatic rings **[3, 2006.01]**
49/215 • • • polycyclic **[3, 2006.01]**
49/217 • • • having unsaturation outside the aromatic rings **[3, 2006.01]**
49/223 • • • • polycyclic **[3, 2006.01]**
49/225 • • containing six-membered aromatic rings and other rings **[3, 2006.01]**
49/227 • • containing halogen **[3, 2006.01]**
49/23 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
49/233 • • • containing six-membered aromatic rings **[3, 2006.01]**
49/235 • • • • having unsaturation outside the aromatic rings **[3, 2006.01]**
49/237 • • • containing six-membered aromatic rings and other rings **[3, 2006.01]**
49/24 • • containing hydroxy groups **[1, 2006.01]**
49/242 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
49/245 • • • containing six-membered aromatic rings **[3, 2006.01]**
49/248 • • • • having unsaturation outside the aromatic rings **[3, 2006.01]**
49/252 • • • containing six-membered aromatic rings and other rings **[3, 2006.01]**
49/255 • • containing ether groups, groups, groups, or groups **[3, 2006.01]**
49/258 • • containing —CHO groups **[3, 2006.01]**
49/29 • Saturated compounds containing keto groups bound to rings **[3, 2006.01]**
49/293 • • to a three- or four-membered ring **[3, 2006.01]**
49/297 • • to a five-membered ring **[3, 2006.01]**
49/303 • • to a six-membered ring **[3, 2006.01]**
49/307 • • to a seven- to twelve-membered ring **[3, 2006.01]**
49/313 • • polycyclic **[3, 2006.01]**
49/317 • • • both carbon atoms bound to the keto group belonging to rings **[3, 2006.01]**
49/323 • • • having keto groups bound to condensed ring systems **[3, 2006.01]**
49/327 • • containing halogen **[3, 2006.01]**
49/333 • • • polycyclic **[3, 2006.01]**
49/337 • • containing hydroxy groups **[3, 2006.01]**
49/345 • • • polycyclic **[3, 2006.01]**
49/35 • • containing ether groups, groups, groups, or groups **[3, 2006.01]**
49/355 • • containing —CHO groups **[3, 2006.01]**
49/385 • Saturated compounds containing a keto group being part of a ring **[3, 2006.01]**
49/39 • • of a three- or four-membered ring **[3, 2006.01]**
49/395 • • of a five-membered ring **[3, 2006.01]**
49/403 • • of a six-membered ring **[3, 2006.01]**
49/407 • • • Menthones **[3, 2006.01]**
49/413 • • of a seven- to twelve-membered ring **[3, 2006.01]**
49/417 • • polycyclic **[3, 2006.01]**
49/423 • • • a keto group being part of a condensed ring system **[3, 2006.01]**
49/427 • • • • having two rings **[3, 2006.01]**
49/433 • • • • • the condensed ring system containing seven carbon atoms **[3, 2006.01]**
49/437 • • • • • • Camphor; Fenchone **[3, 2006.01]**
49/443 • • • • • the condensed ring system containing eight or nine carbon atoms **[3, 2006.01]**
49/447 • • • • • the condensed ring system containing ten carbon atoms **[3, 2006.01]**
49/453 • • • • having three rings **[3, 2006.01]**
49/457 • • containing halogen **[3, 2006.01]**
49/463 • • • a keto group being part of a six-membered ring **[3, 2006.01]**
49/467 • • • polycyclic **[3, 2006.01]**

49/473 • • • • a keto group being part of a condensed ring system **[3, 2006.01]**
49/477 • • • • • having two rings **[3, 2006.01]**
49/483 • • • • • having three rings **[3, 2006.01]**
49/487 • • containing hydroxy groups **[3, 2006.01]**
49/493 • • • a keto group being part of a three- to five-membered ring **[3, 2006.01]**
49/497 • • • a keto group being part of a six-membered ring **[3, 2006.01]**
49/503 • • • a keto group being part of a seven- to twelve-membered ring **[3, 2006.01]**
49/507 • • • polycyclic **[3, 2006.01]**
49/513 • • • • a keto group being part of a condensed ring system **[3, 2006.01]**
49/517 • • containing ether groups, groups, groups, or groups **[3, 2006.01]**
49/523 • • containing —CHO groups **[3, 2006.01]**
49/527 • Unsaturated compounds containing keto groups bound to rings other than six-membered aromatic rings **[3, 2006.01]**
49/533 • • to a three- or four-membered ring **[3, 2006.01]**
49/537 • • to a five-membered ring **[3, 2006.01]**
49/543 • • to a six-membered ring **[3, 2006.01]**
49/547 • • to a seven- to twelve-membered ring **[3, 2006.01]**
49/553 • • polycyclic **[3, 2006.01]**
49/557 • • having unsaturation outside the rings **[3, 2006.01]**
49/563 • • containing six-membered aromatic rings **[3, 2006.01]**
49/567 • • containing halogen **[3, 2006.01]**
49/573 • • containing hydroxy groups **[3, 2006.01]**
49/577 • • containing ether groups, groups, groups, or groups **[3, 2006.01]**
49/583 • • containing —CHO groups **[3, 2006.01]**
49/587 • Unsaturated compounds containing a keto group being part of a ring **[3, 2006.01]**
49/593 • • of a three- or four-membered ring **[3, 2006.01]**
49/597 • • of a five-membered ring **[3, 2006.01]**
49/603 • • of a six-membered ring **[3, 2006.01]**
49/607 • • of a seven- to twelve-membered ring **[3, 2006.01]**
49/613 • • polycyclic **[3, 2006.01]**
49/617 • • • a keto group being part of a condensed ring system **[3, 2006.01]**
49/623 • • • • having two rings **[3, 2006.01]**
49/627 • • • • • the condensed ring system containing seven carbon atoms **[3, 2006.01]**
49/633 • • • • • the condensed ring system containing eight or nine carbon atoms **[3, 2006.01]**
49/637 • • • • • the condensed ring system containing ten carbon atoms **[3, 2006.01]**
49/643 • • • • having three rings **[3, 2006.01]**
49/647 • • having unsaturation outside the ring **[3, 2006.01]**
49/653 • • • polycyclic **[3, 2006.01]**
49/657 • • containing six-membered aromatic rings **[3, 2006.01]**
49/665 • • • a keto group being part of a condensed ring system **[3, 2006.01]**
49/67 • • • • having two rings, e.g. tetralones **[3, 2006.01]**
49/675 • • • • having three rings **[3, 2006.01]**
49/683 • • • having unsaturation outside the aromatic rings **[3, 2006.01]**
49/687 • • containing halogen **[3, 2006.01]**
49/693 • • • polycyclic **[3, 2006.01]**
49/697 • • • containing six-membered aromatic rings **[3, 2006.01]**
49/703 • • containing hydroxy groups **[3, 2006.01]**
49/707 • • • a keto group being part of a three- to five-membered ring **[3, 2006.01]**
49/713 • • • a keto group being part of a six-membered ring **[3, 2006.01]**
49/717 • • • a keto group being part of a seven- to twelve-membered ring **[3, 2006.01]**
49/723 • • • polycyclic **[3, 2006.01]**
49/727 • • • • a keto group being part of a condensed ring system **[3, 2006.01]**
49/733 • • • • • having two rings **[3, 2006.01]**
49/737 • • • • • having three rings **[3, 2006.01]**
49/743 • • • having unsaturation outside the rings, e.g. humulones, lupulones **[3, 2006.01]**
49/747 • • • containing six-membered aromatic rings **[3, 2006.01]**
49/753 • • containing ether groups, groups, groups, or groups **[3, 2006.01]**
49/755 • • • a keto group being part of a condensed ring system with two or three rings, at least one ring being a six-membered aromatic ring **[3, 2006.01]**
49/757 • • containing —CHO groups **[3, 2006.01]**
49/76 • Ketones containing a keto group bound to a six-membered aromatic ring (compounds having a keto group being part of a condensed ring system and being bound to a six-membered aromatic ring C07C 49/657-C07C 49/757) **[1, 2006.01]**
49/78 • • Acetophenone **[1, 2006.01]**
49/782 • • polycyclic **[3, 2006.01]**
49/784 • • • with all keto groups bound to a non-condensed ring **[3, 2006.01]**
49/786 • • • • Benzophenone **[3, 2006.01]**
49/788 • • • with keto groups bound to a condensed ring system **[3, 2006.01]**
49/792 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
49/794 • • having unsaturation outside an aromatic ring **[3, 2006.01]**
49/796 • • • polycyclic **[3, 2006.01]**
49/798 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
49/80 • • containing halogen **[1, 2006.01]**
49/807 • • • all halogen atoms bound to the ring **[3, 2006.01]**
49/813 • • • polycyclic **[3, 2006.01]**
49/82 • • containing hydroxy groups **[1, 3, 2006.01]**
49/825 • • • all hydroxy groups bound to the ring **[3, 2006.01]**
49/83 • • • polycyclic **[3, 2006.01]**
49/835 • • • having unsaturation outside an aromatic ring **[3, 2006.01]**

49/84 • • containing ether groups, groups, groups, or groups **[2, 3, 2006.01]**

49/86 • • containing —CHO groups **[3, 2006.01]**

49/88 • Ketenes; Dimeric ketenes **[3, 2006.01]**

49/90 • • Ketene, i.e. C_2H_2O **[3, 2006.01]**

49/92 • Ketonic chelates **[3, 2006.01]**

50/00 **Quinones** (for quinone methides, see unsaturated ketones with a keto group being part of a ring) **[3, 2006.01]**

Note(s) [3]

In this group, quinhydrones are classified according to their quinoid part.

50/02 • with monocyclic quinoid structure **[3, 2006.01]**

50/04 • • Benzoquinones, i.e. $C_6H_4O_2$ **[3, 2006.01]**

50/06 • • with unsaturation outside the quinoid structure **[3, 2006.01]**

50/08 • with polycyclic non-condensed quinoid structure **[3, 2006.01]**

50/10 • the quinoid structure being part of a condensed ring system containing two rings **[3, 2006.01]**

50/12 • • Naphthoquinones, i.e. $C_{10}H_6O_2$ **[3, 2006.01]**

50/14 • • with unsaturation outside the ring system, e.g. vitamin K_1 **[3, 2006.01]**

50/16 • the quinoid structure being part of a condensed ring system containing three rings **[3, 2006.01]**

50/18 • • Anthraquinones, i.e. $C_{14}H_8O_2$ **[3, 2006.01]**

50/20 • • with unsaturation outside the ring system **[3, 2006.01]**

50/22 • the quinoid structure being part of a condensed ring system containing four or more rings **[3, 2006.01]**

50/24 • containing halogen **[3, 2006.01]**

50/26 • containing groups having oxygen atoms singly bound to carbon atoms **[3, 2006.01]**

50/28 • • with monocyclic quinoid structure **[3, 2006.01]**

50/30 • • with polycyclic non-condensed quinoid structure **[3, 2006.01]**

50/32 • • the quinoid structure being part of a condensed ring system having two rings **[3, 2006.01]**

50/34 • • the quinoid structure being part of a condensed ring system having three rings **[3, 2006.01]**

50/36 • • the quinoid structure being part of a condensed ring system having four or more rings **[3, 2006.01]**

50/38 • containing —CHO or non-quinoid keto groups **[3, 2006.01]**

51/00 **Preparation of carboxylic acids or their salts, halides, or anhydrides [1, 2, 2006.01]**

51/02 • from salts of carboxylic acids **[1, 2006.01]**

51/04 • from carboxylic acid halides **[1, 2006.01]**

51/06 • from carboxylic acid amides **[1, 2006.01]**

51/08 • from nitriles **[1, 2006.01]**

51/083 • from carboxylic acid anhydrides **[3, 2006.01]**

51/087 • • by hydrolysis **[3, 2006.01]**

51/09 • from carboxylic acid esters or lactones (saponification of carboxylic acid esters C07C 27/02) **[1, 2006.01]**

51/093 • by hydrolysis of —CX_3 groups, X being halogen **[3, 2006.01]**

51/097 • from or via nitro-substituted organic compounds **[3, 2006.01]**

51/10 • by reaction with carbon monoxide **[1, 2006.01]**

51/12 • • on an oxygen-containing group in organic compounds, e.g. alcohols **[1, 2006.01]**

51/14 • • on a carbon-to-carbon unsaturated bond in organic compounds **[1, 3, 2006.01]**

51/145 • • with simultaneous oxidation **[3, 2006.01]**

51/15 • by reaction of organic compounds with carbon dioxide, e.g. Kolbe-Schmitt synthesis **[2, 2006.01]**

51/16 • by oxidation (C07C 51/145 takes precedence) **[1, 3, 2006.01]**

51/21 • • with molecular oxygen **[3, 2006.01]**

51/215 • • • of saturated hydrocarbyl groups **[3, 2006.01]**

51/225 • • • • of paraffin waxes **[3, 2006.01]**

51/23 • • • of oxygen-containing groups to carboxyl groups **[3, 2006.01]**

51/235 • • • • of —CHO groups or primary alcohol groups **[3, 2006.01]**

51/245 • • • • of keto groups or secondary alcohol groups **[3, 2006.01]**

51/25 • • • of unsaturated compounds containing no six-membered aromatic ring **[3, 2006.01]**

51/255 • • • of compounds containing six-membered aromatic rings without ring-splitting **[3, 2006.01]**

51/265 • • • • having alkyl side chains which are oxidised to carboxyl groups **[3, 2006.01]**

51/27 • • with oxides of nitrogen or nitrogen-containing mineral acids **[3, 2006.01]**

51/275 • • • of hydrocarbyl groups **[3, 2006.01]**

51/285 • • with peroxy-compounds **[3, 2006.01]**

51/29 • • with halogen-containing compounds which may be formed in situ **[3, 2006.01]**

51/295 • • with inorganic bases, e.g. by alkali fusion **[3, 2006.01]**

51/305 • • with sulfur or sulfur-containing compounds **[3, 2006.01]**

51/31 • • of cyclic compounds with ring-splitting **[3, 2006.01]**

51/34 • by oxidation with ozone; by hydrolysis of ozonides **[1, 3, 2006.01]**

51/347 • by reactions not involving formation of carboxyl groups **[3, 2006.01]**

51/353 • • by isomerisation; by change of size of the carbon skeleton **[3, 2006.01]**

51/36 • • by hydrogenation of carbon-to-carbon unsaturated bonds **[1, 3, 2006.01]**

51/363 • • by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3, 2006.01]**

51/367 • • by introduction of functional groups containing oxygen only in singly bound form **[3, 2006.01]**

51/373 • • by introduction of functional groups containing oxygen only in doubly bound form **[3, 2006.01]**

51/377 • • by splitting-off hydrogen or functional groups; by hydrogenolysis of functional groups **[3, 2006.01]**

51/38 • • • by decarboxylation **[1, 3, 2006.01]**

51/41 • Preparation of salts of carboxylic acids by conversion of the acids or their salts into salts with the same carboxylic acid part (preparation of soap C11D) **[3, 2006.01]**

51/42 • Separation; Purification; Stabilisation; Use of additives **[1, 3, 2006.01]**

51/43 • • by change of the physical state, e.g. crystallisation **[3, 2006.01]**

51/44 • • • by distillation **[1, 3, 2006.01]**

51/46 • • • • by azeotropic distillation **[1, 3, 2006.01]**

51/47 • • by solid-liquid treatment; by chemisorption **[3, 2006.01]**
51/48 • • by liquid-liquid treatment **[1, 2006.01]**
51/487 • • by treatment giving rise to chemical modification (by chemisorption C07C 51/47) **[3, 2006.01]**
51/493 • • • whereby carboxylic acid esters are formed **[3, 2006.01]**
51/50 • • Use of additives, e.g. for stabilisation **[1, 3, 2006.01]**
51/54 • Preparation of carboxylic acid anhydrides (by oxidation C07C 51/16) **[1, 2006.01]**
51/56 • • from organic acids, their salts, or their esters **[1, 2006.01]**
51/567 • • by reactions not involving the carboxylic acid anhydride group **[3, 2006.01]**
51/573 • • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**
51/58 • Preparation of carboxylic acid halides **[1, 2006.01]**
51/60 • • by conversion of carboxylic acids or their anhydrides into halides with the same carboxylic acid part **[3, 2006.01]**
51/62 • • by reactions not involving the carboxylic acid halide group **[3, 2006.01]**
51/64 • • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**

53/00 Saturated compounds having only one carboxyl group bound to an acyclic carbon atom or hydrogen [1, 2006.01]
53/02 • Formic acid **[1, 2006.01]**
53/04 • • Preparation from carbon monoxide **[1, 2006.01]**
53/06 • • Salts thereof **[1, 2006.01]**
53/08 • Acetic acid **[1, 2006.01]**
53/10 • • Salts thereof **[1, 2006.01]**
53/12 • Acetic anhydride (ketene C07C 49/90) **[1, 2006.01]**
53/122 • Propionic acid **[3, 2006.01]**
53/124 • Acids containing four carbon atoms **[3, 2006.01]**
53/126 • Acids containing more than four carbon atoms **[3, 2006.01]**
53/128 • • the carboxyl group being bound to a carbon atom bound to at least two other carbon atoms, e.g. neo-acids **[3, 2006.01]**
53/132 • containing rings **[3, 2006.01]**
53/134 • • monocyclic **[3, 2006.01]**
53/136 • • containing condensed ring systems **[3, 2006.01]**
53/138 • • • containing an adamantane ring system **[3, 2006.01]**
53/15 • containing halogen **[3, 2006.01]**
53/16 • • Halogenated acetic acids **[1, 3, 2006.01]**
53/18 • • • containing fluorine **[1, 3, 2006.01]**
53/19 • • Acids containing three or more carbon atoms **[3, 2006.01]**
53/21 • • • containing fluorine **[3, 2006.01]**
53/23 • • containing rings **[3, 2006.01]**
53/38 • Acyl halides **[3, 2006.01]**
53/40 • • Acetyl halides **[3, 2006.01]**
53/42 • • of acids containing three or more carbon atoms **[3, 2006.01]**
53/44 • • containing rings **[3, 2006.01]**
53/46 • • containing halogen outside the carbonyl halide group **[3, 2006.01]**
53/48 • • • Halogenated acetyl halides **[3, 2006.01]**
53/50 • • • of acids containing three or more carbon atoms **[3, 2006.01]**

55/00 Saturated compounds having more than one carboxyl group bound to acyclic carbon atoms [1, 2, 2006.01]
55/02 • Dicarboxylic acids **[1, 2006.01]**
55/06 • • Oxalic acid **[1, 2006.01]**
55/07 • • • Salts thereof **[3, 2006.01]**
55/08 • • Malonic acid **[1, 2006.01]**
55/10 • • Succinic acid **[1, 2006.01]**
55/12 • • Glutaric acid **[1, 2006.01]**
55/14 • • Adipic acid **[1, 2006.01]**
55/16 • • Pimelic acid **[1, 2006.01]**
55/18 • • Azelaic acid **[1, 2006.01]**
55/20 • • Sebacic acid **[1, 2006.01]**
55/21 • • Dicarboxylic acids having twelve carbon atoms **[3, 2006.01]**
55/22 • Tricarboxylic acids **[1, 2006.01]**
55/24 • containing more than three carboxyl groups **[1, 2006.01]**
55/26 • containing rings **[3, 2006.01]**
55/28 • • monocyclic **[3, 2006.01]**
55/30 • • containing condensed ring systems **[3, 2006.01]**
55/32 • containing halogen **[3, 2006.01]**
55/34 • • containing rings **[3, 2006.01]**
55/36 • Acyl halides **[3, 2006.01]**
55/38 • • containing rings **[3, 2006.01]**
55/40 • • containing halogen outside the carbonyl halide group **[3, 2006.01]**

57/00 Unsaturated compounds having carboxyl groups bound to acyclic carbon atoms [1, 2, 2006.01]
57/02 • with only carbon-to-carbon double bonds as unsaturation **[1, 2006.01]**
57/03 • • Monocarboxylic acids **[3, 2006.01]**
57/04 • • • Acrylic acid; Methacrylic acid **[1, 3, 2006.01]**
57/045 • • • • Preparation by oxidation in the liquid phase **[3, 2006.01]**
57/05 • • • • Preparation by oxidation in the gaseous phase **[3, 2006.01]**
57/055 • • • • • starting from unsaturated aldehydes **[3, 2006.01]**
57/065 • • • • Preparation by splitting-off H—X, X being halogen, OR, or NR_2, R being hydrogen or a hydrocarbon group **[3, 2006.01]**
57/07 • • • • Separation; Purification; Stabilisation; Use of additives **[3, 2006.01]**
57/075 • • • • • Use of additives, e.g. for stabilisation **[3, 2006.01]**
57/08 • • • Crotonic acid **[1, 3, 2006.01]**
57/10 • • • Sorbic acid **[1, 3, 2006.01]**
57/12 • • • Straight chain carboxylic acids containing eighteen carbon atoms **[1, 3, 2006.01]**
57/13 • • Dicarboxylic acids **[3, 2006.01]**
57/145 • • • Maleic acid **[3, 2006.01]**
57/15 • • • Fumaric acid **[3, 2006.01]**
57/155 • • • Citraconic acid **[3, 2006.01]**
57/16 • • • Muconic acid **[1, 3, 2006.01]**
57/18 • with only carbon-to-carbon triple bonds as unsaturation **[1, 2006.01]**
57/20 • • Propiolic acid **[1, 2006.01]**
57/22 • • Acetylene dicarboxylic acid **[1, 2006.01]**
57/24 • • Diacetylene or polyacetylene dicarboxylic acids **[1, 2006.01]**
57/26 • containing rings other than six-membered aromatic rings **[3, 2006.01]**

57/28 • • containing an adamantane ring system **[3, 2006.01]**
57/30 • containing six-membered aromatic rings **[3, 2006.01]**
57/32 • • Phenylacetic acid **[3, 2006.01]**
57/34 • • containing more than one carboxyl group **[3, 2006.01]**
57/36 • • • Phenylmalonic acid **[3, 2006.01]**
57/38 • • polycyclic **[3, 2006.01]**
57/40 • • • containing condensed ring systems **[3, 2006.01]**
57/42 • • having unsaturation outside the rings **[3, 2006.01]**
57/44 • • • Cinnamic acid **[3, 2006.01]**
57/46 • containing six-membered aromatic rings and other rings, e.g. cyclohexylphenylacetic acid **[3, 2006.01]**
57/48 • • having unsaturation outside the aromatic rings **[3, 2006.01]**
57/50 • • containing condensed ring systems **[3, 2006.01]**
57/52 • containing halogen **[3, 2006.01]**
57/54 • • Halogenated acrylic or methacrylic acids **[3, 2006.01]**
57/56 • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
57/58 • • containing six-membered aromatic rings **[3, 2006.01]**
57/60 • • • having unsaturation outside the rings **[3, 2006.01]**
57/62 • • containing six-membered aromatic rings and other rings **[3, 2006.01]**
57/64 • Acyl halides **[3, 2006.01]**
57/66 • • with only carbon-to-carbon double bonds as unsaturation **[3, 2006.01]**
57/68 • • with only carbon-to-carbon triple bonds as unsaturation **[3, 2006.01]**
57/70 • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
57/72 • • containing six-membered aromatic rings **[3, 2006.01]**
57/74 • • containing six-membered aromatic rings and other rings **[3, 2006.01]**
57/76 • • containing halogen outside the carbonyl halide groups **[3, 2006.01]**

59/00 Compounds having carboxyl groups bound to acyclic carbon atoms and containing any of the groups OH, O-metal, —CHO, keto, ether, $>C<^{O-}_{O-C}$ groups, $-C(O-)(O-C)(O-C)$ groups, or $C(O-)(O-C)(O-C)(O-C)$ groups [1, 2, 2006.01]

59/01 • Saturated compounds having only one carboxyl group and containing hydroxy or O-metal groups **[3, 2006.01]**
59/06 • • Glycolic acid **[1, 3, 2006.01]**
59/08 • • Lactic acid **[1, 3, 2006.01]**
59/10 • • Polyhydroxy carboxylic acids **[1, 2006.01]**
59/105 • • • having five or more carbon atoms, e.g. aldonic acids **[3, 2006.01]**
59/11 • • containing rings **[3, 2006.01]**
59/115 • • containing halogen **[3, 2006.01]**
59/125 • Saturated compounds having only one carboxyl group and containing ether groups, $>C<^{O-}_{O-C}$ groups, $-C(O-)(O-C)(O-C)$ groups, or $C(O-)(O-C)(O-C)(O-C)$ groups **[3, 2006.01]**
59/13 • • containing rings **[3, 2006.01]**
59/135 • • containing halogen **[3, 2006.01]**
59/147 • Saturated compounds having only one carboxyl group and containing —CHO groups **[3, 2006.01]**
59/153 • • Glyoxylic acid **[3, 2006.01]**
59/185 • Saturated compounds having only one carboxyl group and containing keto groups **[3, 2006.01]**
59/19 • • Pyruvic acid **[3, 2006.01]**
59/195 • • Acetoacetic acid **[3, 2006.01]**
59/205 • • containing rings **[3, 2006.01]**
59/21 • • containing halogen **[3, 2006.01]**
59/215 • • containing singly bound oxygen-containing groups **[3, 2006.01]**
59/225 • • containing —CHO groups **[3, 2006.01]**
59/235 • Saturated compounds having more than one carboxyl group **[3, 2006.01]**
59/245 • • containing hydroxy or O-metal groups **[3, 2006.01]**
59/255 • • • Tartaric acid **[3, 2006.01]**
59/265 • • • Citric acid **[3, 2006.01]**
59/285 • • • Polyhydroxy dicarboxylic acids having five or more carbon atoms, e.g. saccharic acids **[3, 2006.01]**
59/29 • • • containing rings **[3, 2006.01]**
59/295 • • • containing halogen **[3, 2006.01]**
59/305 • • containing ether groups, $>C<^{O-}_{O-C}$ groups, $-C(O-)(O-C)(O-C)$ groups, or $C(O-)(O-C)(O-C)(O-C)$ groups **[3, 2006.01]**
59/31 • • • containing rings **[3, 2006.01]**
59/315 • • • containing halogen **[3, 2006.01]**
59/325 • • containing —CHO groups **[3, 2006.01]**
59/347 • • containing keto groups **[3, 2006.01]**
59/353 • • • containing rings **[3, 2006.01]**
59/40 • Unsaturated compounds **[3, 2006.01]**
59/42 • • containing hydroxy or O-metal groups **[3, 2006.01]**
59/44 • • • Ricinoleic acid **[3, 2006.01]**
59/46 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
59/48 • • • containing six-membered aromatic rings **[3, 2006.01]**
59/50 • • • • Mandelic acid **[3, 2006.01]**
59/52 • • • a hydroxy or O-metal group being bound to a carbon atom of a six-membered aromatic ring **[3, 2006.01]**
59/54 • • • containing six-membered aromatic rings and other rings **[3, 2006.01]**
59/56 • • • containing halogen **[3, 2006.01]**
59/58 • • containing ether groups, $>C<^{O-}_{O-C}$ groups, $-C(O-)(O-C)(O-C)$ groups, or $C(O-)(O-C)(O-C)(O-C)$ groups **[3, 2006.01]**
59/60 • • • the non-carboxylic part of the ether being unsaturated **[3, 2006.01]**
59/62 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
59/64 • • • containing six-membered aromatic rings **[3, 2006.01]**

59/66 • • • • the non-carboxylic part of the ether containing six-membered aromatic rings **[3, 2006.01]**
59/68 • • • • • the oxygen atom of the ether group being bound to a non-condensed six-membered aromatic ring **[3, 2006.01]**
59/70 • • • • • • Ethers of hydroxy-acetic acid **[3, 2006.01]**
59/72 • • • containing six-membered aromatic rings and other rings **[3, 2006.01]**
59/74 • • containing —CHO groups **[3, 2006.01]**
59/76 • • containing keto groups **[3, 2006.01]**
59/80 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
59/82 • • • • the keto group being part of a ring **[3, 2006.01]**
59/84 • • • containing six-membered aromatic rings **[3, 2006.01]**
59/86 • • • containing six-membered aromatic rings and other rings **[3, 2006.01]**
59/88 • • • containing halogen **[3, 2006.01]**
59/90 • • • containing singly bound oxygen-containing groups **[3, 2006.01]**
59/92 • • • containing —CHO groups **[3, 2006.01]**

61/00 Compounds having carboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings [1, 2006.01]
61/04 • Saturated compounds having a carboxyl group bound to a three- or four-membered ring **[1, 3, 2006.01]**
61/06 • Saturated compounds having a carboxyl group bound to a five-membered ring **[1, 3, 2006.01]**
61/08 • Saturated compounds having a carboxyl group bound to a six-membered ring **[1, 3, 2006.01]**
61/09 • • Completely hydrogenated benzenedicarboxylic acids **[2, 3, 2006.01]**
61/10 • Saturated compounds having a carboxyl group bound to a seven- to twelve-membered ring **[1, 3, 2006.01]**
61/12 • Saturated polycyclic compounds **[1, 3, 2006.01]**
61/125 • • having a carboxyl group bound to a condensed ring system **[3, 2006.01]**
61/13 • • • having two rings **[3, 2006.01]**
61/135 • • • having three rings **[3, 2006.01]**
61/15 • Saturated compounds containing halogen **[3, 2006.01]**
61/16 • Unsaturated compounds **[1, 3, 2006.01]**
61/20 • • having a carboxyl group bound to a five-membered ring **[1, 3, 2006.01]**
61/22 • • having a carboxyl group bound to a six-membered ring **[1, 3, 2006.01]**
61/24 • • • Partially hydrogenated benzenedicarboxylic acids **[1, 3, 2006.01]**
61/26 • • having a carboxyl group bound to a seven- to twelve-membered ring **[1, 3, 2006.01]**
61/28 • • polycyclic **[1, 3, 2006.01]**
61/29 • • • having a carboxyl group bound to a condensed ring system **[3, 2006.01]**
61/35 • • having unsaturation outside the rings **[3, 2006.01]**
61/37 • • • Chrysanthemumic acid **[3, 2006.01]**
61/39 • • containing six-membered aromatic rings **[3, 2006.01]**
61/40 • • containing halogen **[3, 2006.01]**

62/00 Compounds having carboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings and containing any of the groups OH, O-metal, —CHO, keto, ether, $>C<^{O-}_{O-C}$ groups, $-C(O-C)_3$ groups, or $C(O-C)_4$ groups [3, 2006.01]
62/02 • Saturated compounds containing hydroxy or O-metal groups **[3, 2006.01]**
62/04 • • with a six-membered ring **[3, 2006.01]**
62/06 • • polycyclic **[3, 2006.01]**
62/08 • Saturated compounds containing ether groups, $>C<^{O-}_{O-C}$ groups, $-C(O-C)_3$ groups, or $C(O-C)_4$ groups **[3, 2006.01]**
62/10 • • with a six-membered ring **[3, 2006.01]**
62/12 • • polycyclic **[3, 2006.01]**
62/14 • • • having a carboxyl group on a condensed ring system **[3, 2006.01]**
62/16 • Saturated compounds containing —CHO groups **[3, 2006.01]**
62/18 • Saturated compounds containing keto groups **[3, 2006.01]**
62/20 • • with a six-membered ring **[3, 2006.01]**
62/22 • • polycyclic **[3, 2006.01]**
62/24 • • the keto group being part of a ring **[3, 2006.01]**
62/26 • • containing singly bound oxygen-containing groups **[3, 2006.01]**
62/28 • • containing —CHO groups **[3, 2006.01]**
62/30 • Unsaturated compounds **[3, 2006.01]**
62/32 • • containing hydroxy or O-metal groups **[3, 2006.01]**
62/34 • • containing ether groups, $>C<^{O-}_{O-C}$ groups, $-C(O-C)_3$ groups, or $C(O-C)_4$ groups **[3, 2006.01]**
62/36 • • containing —CHO groups **[3, 2006.01]**
62/38 • • containing keto groups **[3, 2006.01]**

63/00 Compounds having carboxyl groups bound to carbon atoms of six-membered aromatic rings [1, 2, 2006.01]
63/04 • Monocyclic monocarboxylic acids **[1, 2006.01]**
63/06 • • Benzoic acid **[1, 2006.01]**
63/08 • • • Salts thereof **[1, 2006.01]**
63/10 • • • Halides thereof **[1, 2006.01]**
63/14 • Monocyclic dicarboxylic acids **[1, 2006.01]**
63/15 • • all carboxyl groups bound to carbon atoms of the six-membered aromatic ring **[3, 2006.01]**
63/16 • • • 1,2-Benzenedicarboxylic acid **[1, 3, 2006.01]**
63/20 • • • • Salts thereof **[1, 3, 2006.01]**
63/22 • • • • Halides thereof **[1, 3, 2006.01]**
63/24 • • • 1,3-Benzenedicarboxylic acid **[1, 3, 2006.01]**
63/26 • • • 1,4-Benzenedicarboxylic acid **[1, 3, 2006.01]**
63/28 • • • • Salts thereof **[1, 3, 2006.01]**
63/30 • • • • Halides thereof **[1, 3, 2006.01]**
63/307 • Monocyclic tricarboxylic acids **[3, 2006.01]**
63/313 • Monocyclic acids containing more than three carboxyl groups **[3, 2006.01]**

63/33 • Polycyclic acids **[2, 3, 2006.01]**
63/331 • • with all carboxyl groups bound to non-condensed rings **[3, 2006.01]**
63/333 • • • 4,4'-Diphenyldicarboxylic acids **[2, 3, 2006.01]**
63/337 • • with carboxyl groups bound to condensed ring systems **[2, 3, 2006.01]**
63/34 • • • containing two rings **[1, 3, 2006.01]**
63/36 • • • • containing one carboxyl group **[1, 3, 2006.01]**
63/38 • • • • containing two carboxyl groups both bound to carbon atoms of the condensed ring system **[1, 3, 2006.01]**
63/40 • • • • containing three or more carboxyl groups all bound to carbon atoms of the condensed ring system **[1, 3, 2006.01]**
63/42 • • • containing three or more rings **[1, 3, 2006.01]**
63/44 • • • • containing one carboxyl group **[1, 3, 2006.01]**
63/46 • • • • containing two carboxyl groups both bound to carbon atoms of the condensed ring system **[1, 3, 2006.01]**
63/48 • • • • containing three or more carboxyl groups all bound to carbon atoms of the condensed ring system **[1, 3, 2006.01]**
63/49 • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
63/64 • Monocyclic acids with unsaturation outside the aromatic ring **[3, 2006.01]**
63/66 • Polycyclic acids with unsaturation outside the aromatic rings **[3, 2006.01]**
63/68 • containing halogen **[3, 2006.01]**
63/70 • • Monocarboxylic acids **[3, 2006.01]**
63/72 • • Polycyclic acids **[3, 2006.01]**
63/74 • • having unsaturation outside the aromatic rings **[3, 2006.01]**

65/00 Compounds having carboxyl groups bound to carbon atoms of six-membered aromatic rings and containing any of the groups OH, O-metal, —CHO, keto, ether, >C<(O-)(O-C) groups, -C(O-)=(O-C)(O-C) groups, or C(O-)(O-C)(O-C)(O-C) groups [1, 2006.01]

65/01 • containing hydroxy or O-metal groups **[3, 2006.01]**
65/03 • • monocyclic and having all hydroxy or O-metal groups bound to the ring **[3, 2006.01]**
65/05 • • • o-Hydroxy carboxylic acids **[3, 2006.01]**
65/10 • • • • Salicylic acid **[1, 3, 2006.01]**
65/105 • • polycyclic **[3, 2006.01]**
65/11 • • • with carboxyl groups on a condensed ring system containing two rings **[3, 2006.01]**
65/15 • • • with carboxyl groups on a condensed ring system containing more than two rings **[3, 2006.01]**
65/17 • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
65/19 • • having unsaturation outside the aromatic ring **[3, 2006.01]**
65/21 • containing ether groups, >C<(O-)(O-C) groups, -C(O-)=(O-C)(O-C) groups, or C(O-)(O-C)(O-C)(O-C) groups **[3, 2006.01]**
65/24 • • polycyclic **[3, 2006.01]**
65/26 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
65/28 • • having unsaturation outside the aromatic rings **[3, 2006.01]**
65/30 • containing —CHO groups **[3, 2006.01]**
65/32 • containing keto groups **[3, 2006.01]**
65/34 • • polycyclic **[3, 2006.01]**
65/36 • • • containing rings other than six-membered aromatic rings **[3, 2006.01]**
65/38 • • having unsaturation outside the aromatic rings **[3, 2006.01]**
65/40 • • containing singly bound oxygen-containing groups **[3, 2006.01]**
65/42 • • containing —CHO groups **[3, 2006.01]**

66/00 Quinone carboxylic acids [2, 2006.01]
66/02 • Anthraquinone carboxylic acids **[2, 2006.01]**

67/00 Preparation of carboxylic acid esters [1, 2006.01]

Note(s) [3]

In this group, lactones used as reactants are considered as being esters.

67/02 • by interreacting ester groups, i.e. transesterification **[1, 2006.01]**
67/03 • by reacting an ester group with a hydroxy group **[2, 2006.01]**
67/035 • by reacting carboxylic acids or symmetrical anhydrides with saturated hydrocarbons **[3, 2006.01]**
67/04 • by reacting carboxylic acids or symmetrical anhydrides onto unsaturated carbon-to-carbon bonds **[1, 2, 2006.01]**
67/05 • • with oxidation **[2, 3, 2006.01]**
67/055 • • • in the presence of platinum group metals or their compounds **[3, 2006.01]**
67/08 • by reacting carboxylic acids or symmetrical anhydrides with the hydroxy or O-metal group of organic compounds **[2, 2006.01]**
67/10 • by reacting carboxylic acids or symmetrical anhydrides with ester groups or with a carbon-halogen bond **[2, 2006.01]**
67/11 • • being mineral ester groups **[3, 2006.01]**
67/12 • from asymmetrical anhydrides **[2, 2006.01]**
67/14 • from carboxylic acid halides **[2, 2006.01]**
67/16 • from carboxylic acids, esters or anhydrides wherein one oxygen atom has been replaced by a sulfur, selenium or tellurium atom **[2, 2006.01]**
67/18 • by conversion of a group containing nitrogen into an ester group **[2, 2006.01]**
67/20 • • from amides or lactams **[2, 2006.01]**
67/22 • • from nitriles **[2, 2006.01]**
67/24 • by reacting carboxylic acids or derivatives thereof with a carbon-to-oxygen ether bond, e.g. acetal, tetrahydrofuran **[2, 2006.01]**
67/26 • • with an oxirane ring **[2, 2006.01]**
67/27 • from ortho-esters **[3, 2006.01]**

67/28 • by modifying the hydroxylic moiety of the ester, such modification not being an introduction of an ester group **[2, 2006.01]**

67/283 • • by hydrogenation of unsaturated carbon-to-carbon bonds **[3, 2006.01]**

67/287 • • by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3, 2006.01]**

67/29 • • by introduction of oxygen-containing functional groups **[3, 2006.01]**

67/293 • • by isomerisation; by change of size of the carbon skeleton **[3, 2006.01]**

67/297 • • by splitting-off hydrogen or functional groups; by hydrogenolysis of functional groups **[3, 2006.01]**

67/30 • by modifying the acid moiety of the ester, such modification not being an introduction of an ester group **[2, 2006.01]**

67/303 • • by hydrogenation of unsaturated carbon-to-carbon bonds **[3, 2006.01]**

67/307 • • by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3, 2006.01]**

67/31 • • by introduction of functional groups containing oxygen only in singly bound form **[3, 2006.01]**

67/313 • • by introduction of doubly bound oxygen containing functional groups, e.g. carboxyl groups **[3, 2006.01]**

67/317 • • by splitting-off hydrogen or functional groups; by hydrogenolysis of functional groups **[3, 2006.01]**

67/32 • • • Decarboxylation **[2, 3, 2006.01]**

67/327 • • • by elimination of functional groups containing oxygen only in singly bound form **[3, 2006.01]**

67/333 • • by isomerisation; by change of size of the carbon skeleton (introduction or elimination of carboxyl groups C07C 67/313, C07C 67/32) **[3, 2006.01]**

67/34 • • • Migration of groups in the molecule **[2, 3, 2006.01]**

67/343 • • • by increase in the number of carbon atoms **[3, 2006.01]**

67/347 • • • • by addition to unsaturated carbon-to-carbon bonds **[3, 2006.01]**

67/36 • by reaction with carbon monoxide or formates (C07C 67/02, C07C 67/03, C07C 67/10 take precedence) **[2, 2006.01]**

67/37 • • by reaction of ethers with carbon monoxide **[2, 2006.01]**

67/38 • • by addition to an unsaturated carbon-to-carbon bond **[2, 2006.01]**

67/39 • by oxidation of groups which are precursors for the acid moiety of the ester **[3, 2006.01]**

67/40 • • by oxidation of primary alcohols **[2, 3, 2006.01]**

67/42 • • by oxidation of secondary alcohols or ketones **[2, 3, 2006.01]**

67/44 • by oxidation-reduction of aldehydes, e.g. Tishchenko reaction **[2, 2006.01]**

67/46 • from ketenes or polyketenes **[2, 2006.01]**

67/465 • by oligomerisation **[3, 2006.01]**

67/47 • by telomerisation (macromolecular compounds C08) **[3, 2006.01]**

67/475 • by splitting of carbon-to-carbon bonds and redistribution, e.g. disproportionation or migration of groups between different molecules **[3, 2006.01]**

67/48 • Separation; Purification; Stabilisation; Use of additives **[2, 3, 2006.01]**

67/52 • • by change in the physical state, e.g. crystallisation **[3, 2006.01]**

67/54 • • • by distillation **[3, 2006.01]**

67/56 • • by solid-liquid treatment; by chemisorption **[3, 2006.01]**

67/58 • • by liquid-liquid treatment **[3, 2006.01]**

67/60 • • by treatment giving rise to chemical modification (by chemisorption C07C 67/56) **[3, 2006.01]**

67/62 • • Use of additives, e.g. for stabilisation **[3, 2006.01]**

68/00 Preparation of esters of carbonic or haloformic acids [2, 2006.01]

68/02 • from phosgene or haloformates **[2, 2006.01]**

68/04 • from carbon dioxide or inorganic carbonates **[2, 2006.01]**

68/06 • from organic carbonates **[2, 2006.01]**

68/08 • Purification; Separation; Stabilisation **[2, 2006.01]**

69/00 Esters of carboxylic acids; Esters of carbonic or haloformic acids [1, 2006.01]

Note(s) [5]

Attention is drawn to Note (6) following the title of this subclass.

69/003 • Esters of saturated alcohols having the esterified hydroxy group bound to an acyclic carbon atom **[3, 2006.01]**

69/007 • Esters of unsaturated alcohols having the esterified hydroxy group bound to an acyclic carbon atom **[3, 2006.01]**

69/01 • • Vinyl esters **[3, 2006.01]**

69/013 • Esters of alcohols having the esterified hydroxy group bound to a carbon atom of a ring other than a six-membered aromatic ring **[3, 2006.01]**

69/017 • Esters of hydroxy compounds having the esterified hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3, 2006.01]**

Note(s) [3]

Esters having a variably-specified acid moiety, i.e. covered by more than one of groups C07C 69/02, C07C 69/34, C07C 69/52, C07C 69/608, C07C 69/612, C07C 69/62, C07C 69/66, C07C 69/74, C07C 69/76, C07C 69/95, C07C 69/96, are covered by groups C07C 69/003-C07C 69/017 according to their hydroxylic moiety.

69/02 • Esters of acyclic saturated monocarboxylic acids having the carboxyl group bound to an acyclic carbon atom or to hydrogen **[1, 2006.01]**

69/025 • • esterified with unsaturated alcohols having the esterified hydroxy group bound to an acyclic carbon atom **[3, 2006.01]**

69/03 • • esterified with alcohols having the esterified hydroxy group bound to a carbon atom of a ring other than a six-membered aromatic ring **[3, 2006.01]**

69/035 • • esterified with a hydroxy compound having the esterified hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3, 2006.01]**

69/04 • • Formic acid esters **[1, 2006.01]**

69/06 • • • of monohydroxylic compounds **[1, 2006.01]**

69/07 • • • • of unsaturated alcohols **[2, 2006.01]**

69/08 • • • of dihydroxylic compounds **[1, 2006.01]**

69/10 • • • of trihydroxylic compounds **[1, 2006.01]**

69/12 • • Acetic acid esters **[1, 2006.01]**

69/14 • • • of monohydroxylic compounds **[1, 2006.01]**
69/145 • • • • of unsaturated alcohols **[2, 2006.01]**
69/15 • • • • • Vinyl acetate **[2, 2006.01]**
69/155 • • • • • Allyl acetate **[2, 2006.01]**
69/157 • • • • • containing six-membered aromatic rings **[3, 2006.01]**
69/16 • • • of dihydroxylic compounds **[1, 2006.01]**
69/18 • • • of trihydroxylic compounds **[1, 2006.01]**
69/21 • • • of hydroxy compounds with more than three hydroxy groups **[2, 2006.01]**
69/22 • • having three or more carbon atoms in the acid moiety **[1, 2006.01]**
69/24 • • • esterified with monohydroxylic compounds **[1, 2006.01]**
69/26 • • • • Synthetic waxes **[1, 2006.01]**
69/28 • • • esterified with dihydroxylic compounds **[1, 2006.01]**
69/30 • • • esterified with trihydroxylic compounds **[1, 2006.01]**
69/33 • • • esterified with hydroxy compounds having more than three hydroxy groups **[2, 2006.01]**
69/34 • Esters of acyclic saturated polycarboxylic acids having an esterified carboxyl group bound to an acyclic carbon atom **[1, 3, 2006.01]**
69/347 • • esterified with unsaturated alcohols having the esterified hydroxy group bound to an acyclic carbon atom **[3, 2006.01]**
69/353 • • esterified with a hydroxy compound having the esterified hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3, 2006.01]**
69/36 • • Oxalic acid esters **[1, 3, 2006.01]**
69/38 • • Malonic acid esters **[1, 3, 2006.01]**
69/40 • • Succinic acid esters **[1, 3, 2006.01]**
69/42 • • Glutaric acid esters **[1, 3, 2006.01]**
69/44 • • Adipic acid esters **[1, 3, 2006.01]**
69/46 • • Pimelic acid esters **[1, 3, 2006.01]**
69/48 • • Azelaic acid esters **[1, 3, 2006.01]**
69/50 • • Sebacic acid esters **[1, 3, 2006.01]**
69/52 • Esters of acyclic unsaturated carboxylic acids having the esterified carboxyl group bound to an acyclic carbon atom **[1, 3, 2006.01]**
69/527 • • of unsaturated hydroxy compounds **[3, 2006.01]**
69/533 • • Monocarboxylic acid esters having only one carbon-to-carbon double bond **[3, 2006.01]**
69/54 • • • Acrylic acid esters; Methacrylic acid esters **[1, 3, 2006.01]**
69/56 • • • Crotonic acid esters; Vinyl acetic acid esters **[1, 3, 2006.01]**
69/58 • • • Esters of straight chain acids with eighteen carbon atoms in the acid moiety **[1, 3, 2006.01]**
69/587 • • Monocarboxylic acid esters having at least two carbon-to-carbon double bonds **[3, 2006.01]**
69/593 • • Dicarboxylic acid esters having only one carbon-to-carbon double bond **[3, 2006.01]**
69/60 • • • Maleic acid esters; Fumaric acid esters **[1, 3, 2006.01]**
69/602 • • Dicarboxylic acid esters having at least two carbon-to-carbon double bonds **[3, 2006.01]**
69/604 • • Polycarboxylic acid esters, the acid moiety containing more than two carboxyl groups **[3, 2006.01]**
69/606 • • having only carbon-to-carbon triple bonds as unsaturation in the carboxylic acid moiety **[3, 2006.01]**
69/608 • Esters of carboxylic acids having a carboxyl group bound to an acyclic carbon atom and having a ring other than a six-membered aromatic ring in the acid moiety **[3, 2006.01]**
69/612 • Esters of carboxylic acids having a carboxyl group bound to an acyclic carbon atom and having a six-membered aromatic ring in the acid moiety **[3, 2006.01]**
69/614 • • of phenylacetic acid **[3, 2006.01]**
69/616 • • polycyclic **[3, 2006.01]**
69/618 • • having unsaturation outside the six-membered aromatic ring **[3, 2006.01]**
69/62 • Halogen-containing esters **[1, 2, 2006.01]**
69/63 • • of saturated acids **[2, 2006.01]**
69/635 • • • containing rings in the acid moiety **[3, 2006.01]**
69/65 • • of unsaturated acids **[2, 2006.01]**
69/653 • • • Acrylic acid esters; Methacrylic acid esters; Haloacrylic acid esters; Halomethacrylic acid esters **[3, 2006.01]**
69/657 • • • Maleic acid esters; Fumaric acid esters; Halomaleic acid esters; Halofumaric acid esters **[3, 2006.01]**
69/66 • Esters of carboxylic acids having esterified carboxyl groups bound to acyclic carbon atoms and having any of the groups OH, O-metal, —CHO, keto, ether, acyloxy, $>C<^{O-}_{O-C}$ groups, $-C^{O-}_{(O-C)_2}$ groups, or $C^{O-}_{(O-C)_3}$ in the acid moiety **[1, 2006.01]**
69/67 • • of saturated acids **[2, 2006.01]**
69/675 • • • of saturated hydroxy-carboxylic acids **[3, 2006.01]**
69/68 • • • • Lactic acid esters **[1, 3, 2006.01]**
69/70 • • • • Tartaric acid esters **[1, 3, 2006.01]**
69/704 • • • • Citric acid esters **[3, 2006.01]**
69/708 • • • Ethers **[3, 2006.01]**
69/712 • • • • the hydroxy group of the ester being etherified with a hydroxy compound having the hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3, 2006.01]**
69/716 • • • Esters of keto-carboxylic acids **[3, 2006.01]**
69/72 • • • • Acetoacetic acid esters **[1, 3, 2006.01]**
69/73 • • of unsaturated acids **[2, 2006.01]**
69/732 • • • of unsaturated hydroxy carboxylic acids **[3, 2006.01]**
69/734 • • • Ethers **[3, 2006.01]**
69/736 • • • • the hydroxy group of the ester being etherified with a hydroxy compound having the hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3, 2006.01]**
69/738 • • • Esters of keto-carboxylic acids **[3, 2006.01]**
69/74 • Esters of carboxylic acids having an esterified carboxyl group bound to a carbon atom of a ring other than a six-membered aromatic ring **[1, 2006.01]**
69/743 • • of acids with a three-membered ring and with unsaturation outside the ring **[3, 2006.01]**
69/747 • • • Chrysanthemumic acid esters **[3, 2006.01]**
69/75 • • of acids with a six-membered ring **[3, 2006.01]**
69/753 • • of polycyclic acids **[3, 2006.01]**

69/757 • • having any of the groups OH, O-metal, —CHO, keto, ether, acyloxy, groups, groups, or in the acid moiety **[3, 2006.01]**

69/76 • Esters of carboxylic acids having an esterified carboxyl group bound to a carbon atom of a six-membered aromatic ring **[1, 2006.01]**

69/767 • • esterified with unsaturated alcohols having the esterified hydroxy group bound to an acyclic carbon atom **[3, 2006.01]**

69/773 • • esterified with a hydroxy compound having the esterified hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3, 2006.01]**

69/78 • • Benzoic acid esters **[1, 2006.01]**

69/80 • • Phthalic acid esters **[1, 2, 2006.01]**

69/82 • • • Terephthalic acid esters **[1, 2006.01]**

69/83 • • • of unsaturated alcohols **[2, 2006.01]**

69/84 • • of monocyclic hydroxy carboxylic acids, the hydroxy groups and the carboxyl groups of which are bound to carbon atoms of a six-membered aromatic ring **[1, 2006.01]**

69/86 • • • with esterified hydroxyl groups **[1, 2006.01]**

69/88 • • • with esterified carboxyl groups **[1, 2006.01]**

69/90 • • • with esterified hydroxyl and carboxyl groups **[1, 2006.01]**

69/92 • • • with etherified hydroxyl groups **[1, 2, 2006.01]**

69/94 • • of polycyclic hydroxy carboxylic acids, the hydroxy groups and the carboxyl groups of which are bound to carbon atoms of six-membered aromatic rings **[1, 2, 2006.01]**

69/95 • Esters of quinone carboxylic acids **[2, 2006.01]**

69/96 • Esters of carbonic or haloformic acids **[2, 2006.01]**

71/00 Esters of oxyacids of halogens [1, 2006.01]

<u>Compounds containing carbon and nitrogen with or without hydrogen, halogens or oxygen [5]</u>

201/00 Preparation of esters of nitric or nitrous acid or of compounds containing nitro or nitroso groups bound to a carbon skeleton [5, 2006.01]

201/02 • Preparation of esters of nitric acid **[5, 2006.01]**

201/04 • Preparation of esters of nitrous acid **[5, 2006.01]**

201/06 • Preparation of nitro compounds **[5, 2006.01]**

201/08 • • by substitution of hydrogen atoms by nitro groups **[5, 2006.01]**

201/10 • • by substitution of functional groups by nitro groups **[5, 2006.01]**

201/12 • • by reactions not involving the formation of nitro groups **[5, 2006.01]**

201/14 • • by formation of nitro groups together with reactions not involving the formation of nitro groups **[5, 2006.01]**

201/16 • • Separation; Purification; Stabilisation; Use of additives **[5, 2006.01]**

203/00 Esters of nitric or nitrous acid [5, 2006.01]

203/02 • Esters of nitric acid **[5, 2006.01]**

203/04 • • having nitrate groups bound to acyclic carbon atoms **[5, 2006.01]**

203/06 • • • Glycerol trinitrate **[5, 2006.01]**

203/08 • • having nitrate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

203/10 • • having nitrate groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

205/00 Compounds containing nitro groups bound to a carbon skeleton [5, 2006.01]

205/01 • having nitro groups bound to acyclic carbon atoms **[5, 2006.01]**

205/02 • • of a saturated carbon skeleton **[5, 2006.01]**

205/03 • • of an unsaturated carbon skeleton **[5, 2006.01]**

205/04 • • • containing six-membered aromatic rings **[5, 2006.01]**

205/05 • having nitro groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

205/06 • having nitro groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

205/07 • the carbon skeleton being further substituted by halogen atoms **[5, 2006.01]**

205/08 • • having nitro groups bound to acyclic carbon atoms **[5, 2006.01]**

205/09 • • • of an unsaturated carbon skeleton **[5, 2006.01]**

205/10 • • having nitro groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

205/11 • • having nitro groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

205/12 • • • the six-membered aromatic ring or a condensed ring system containing that ring being substituted by halogen atoms **[5, 2006.01]**

205/13 • the carbon skeleton being further substituted by hydroxy groups **[5, 2006.01]**

205/14 • • having nitro groups and hydroxy groups bound to acyclic carbon atoms **[5, 2006.01]**

205/15 • • • of a saturated carbon skeleton **[5, 2006.01]**

205/16 • • • of a carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

205/17 • • having nitro groups bound to acyclic carbon atoms and hydroxy groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

205/18 • • having nitro groups or hydroxy groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

205/19 • • having nitro groups bound to carbon atoms of six-membered aromatic rings and hydroxy groups bound to acyclic carbon atoms **[5, 2006.01]**

205/20 • • having nitro groups and hydroxy groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

205/21 • • • having nitro groups and hydroxy groups bound to carbon atoms of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

205/22 • • • • having one nitro group bound to the ring **[5, 2006.01]**

205/23 • • • • having two nitro groups bound to the ring **[5, 2006.01]**

205/24 • • • • having three, and only three, nitro groups bound to the ring **[5, 2006.01]**

205/25 • • • having nitro groups bound to carbon atoms of six-membered aromatic rings being part of a condensed ring system **[5, 2006.01]**

205/26 • • and being further substituted by halogen atoms **[5, 2006.01]**

205/27 • the carbon skeleton being further substituted by etherified hydroxy groups **[5, 2006.01]**

205/28 • • having nitro groups and etherified hydroxy groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

205/29 • • • the carbon skeleton being saturated **[5, 2006.01]**

205/30 • • • • the oxygen atom of at least one of the etherified hydroxy groups being further bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

205/31 • • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

205/32 • • having nitro groups bound to acyclic carbon atoms and etherified hydroxy groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

205/33 • • having nitro groups or etherified hydroxy groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

205/34 • • having nitro groups bound to carbon atoms of six-membered aromatic rings and etherified hydroxy groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

205/35 • • having nitro groups and etherified hydroxy groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

205/36 • • • to carbon atoms of the same non-condensed six-membered aromatic ring or to carbon atoms of six-membered aromatic rings being part of the same condensed ring system **[5, 2006.01]**

205/37 • • • • the oxygen atom of at least one of the etherified hydroxy groups being further bound to an acyclic carbon atom **[5, 2006.01]**

205/38 • • • • the oxygen atom of at least one of the etherified hydroxy groups being further bound to a carbon atom of a six-membered aromatic ring, e.g. nitrodiphenyl ethers **[5, 2006.01]**

205/39 • the carbon skeleton being further substituted by esterified hydroxy groups **[5, 2006.01]**

205/40 • • having nitro groups and esterified hydroxy groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

205/41 • • having nitro groups or esterified hydroxy groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

205/42 • • having nitro groups or esterified hydroxy groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

205/43 • • • to carbon atoms of the same non-condensed six-membered aromatic ring or to carbon atoms of six-membered aromatic rings being part of the same condensed ring system **[5, 2006.01]**

205/44 • the carbon skeleton being further substituted by —CHO groups **[5, 2006.01]**

205/45 • the carbon skeleton being further substituted by at least one doubly-bound oxygen atom, not being part of a —CHO group **[5, 2006.01]**

205/46 • • the carbon skeleton containing carbon atoms of quinone rings **[5, 2006.01]**

205/47 • • • Anthraquinones containing nitro groups **[5, 2006.01]**

205/48 • • • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

205/49 • the carbon skeleton being further substituted by carboxyl groups **[5, 2006.01]**

205/50 • • having nitro groups and carboxyl groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

205/51 • • • the carbon skeleton being saturated **[5, 2006.01]**

205/52 • • • • Nitro-acetic acids **[5, 2006.01]**

205/53 • • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

205/54 • • having nitro groups bound to acyclic carbon atoms and carboxyl groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

205/55 • • having nitro groups or carboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

205/56 • • having nitro groups bound to carbon atoms of six-membered aromatic rings and carboxyl groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

205/57 • • having nitro groups and carboxyl groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

205/58 • • • the carbon skeleton being further substituted by halogen atoms **[5, 2006.01]**

205/59 • • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

205/60 • • • • in ortho-position to the carboxyl group, e.g. nitro-salicylic acids **[5, 2006.01]**

205/61 • • • the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5, 2006.01]**

207/00 Compounds containing nitroso groups bound to a carbon skeleton [5, 2006.01]

207/02 • the carbon skeleton not being further substituted **[5, 2006.01]**

207/04 • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

209/00 Preparation of compounds containing amino groups bound to a carbon skeleton [5, 2006.01]

209/02 • by substitution of hydrogen atoms by amino groups **[5, 2006.01]**

209/04 • by substitution of functional groups by amino groups **[5, 2006.01]**

209/06 • • by substitution of halogen atoms **[5, 2006.01]**

209/08 • • • with formation of amino groups bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

209/10 • • • with formation of amino groups bound to carbon atoms of six-membered aromatic rings or from amines having nitrogen atoms bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

209/12 • • • with formation of quaternary ammonium compounds **[5, 2006.01]**

209/14 • • by substitution of hydroxy groups or of etherified or esterified hydroxy groups **[5, 2006.01]**

209/16 • • • with formation of amino groups bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

209/18 • • • with formation of amino groups bound to carbon atoms of six-membered aromatic rings or from amines having nitrogen atoms bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

209/20 • • • with formation of quaternary ammonium compounds **[5, 2006.01]**
209/22 • • by substitution of other functional groups **[5, 2006.01]**
209/24 • by reductive alkylation of ammonia, amines or compounds having groups reducible to amino groups, with carbonyl compounds **[5, 2006.01]**
209/26 • • by reduction with hydrogen **[5, 2006.01]**
209/28 • • by reduction with other reducing agents **[5, 2006.01]**
209/30 • by reduction of nitrogen-to-oxygen or nitrogen-to-nitrogen bonds **[5, 2006.01]**
209/32 • • by reduction of nitro groups **[5, 2006.01]**
209/34 • • • by reduction of nitro groups bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**
209/36 • • • by reduction of nitro groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**
209/38 • • by reduction of nitroso groups **[5, 2006.01]**
209/40 • • by reduction of hydroxylamino or oxyimino groups **[5, 2006.01]**
209/42 • • by reduction of nitrogen-to-nitrogen bonds **[5, 2006.01]**
209/44 • by reduction of carboxylic acids or esters thereof in presence of ammonia or amines, or by reduction of nitriles, carboxylic acid amides, imines or imino-ethers **[5, 2006.01]**
209/46 • • by reduction of carboxylic acids or esters thereof in presence of ammonia or amines **[5, 2006.01]**
209/48 • • by reduction of nitriles **[5, 2006.01]**
209/50 • • by reduction of carboxylic acid amides **[5, 2006.01]**
209/52 • • by reduction of imines or imino-ethers (C07C 209/24 takes precedence) **[5, 2006.01]**
209/54 • by rearrangement reactions **[5, 2006.01]**
209/56 • • from carboxylic acids involving a Hofmann, Curtius, Schmidt, or Lossen-type rearrangement **[5, 2006.01]**
209/58 • • from or via amides **[5, 2006.01]**
209/60 • by condensation or addition reactions, e.g. Mannich reaction, addition of ammonia or amines to alkenes or to alkynes or addition of compounds containing an active hydrogen atom to Schiff's bases, quinone imines, or aziranes **[5, 2006.01]**
209/62 • by cleaving carbon-to-nitrogen, sulfur-to-nitrogen, or phosphorus-to-nitrogen bonds, e.g. hydrolysis of amides, N-dealkylation of amines or quaternary ammonium compounds (C07C 209/24 takes precedence) **[5, 2006.01]**
209/64 • by disproportionation **[5, 2006.01]**
209/66 • from or via metallo-organic compounds **[5, 2006.01]**
209/68 • from amines, by reactions not involving amino groups, e.g. reduction of unsaturated amines, aromatisation, or substitution of the carbon skeleton **[5, 2006.01]**
209/70 • • by reduction of unsaturated amines **[5, 2006.01]**
209/72 • • • by reduction of six-membered aromatic rings **[5, 2006.01]**
209/74 • • by halogenation, hydrohalogenation, dehalogenation, or dehydrohalogenation **[5, 2006.01]**
209/76 • • by nitration **[5, 2006.01]**
209/78 • • from carbonyl compounds, e.g. from formaldehyde, and amines having amino groups bound to carbon atoms of six-membered aromatic rings, with formation of methylene-diarylamines **[5, 2006.01]**
209/80 • by photochemical reactions; by using free radicals **[5, 2006.01]**
209/82 • Purification; Separation; Stabilisation; Use of additives **[5, 2006.01]**
209/84 • • Purification **[5, 2006.01]**
209/86 • • Separation **[5, 2006.01]**
209/88 • • • Separation of optical isomers **[5, 2006.01]**
209/90 • • Stabilisation; Use of additives **[5, 2006.01]**

211/00 Compounds containing amino groups bound to a carbon skeleton [5, 2006.01]
211/01 • having amino groups bound to acyclic carbon atoms **[5, 2006.01]**
211/02 • • of an acyclic saturated carbon skeleton **[5, 2006.01]**
211/03 • • • Monoamines **[5, 2006.01]**
211/04 • • • • Mono-, di- or tri-methylamine **[5, 2006.01]**
211/05 • • • • Mono-, di- or tri-ethylamine **[5, 2006.01]**
211/06 • • • • containing only n- or iso-propyl groups **[5, 2006.01]**
211/07 • • • • containing one, two or three alkyl groups, each having the same number of carbon atoms in excess of three **[5, 2006.01]**
211/08 • • • • containing alkyl groups having a different number of carbon atoms **[5, 2006.01]**
211/09 • • • Diamines **[5, 2006.01]**
211/10 • • • • Diaminoethanes **[5, 2006.01]**
211/11 • • • • Diaminopropanes **[5, 2006.01]**
211/12 • • • • 1,6-Diaminohexanes **[5, 2006.01]**
211/13 • • • Amines containing three or more amino groups bound to the carbon skeleton **[5, 2006.01]**
211/14 • • • Amines containing amino groups bound to at least two aminoalkyl groups, e.g. diethylenetriamines **[5, 2006.01]**
211/15 • • • the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**
211/16 • • of a saturated carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**
211/17 • • • containing only non-condensed rings **[5, 2006.01]**
211/18 • • • containing at least two amino groups bound to the carbon skeleton **[5, 2006.01]**
211/19 • • • containing condensed ring systems **[5, 2006.01]**
211/20 • • of an acyclic unsaturated carbon skeleton **[5, 2006.01]**
211/21 • • • Monoamines **[5, 2006.01]**
211/22 • • • containing at least two amino groups bound to the carbon skeleton **[5, 2006.01]**
211/23 • • • the carbon skeleton containing carbon-to-carbon triple bonds **[5, 2006.01]**
211/24 • • • the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**
211/25 • • of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**
211/26 • • of an unsaturated carbon skeleton containing at least one six-membered aromatic ring **[5, 2006.01]**

211/27 • • • having amino groups linked to the six-membered aromatic ring by saturated carbon chains **[5, 2006.01]**
211/28 • • • having amino groups linked to the six-membered aromatic ring by unsaturated carbon chains **[5, 2006.01]**
211/29 • • • the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**
211/30 • • • the six-membered aromatic ring being part of a condensed ring system formed by two rings **[5, 2006.01]**
211/31 • • • the six-membered aromatic ring being part of a condensed ring system formed by at least three rings **[5, 2006.01]**
211/32 • • • • containing dibenzocycloheptane or dibenzocycloheptene ring systems or condensed derivatives thereof **[5, 2006.01]**
211/33 • having amino groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**
211/34 • • of a saturated carbon skeleton **[5, 2006.01]**
211/35 • • • containing only non-condensed rings **[5, 2006.01]**
211/36 • • • containing at least two amino groups bound to the carbon skeleton **[5, 2006.01]**
211/37 • • • being further substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**
211/38 • • • containing condensed ring systems **[5, 2006.01]**
211/39 • • of an unsaturated carbon skeleton **[5, 2006.01]**
211/40 • • • containing only non-condensed rings **[5, 2006.01]**
211/41 • • • containing condensed ring systems **[5, 2006.01]**
211/42 • • • • with six-membered aromatic rings being part of the condensed ring systems **[5, 2006.01]**
211/43 • having amino groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**
211/44 • • having amino groups bound to only one six-membered aromatic ring **[5, 2006.01]**
211/45 • • • Monoamines **[5, 2006.01]**
211/46 • • • • Aniline **[5, 2006.01]**
211/47 • • • • Toluidines; Homologues thereof **[5, 2006.01]**
211/48 • • • • N-alkylated amines **[5, 2006.01]**
211/49 • • • having at least two amino groups bound to the carbon skeleton **[5, 2006.01]**
211/50 • • • • with at least two amino groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**
211/51 • • • • • Phenylenediamines **[5, 2006.01]**
211/52 • • • the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**
211/53 • • • having the nitrogen atom of at least one of the amino groups further bound to a hydrocarbon radical substituted by amino groups **[5, 2006.01]**
211/54 • • having amino groups bound to two or three six-membered aromatic rings **[5, 2006.01]**
211/55 • • • Diphenylamines **[5, 2006.01]**
211/56 • • • the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**
211/57 • • having amino groups bound to carbon atoms of six-membered aromatic rings being part of condensed ring systems of the carbon skeleton **[5, 2006.01]**
211/58 • • • Naphthylamines; N-substituted derivatives thereof **[5, 2006.01]**
211/59 • • • the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**
211/60 • • • containing a ring other than a six-membered aromatic ring forming part of at least one of the condensed ring systems **[5, 2006.01]**
211/61 • • • with at least one of the condensed ring systems formed by three or more rings **[5, 2006.01]**
211/62 • Quaternary ammonium compounds **[5, 2006.01]**
211/63 • • having quaternised nitrogen atoms bound to acyclic carbon atoms **[5, 2006.01]**
211/64 • • having quaternised nitrogen atoms bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**
211/65 • Metal complexes of amines **[5, 2006.01]**

213/00 Preparation of compounds containing amino and hydroxy, amino and etherified hydroxy or amino and esterified hydroxy groups bound to the same carbon skeleton [5, 2006.01]
213/02 • by reactions involving the formation of amino groups from compounds containing hydroxy groups or etherified or esterified hydroxy groups **[5, 2006.01]**
213/04 • by reaction of ammonia or amines with olefin oxides or halohydrins **[5, 2006.01]**
213/06 • from hydroxy amines by reactions involving the etherification or esterification of hydroxy groups **[5, 2006.01]**
213/08 • by reactions not involving the formation of amino groups, hydroxy groups or etherified or esterified hydroxy groups **[5, 2006.01]**
213/10 • Separation; Purification; Stabilisation; Use of additives **[5, 2006.01]**

215/00 Compounds containing amino and hydroxy groups bound to the same carbon skeleton [5, 2006.01]
215/02 • having hydroxy groups and amino groups bound to acyclic carbon atoms of the same carbon skeleton **[5, 2006.01]**
215/04 • • the carbon skeleton being saturated **[5, 2006.01]**
215/06 • • • and acyclic **[5, 2006.01]**
215/08 • • • • with only one hydroxy group and one amino group bound to the carbon skeleton **[5, 2006.01]**
215/10 • • • • with one amino group and at least two hydroxy groups bound to the carbon skeleton **[5, 2006.01]**
215/12 • • • • the nitrogen atom of the amino group being further bound to hydrocarbon groups substituted by hydroxy groups **[5, 2006.01]**
215/14 • • • • the nitrogen atom of the amino group being further bound to hydrocarbon groups substituted by amino groups **[5, 2006.01]**
215/16 • • • • the nitrogen atom of the amino group being further bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**
215/18 • • • • with hydroxy groups and at least two amino groups bound to the carbon skeleton **[5, 2006.01]**
215/20 • • • the carbon skeleton being saturated and containing rings **[5, 2006.01]**
215/22 • • the carbon skeleton being unsaturated **[5, 2006.01]**
215/24 • • • and acyclic **[5, 2006.01]**
215/26 • • • and containing rings other than six-membered aromatic rings **[5, 2006.01]**

215/28 • • • and containing six-membered aromatic rings **[5, 2006.01]**

215/30 • • • • containing hydroxy groups and carbon atoms of six-membered aromatic rings bound to the same carbon atom of the carbon skeleton **[5, 2006.01]**

215/32 • • • • • containing hydroxy groups and carbon atoms of two six-membered aromatic rings bound to the same carbon atom of the carbon skeleton **[5, 2006.01]**

215/34 • • • • containing hydroxy groups and carbon atoms of six-membered aromatic rings bound to the same carbon atom of the carbon skeleton and at least one hydroxy group bound to another carbon atom of the carbon skeleton **[5, 2006.01]**

215/36 • • • • • 1-Aryl-2-amino-1,3-propane diols **[5, 2006.01]**

215/38 • • • • with rings other than six-membered aromatic rings being part of the carbon skeleton **[5, 2006.01]**

215/40 • • with quaternised nitrogen atoms bound to carbon atoms of the carbon skeleton **[5, 2006.01]**

215/42 • having amino groups or hydroxy groups bound to carbon atoms of rings other than six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

215/44 • • bound to carbon atoms of the same ring or condensed ring system **[5, 2006.01]**

215/46 • having hydroxy groups bound to carbon atoms of at least one six-membered aromatic ring and amino groups bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

215/48 • • with amino groups linked to the six-membered aromatic ring, or to the condensed ring system containing that ring, by carbon chains not further substituted by hydroxy groups **[5, 2006.01]**

215/50 • • • with amino groups and the six-membered aromatic ring, or the condensed ring system containing that ring, bound to the same carbon atom of the carbon chain **[5, 2006.01]**

215/52 • • • linked by carbon chains having two carbon atoms between the amino groups and the six-membered aromatic ring or the condensed ring system containing that ring **[5, 2006.01]**

215/54 • • • linked by carbon chains having at least three carbon atoms between the amino groups and the six-membered aromatic ring or the condensed ring system containing that ring **[5, 2006.01]**

215/56 • • with amino groups linked to the six-membered aromatic ring, or to the condensed ring system containing that ring, by carbon chains further substituted by hydroxy groups **[5, 2006.01]**

215/58 • • • with hydroxy groups and the six-membered aromatic ring, or the condensed ring system containing that ring, bound to the same carbon atom of the carbon chain **[5, 2006.01]**

215/60 • • • • the chain having two carbon atoms between the amino groups and the six-membered aromatic ring or the condensed ring system containing that ring **[5, 2006.01]**

215/62 • • • • the chain having at least three carbon atoms between the amino groups and the six-membered aromatic ring or the condensed ring system containing that ring **[5, 2006.01]**

215/64 • • with rings other than six-membered aromatic rings being part of the carbon skeleton **[5, 2006.01]**

215/66 • • with quaternised amino groups bound to the carbon skeleton **[5, 2006.01]**

215/68 • having amino groups bound to carbon atoms of six-membered aromatic rings and hydroxy groups bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

215/70 • • with rings other than six-membered aromatic rings being part of the carbon skeleton **[5, 2006.01]**

215/72 • • with quaternised amino groups bound to the carbon skeleton **[5, 2006.01]**

215/74 • having hydroxy groups and amino groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

215/76 • • of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

215/78 • • • containing at least two hydroxy groups bound to the carbon skeleton **[5, 2006.01]**

215/80 • • • containing at least two amino groups bound to the carbon skeleton **[5, 2006.01]**

215/82 • • • having the nitrogen atom of at least one of the amino groups further bound to a carbon atom of another six-membered aromatic ring **[5, 2006.01]**

215/84 • • having amino groups bound to carbon atoms of six-membered aromatic rings being part of condensed ring systems **[5, 2006.01]**

215/86 • • • being formed by two rings **[5, 2006.01]**

215/88 • • • being formed by at least three rings **[5, 2006.01]**

215/90 • • with quaternised amino groups bound to the carbon skeleton **[5, 2006.01]**

217/00 Compounds containing amino and etherified hydroxy groups bound to the same carbon skeleton [5, 2006.01]

217/02 • having etherified hydroxy groups and amino groups bound to acyclic carbon atoms of the same carbon skeleton **[5, 2006.01]**

217/04 • • the carbon skeleton being acyclic and saturated **[5, 2006.01]**

217/06 • • • having only one etherified hydroxy group and one amino group bound to the carbon skeleton, which is not further substituted **[5, 2006.01]**

217/08 • • • • the oxygen atom of the etherified hydroxy group being further bound to an acyclic carbon atom **[5, 2006.01]**

217/10 • • • • • to an acyclic carbon atom of a hydrocarbon radical containing six-membered aromatic rings **[5, 2006.01]**

217/12 • • • • the oxygen atom of the etherified hydroxy group being further bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

217/14 • • • • the oxygen atom of the etherified hydroxy group being further bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

217/16 • • • • • the six-membered aromatic ring or condensed ring system containing that ring not being further substituted **[5, 2006.01]**

217/18 • • • • • the six-membered aromatic ring or condensed ring system containing that ring being further substituted **[5, 2006.01]**

217/20 • • • • • • by halogen atoms, by trihalomethyl, nitro or nitroso groups, or by singly-bound oxygen atoms **[5, 2006.01]**

217/22 • • • • • • by carbon atoms having at least two bonds to oxygen atoms **[5, 2006.01]**

217/24 • • • • • the six-membered aromatic ring being part of a condensed ring system containing rings other than six-membered aromatic rings **[5, 2006.01]**

217/26 • • • having only one etherified hydroxy group and one amino group bound to the carbon skeleton, which is further substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**

217/28 • • • having one amino group and at least two singly-bound oxygen atoms, with at least one being part of an etherified hydroxy group, bound to the carbon skeleton, e.g. ethers of polyhydroxy amines **[5, 2006.01]**

217/30 • • • • having the oxygen atom of at least one of the etherified hydroxy groups further bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

217/32 • • • • • the six-membered aromatic ring or condensed ring system containing that ring being further substituted **[5, 2006.01]**

217/34 • • • • • • by halogen atoms, by trihalomethyl, nitro or nitroso groups, or by singly-bound oxygen atoms **[5, 2006.01]**

217/36 • • • • • • by carbon atoms having at least two bonds to oxygen atoms **[5, 2006.01]**

217/38 • • • • • the six-membered aromatic ring being part of a condensed ring system containing rings other than six-membered aromatic rings **[5, 2006.01]**

217/40 • • • • having at least two singly-bound oxygen atoms, with at least one being part of an etherified hydroxy group, bound to the same carbon atom of the carbon skeleton, e.g. amino-ketals, ortho esters **[5, 2006.01]**

217/42 • • • having etherified hydroxy groups and at least two amino groups bound to the carbon skeleton **[5, 2006.01]**

217/44 • • the carbon skeleton being saturated and containing rings **[5, 2006.01]**

217/46 • • the carbon skeleton being acyclic and unsaturated **[5, 2006.01]**

217/48 • • the carbon skeleton being unsaturated and containing rings **[5, 2006.01]**

217/50 • • Ethers of hydroxy amines of undetermined structure, e.g. obtained by reactions of epoxides with hydroxy amines **[5, 2006.01]**

217/52 • having etherified hydroxy groups or amino groups bound to carbon atoms of rings other than six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

217/54 • having etherified hydroxy groups bound to carbon atoms of at least one six-membered aromatic ring and amino groups bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

217/56 • • with amino groups linked to the six-membered aromatic ring, or to the condensed ring system containing that ring, by carbon chains not further substituted by singly-bound oxygen atoms **[5, 2006.01]**

217/58 • • • with amino groups and the six-membered aromatic ring, or the condensed ring system containing that ring, bound to the same carbon atom of the carbon chain **[5, 2006.01]**

217/60 • • • linked by carbon chains having two carbon atoms between the amino groups and the six-membered aromatic ring or the condensed ring system containing that ring **[5, 2006.01]**

217/62 • • • linked by carbon chains having at least three carbon atoms between the amino groups and the six-membered aromatic ring or the condensed ring system containing that ring **[5, 2006.01]**

217/64 • • with amino groups linked to the six-membered aromatic ring, or to the condensed ring system containing that ring, by carbon chains further substituted by singly-bound oxygen atoms **[5, 2006.01]**

217/66 • • • with singly-bound oxygen atoms and six-membered aromatic rings bound to the same carbon atom of the carbon chain **[5, 2006.01]**

217/68 • • • • with singly-bound oxygen atoms, six-membered aromatic rings and amino groups bound to the same carbon atom of the carbon chain **[5, 2006.01]**

217/70 • • • • linked by carbon chains having two carbon atoms between the amino groups and the six-membered aromatic ring or the condensed ring system containing that ring **[5, 2006.01]**

217/72 • • • • linked by carbon chains having at least three carbon atoms between the amino groups and the six-membered aromatic ring or the condensed ring system containing that ring **[5, 2006.01]**

217/74 • • with rings other than six-membered aromatic rings being part of the carbon skeleton **[5, 2006.01]**

217/76 • having amino groups bound to carbon atoms of six-membered aromatic rings and etherified hydroxy groups bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

217/78 • having amino groups and etherified hydroxy groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

217/80 • • having amino groups and etherified hydroxy groups bound to carbon atoms of non-condensed six-membered aromatic rings **[5, 2006.01]**

217/82 • • • of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

217/84 • • • • the oxygen atom of at least one of the etherified hydroxy groups being further bound to an acyclic carbon atom **[5, 2006.01]**

217/86 • • • • • to an acyclic carbon atom of a hydrocarbon radical containing six-membered aromatic rings **[5, 2006.01]**

217/88 • • • • the oxygen atom of at least one of the etherified hydroxy groups being further bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

217/90 • • • • the oxygen atom of at least one of the etherified hydroxy groups being further bound to a carbon atom of a six-membered aromatic ring, e.g. amino-diphenylethers **[5, 2006.01]**

217/92 • • • • the nitrogen atom of at least one of the amino groups being further bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

217/94 • • having amino groups bound to carbon atoms of six-membered aromatic rings being part of condensed ring systems and etherified hydroxy groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

219/00 Compounds containing amino and esterified hydroxy groups bound to the same carbon skeleton [5, 2006.01]

219/02 • having esterified hydroxy groups and amino groups bound to acyclic carbon atoms of the same carbon skeleton **[5, 2006.01]**

219/04 • • the carbon skeleton being acyclic and saturated **[5, 2006.01]**

219/06 • • • having the hydroxy groups esterified by carboxylic acids having the esterifying carboxyl groups bound to hydrogen atoms or to acyclic carbon atoms of an acyclic saturated carbon skeleton **[5, 2006.01]**

219/08 • • • having at least one of the hydroxy groups esterified by a carboxylic acid having the esterifying carboxyl group bound to an acyclic carbon atom of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

219/10 • • • having at least one of the hydroxy groups esterified by a carboxylic acid having the esterifying carboxyl group bound to an acyclic carbon atom of a carbon skeleton containing rings **[5, 2006.01]**

219/12 • • • having at least one of the hydroxy groups esterified by a carboxylic acid having the esterifying carboxyl group bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

219/14 • • • having at least one of the hydroxy groups esterified by a carboxylic acid having the esterifying carboxyl group bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

219/16 • • • having at least one of the hydroxy groups esterified by an inorganic acid or a derivative thereof **[5, 2006.01]**

219/18 • • the carbon skeleton being saturated and containing rings **[5, 2006.01]**

219/20 • • the carbon skeleton being unsaturated **[5, 2006.01]**

219/22 • • • and containing six-membered aromatic rings **[5, 2006.01]**

219/24 • having esterified hydroxy groups or amino groups bound to carbon atoms of rings other than six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

219/26 • having esterified hydroxy groups bound to carbon atoms of at least one six-membered aromatic ring and amino groups bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

219/28 • • having amino groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

219/30 • • • with amino groups linked to the six-membered aromatic ring, or to the condensed ring system containing that ring, by carbon chains further substituted by singly-bound oxygen atoms **[5, 2006.01]**

219/32 • having amino groups bound to carbon atoms of six-membered aromatic rings and esterified hydroxy groups bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

219/34 • having amino groups and esterified hydroxy groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

221/00 Preparation of compounds containing amino groups and doubly-bound oxygen atoms bound to the same carbon skeleton [5, 2006.01]

223/00 Compounds containing amino and —CHO groups bound to the same carbon skeleton [5, 2006.01]

223/02 • having amino groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

223/04 • having amino groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

223/06 • having amino groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

225/00 Compounds containing amino groups and doubly-bound oxygen atoms bound to the same carbon skeleton, at least one of the doubly-bound oxygen atoms not being part of a —CHO group, e.g. amino ketones [5, 2006.01]

225/02 • having amino groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

225/04 • • the carbon skeleton being saturated **[5, 2006.01]**

225/06 • • • and acyclic **[5, 2006.01]**

225/08 • • • and containing rings **[5, 2006.01]**

225/10 • • • • with doubly-bound oxygen atoms bound to carbon atoms not being part of rings **[5, 2006.01]**

225/12 • • • • with doubly-bound oxygen atoms bound to carbon atoms being part of rings **[5, 2006.01]**

225/14 • • the carbon skeleton being unsaturated **[5, 2006.01]**

225/16 • • • and containing six-membered aromatic rings **[5, 2006.01]**

225/18 • • • • the carbon skeleton containing also rings other than six-membered aromatic rings **[5, 2006.01]**

225/20 • having amino groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

225/22 • having amino groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

225/24 • the carbon skeleton containing carbon atoms of quinone rings **[5, 2006.01]**

225/26 • • having amino groups bound to carbon atoms of quinone rings or of condensed ring systems containing quinone rings **[5, 2006.01]**

225/28 • • • of non-condensed quinone rings **[5, 2006.01]**

225/30 • • • of condensed quinone ring systems formed by two rings **[5, 2006.01]**

225/32 • • • of condensed quinone ring systems formed by at least three rings **[5, 2006.01]**

225/34 • • • • Amino anthraquinones **[5, 2006.01]**

225/36 • • • • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

227/00 Preparation of compounds containing amino and carboxyl groups bound to the same carbon skeleton [5, 2006.01]

227/02 • Formation of carboxyl groups in compounds containing amino groups, e.g. by oxidation of amino alcohols **[5, 2006.01]**

227/04 • Formation of amino groups in compounds containing carboxyl groups **[5, 2006.01]**

227/06 • • by addition or substitution reactions, without increasing the number of carbon atoms in the carbon skeleton of the acid **[5, 2006.01]**

227/08 • • • by reaction of ammonia or amines with acids containing functional groups **[5, 2006.01]**

227/10 • • with simultaneously increasing the number of carbon atoms in the carbon skeleton **[5, 2006.01]**

227/12 • Formation of amino and carboxyl groups **[5, 2006.01]**

227/14 • from compounds containing already amino and carboxyl groups or derivatives thereof **[5, 2006.01]**

227/16 • • by reactions not involving the amino or carboxyl groups **[5, 2006.01]**

227/18 • • by reactions involving amino or carboxyl groups, e.g. hydrolysis of esters or amides, by formation of halides, salts or esters **[5, 2006.01]**

227/20 • • • by hydrolysis of N-acylated amino acids or derivatives thereof, e.g. hydrolysis of carbamates **[5, 2006.01]**

227/22 • from lactams, cyclic ketones or cyclic oximes, e.g. by reaction involving Beckmann rearrangement **[5, 2006.01]**

227/24 • from hydantoins **[5, 2006.01]**

227/26 • from compounds containing carboxyl groups by reaction with HCN, or a salt thereof, and amines, or from aminonitriles **[5, 2006.01]**

227/28 • from natural products **[5, 2006.01]**

227/30 • Preparation of optical isomers **[5, 2006.01]**

227/32 • • by stereospecific synthesis **[5, 2006.01]**

227/34 • • by separation of optical isomers **[5, 2006.01]**

227/36 • Racemisation of optical isomers **[5, 2006.01]**

227/38 • Separation; Purification; Stabilisation; Use of additives (separation of optical isomers C07C 227/34) **[5, 2006.01]**

227/40 • • Separation; Purification **[5, 2006.01]**

227/42 • • • Crystallisation **[5, 2006.01]**

227/44 • • Stabilisation; Use of additives **[5, 2006.01]**

229/00 Compounds containing amino and carboxyl groups bound to the same carbon skeleton [5, 2006.01]

229/02 • having amino and carboxyl groups bound to acyclic carbon atoms of the same carbon skeleton **[5, 2006.01]**

229/04 • • the carbon skeleton being acyclic and saturated **[5, 2006.01]**

229/06 • • • having only one amino and one carboxyl group bound to the carbon skeleton **[5, 2006.01]**

229/08 • • • • the nitrogen atom of the amino group being further bound to hydrogen atoms **[5, 2006.01]**

229/10 • • • • the nitrogen atom of the amino group being further bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

229/12 • • • • • to carbon atoms of acyclic carbon skeletons **[5, 2006.01]**

229/14 • • • • • to carbon atoms of carbon skeletons containing rings **[5, 2006.01]**

229/16 • • • • • to carbon atoms of hydrocarbon radicals substituted by amino or carboxyl groups, e.g. ethylenediamine-tetra-acetic acid, iminodiacetic acids **[5, 2006.01]**

229/18 • • • • the nitrogen atom of the amino group being further bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

229/20 • • • the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**

229/22 • • • the carbon skeleton being further substituted by oxygen atoms **[5, 2006.01]**

229/24 • • • having more than one carboxyl group bound to the carbon skeleton, e.g. aspartic acid **[5, 2006.01]**

229/26 • • • having more than one amino group bound to the carbon skeleton, e.g. lysine **[5, 2006.01]**

229/28 • • the carbon skeleton being saturated and containing rings **[5, 2006.01]**

229/30 • • the carbon skeleton being acyclic and unsaturated **[5, 2006.01]**

229/32 • • the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5, 2006.01]**

229/34 • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

229/36 • • • with at least one amino group and one carboxyl group bound to the same carbon atom of the carbon skeleton **[5, 2006.01]**

229/38 • having amino groups bound to acyclic carbon atoms and carboxyl groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

229/40 • having amino groups bound to carbon atoms of at least one six-membered aromatic ring and carboxyl groups bound to acyclic carbon atoms of the same carbon skeleton **[5, 2006.01]**

229/42 • • with carboxyl groups linked to the six-membered aromatic ring, or to the condensed ring system containing that ring, by saturated carbon chains **[5, 2006.01]**

229/44 • • with carboxyl groups linked to the six-membered aromatic ring, or to the condensed ring system containing that ring, by unsaturated carbon chains **[5, 2006.01]**

229/46 • having amino or carboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

229/48 • • with amino groups and carboxyl groups bound to carbon atoms of the same non-condensed ring **[5, 2006.01]**

229/50 • • with amino groups and carboxyl groups bound to carbon atoms being part of the same condensed ring system **[5, 2006.01]**

229/52 • having amino and carboxyl groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

229/54 • • with amino and carboxyl groups bound to carbon atoms of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

229/56 • • • with amino and carboxyl groups bound in ortho- position **[5, 2006.01]**

229/58 • • • • having the nitrogen atom of at least one of the amino groups further bound to a carbon atom of a six-membered aromatic ring, e.g. N-phenyl-anthranilic acids **[5, 2006.01]**

229/60 • • • with amino and carboxyl groups bound in meta- or para- positions **[5, 2006.01]**

229/62 • • • with amino groups and at least two carboxyl groups bound to carbon atoms of the same six-membered aromatic ring **[5, 2006.01]**
229/64 • • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**
229/66 • • • the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5, 2006.01]**
229/68 • • with amino and carboxyl groups bound to carbon atoms of six-membered aromatic rings being part of the same condensed ring system **[5, 2006.01]**
229/70 • • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**
229/72 • • • the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5, 2006.01]**
229/74 • • • • the condensed ring system being formed by at least three rings, e.g. amino anthraquinone carboxylic acids **[5, 2006.01]**
229/76 • Metal complexes of amino carboxylic acids **[5, 2006.01]**

231/00 Preparation of carboxylic acid amides [5, 2006.01]
231/02 • from carboxylic acids or from esters, anhydrides, or halides thereof by reaction with ammonia or amines **[5, 2006.01]**
231/04 • from ketenes by reaction with ammonia or amines **[5, 2006.01]**
231/06 • from nitriles by transformation of cyano groups into carboxamide groups **[5, 2006.01]**
231/08 • from amides by reaction at nitrogen atoms of carboxamide groups **[5, 2006.01]**
231/10 • from compounds not provided for in groups C07C 231/02-C07C 231/08 **[5, 2006.01]**
231/12 • by reactions not involving the formation of carboxamide groups **[5, 2006.01]**
231/14 • by formation of carboxamide groups together with reactions not involving the carboxamide groups **[5, 2006.01]**
231/16 • Preparation of optical isomers **[5, 2006.01]**
231/18 • • by stereospecific synthesis **[5, 2006.01]**
231/20 • • by separation of optical isomers **[5, 2006.01]**
231/22 • Separation; Purification; Stabilisation; Use of additives (separation of optical isomers C07C 231/20) **[5, 2006.01]**
231/24 • • Separation; Purification **[5, 2006.01]**

233/00 Carboxylic acid amides [5, 2006.01]
233/01 • having carbon atoms of carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**
233/02 • • having nitrogen atoms of carboxamide groups bound to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5, 2006.01]**
233/03 • • • with carbon atoms of carboxamide groups bound to hydrogen atoms **[5, 2006.01]**
233/04 • • • with carbon atoms of carboxamide groups bound to carbon atoms of an acyclic saturated carbon skeleton **[5, 2006.01]**
233/05 • • • • having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**
233/06 • • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**
233/07 • • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**
233/08 • • • with carbon atoms of carboxamide groups bound to acyclic carbon atoms of a saturated carbon skeleton containing rings **[5, 2006.01]**
233/09 • • • with carbon atoms of carboxamide groups bound to carbon atoms of an acyclic unsaturated carbon skeleton **[5, 2006.01]**
233/10 • • • with carbon atoms of carboxamide groups bound to carbon atoms of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**
233/11 • • • with carbon atoms of carboxamide groups bound to carbon atoms of an unsaturated carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**
233/12 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**
233/13 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5, 2006.01]**
233/14 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**
233/15 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a six-membered aromatic ring **[5, 2006.01]**
233/16 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by singly-bound oxygen atoms **[5, 2006.01]**
233/17 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5, 2006.01]**
233/18 • • • • having the carbon atom of the carboxamide group bound to a hydrogen atom or to a carbon atom of an acyclic saturated carbon skeleton **[5, 2006.01]**
233/19 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a saturated carbon skeleton containing rings **[5, 2006.01]**
233/20 • • • • having the carbon atom of the carboxamide group bound to a carbon atom of an acyclic unsaturated carbon skeleton **[5, 2006.01]**
233/21 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**
233/22 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**
233/23 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**
233/24 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

233/25 • • • • having the carbon atom of the carboxamide group bound to a hydrogen atom or to a carbon atom of an acyclic saturated carbon skeleton **[5, 2006.01]**

233/26 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a saturated carbon skeleton containing rings **[5, 2006.01]**

233/27 • • • • having the carbon atom of the carboxamide group bound to a carbon atom of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

233/28 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**

233/29 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

233/30 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by doubly-bound oxygen atoms **[5, 2006.01]**

233/31 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5, 2006.01]**

233/32 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

233/33 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

233/34 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by amino groups **[5, 2006.01]**

233/35 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5, 2006.01]**

233/36 • • • • having the carbon atom of the carboxamide group bound to a hydrogen atom or to a carbon atom of an acyclic saturated carbon skeleton **[5, 2006.01]**

233/37 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a saturated carbon skeleton containing rings **[5, 2006.01]**

233/38 • • • • having the carbon atom of the carboxamide group bound to a carbon atom of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

233/39 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**

233/40 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

233/41 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

233/42 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

233/43 • • • • having the carbon atom of the carboxamide group bound to a hydrogen atom or to a carbon atom of a saturated carbon skeleton **[5, 2006.01]**

233/44 • • • • having the carbon atom of the carboxamide group bound to a carbon atom of an unsaturated carbon skeleton **[5, 2006.01]**

233/45 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5, 2006.01]**

233/46 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5, 2006.01]**

233/47 • • • • having the carbon atom of the carboxamide group bound to a hydrogen atom or to a carbon atom of an acyclic saturated carbon skeleton **[5, 2006.01]**

233/48 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a saturated carbon skeleton containing rings **[5, 2006.01]**

233/49 • • • • having the carbon atom of the carboxamide group bound to a carbon atom of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

233/50 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**

233/51 • • • • having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

233/52 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

233/53 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

233/54 • • • • having the carbon atom of the carboxamide group bound to a hydrogen atom or to a carbon atom of a saturated carbon skeleton **[5, 2006.01]**

233/55 • • • • having the carbon atom of the carboxamide group bound to a carbon atom of an unsaturated carbon skeleton **[5, 2006.01]**

233/56 • • having carbon atoms of carboxamide groups bound to carbon atoms of carboxyl groups, e.g. oxamides **[5, 2006.01]**

233/57 • having carbon atoms of carboxamide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

233/58 • • having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5, 2006.01]**

233/59 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**

233/60 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by singly-bound oxygen atoms **[5, 2006.01]**

233/61 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by doubly-bound oxygen atoms **[5, 2006.01]**

233/62 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by amino groups **[5, 2006.01]**

233/63 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5, 2006.01]**

233/64 • having carbon atoms of carboxamide groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

233/65 • • having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5, 2006.01]**

233/66 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**

233/67 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by singly-bound oxygen atoms **[5, 2006.01]**

233/68 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5, 2006.01]**

233/69 • • • • of an acyclic saturated carbon skeleton **[5, 2006.01]**

233/70 • • • • of a saturated carbon skeleton containing rings **[5, 2006.01]**

233/71 • • • • of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

233/72 • • • • of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**

233/73 • • • • of a carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

233/74 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

233/75 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

233/76 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by doubly-bound oxygen atoms **[5, 2006.01]**

233/77 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by amino groups **[5, 2006.01]**

233/78 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5, 2006.01]**

233/79 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

233/80 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

233/81 • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5, 2006.01]**

233/82 • • • with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5, 2006.01]**

233/83 • • • • of an acyclic saturated carbon skeleton **[5, 2006.01]**

233/84 • • • • of a saturated carbon skeleton containing rings **[5, 2006.01]**

233/85 • • • • of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

233/86 • • • • of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**

233/87 • • • • of a carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

233/88 • having nitrogen atoms of carboxamide groups bound to an acyclic carbon atom and to a carbon atom of a six-membered aromatic ring wherein at least one ortho-hydrogen atom has been replaced **[5, 2006.01]**

233/89 • having nitrogen atoms of carboxamide groups quaternised **[5, 2006.01]**

233/90 • having nitrogen atoms of carboxamide groups further acylated **[5, 2006.01]**

233/91 • • with carbon atoms of the carboxamide groups bound to acyclic carbon atoms **[5, 2006.01]**

233/92 • • with at least one carbon atom of the carboxamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

235/00 Carboxylic acid amides, the carbon skeleton of the acid part being further substituted by oxygen atoms [5, 2006.01]

235/02 • having carbon atoms of carboxamide groups bound to acyclic carbon atoms and singly-bound oxygen atoms bound to the same carbon skeleton **[5, 2006.01]**

235/04 • • the carbon skeleton being acyclic and saturated **[5, 2006.01]**

235/06 • • • having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

235/08 • • • having the nitrogen atom of at least one of the carboxamide groups bound to an acyclic carbon atom of a hydrocarbon radical substituted by singly-bound oxygen atoms **[5, 2006.01]**

235/10 • • • having the nitrogen atom of at least one of the carboxamide groups bound to an acyclic carbon atom of a hydrocarbon radical substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**

235/12 • • • having the nitrogen atom of at least one of the carboxamide groups bound to an acyclic carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5, 2006.01]**

235/14 • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

235/16 • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

235/18 • • • having at least one of the singly-bound oxygen atoms further bound to a carbon atom of a six-membered aromatic ring, e.g. phenoxyacetamides **[5, 2006.01]**

235/20 • • • • having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

235/22 • • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

235/24 • • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

235/26 • • the carbon skeleton being saturated and containing rings **[5, 2006.01]**

235/28 • • the carbon skeleton being acyclic and unsaturated **[5, 2006.01]**

235/30 • • the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5, 2006.01]**

235/32 • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

235/34 • • • having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

235/36 • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

235/38 • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

235/40 • having carbon atoms of carboxamide groups bound to carbon atoms of rings other than six-membered aromatic rings and singly-bound oxygen atoms bound to the same carbon skeleton **[5, 2006.01]**

235/42 • having carbon atoms of carboxamide groups bound to carbon atoms of six-membered aromatic rings and singly-bound oxygen atoms bound to the same carbon skeleton **[5, 2006.01]**

235/44 • • with carbon atoms of carboxamide groups and singly-bound oxygen atoms bound to carbon atoms of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

235/46 • • • having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

235/48 • • • having the nitrogen atom of at least one of the carboxamide groups bound to an acyclic carbon atom of a hydrocarbon radical substituted by singly-bound oxygen atoms **[5, 2006.01]**

235/50 • • • having the nitrogen atom of at least one of the carboxamide groups bound to an acyclic carbon atom of a hydrocarbon radical substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**

235/52 • • • having the nitrogen atom of at least one of the carboxamide groups bound to an acyclic carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5, 2006.01]**

235/54 • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

235/56 • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

235/58 • • • with carbon atoms of carboxamide groups and singly-bound oxygen atoms, bound in ortho-position to carbon atoms of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

235/60 • • • • having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

235/62 • • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

235/64 • • • • having the nitrogen atom of at least one of the carboxamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

235/66 • • with carbon atoms of carboxamide groups bound to carbon atoms of six-membered aromatic rings being part of condensed ring systems and singly-bound oxygen atoms, bound to the same carbon skeleton **[5, 2006.01]**

235/68 • having the nitrogen atom of at least one of the carboxamide groups bound to an acyclic carbon atom and to a carbon atom of a six-membered aromatic ring wherein at least one ortho-hydrogen atom has been replaced **[5, 2006.01]**

235/70 • having carbon atoms of carboxamide groups and doubly-bound oxygen atoms bound to the same carbon skeleton **[5, 2006.01]**

235/72 • • with the carbon atoms of the carboxamide groups bound to acyclic carbon atoms **[5, 2006.01]**

235/74 • • • of a saturated carbon skeleton **[5, 2006.01]**

235/76 • • • of an unsaturated carbon skeleton **[5, 2006.01]**

235/78 • • • • the carbon skeleton containing rings **[5, 2006.01]**

235/80 • • • having carbon atoms of carboxamide groups and keto groups bound to the same carbon atom, e.g. acetoacetamides **[5, 2006.01]**

235/82 • • with the carbon atom of at least one of the carboxamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

235/84 • • with the carbon atom of at least one of the carboxamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

235/86 • having the nitrogen atom of at least one of the carboxamide groups quaternised **[5, 2006.01]**

235/88 • having the nitrogen atom of at least one of the carboxamide groups further acylated **[5, 2006.01]**

237/00 Carboxylic acid amides, the carbon skeleton of the acid part being further substituted by amino groups [5, 2006.01]

237/02 • having the carbon atoms of the carboxamide groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

237/04 • • the carbon skeleton being acyclic and saturated **[5, 2006.01]**

237/06 • • • having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

237/08 • • • having the nitrogen atom of at least one of the carboxamide groups bound to an acyclic carbon atom of a hydrocarbon radical substituted by singly-bound oxygen atoms **[5, 2006.01]**

237/10 • • • having the nitrogen atom of at least one of the carboxamide groups bound to an acyclic carbon atom of a hydrocarbon radical substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**

237/12 • • • having the nitrogen atom of at least one of the carboxamide groups bound to an acyclic carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5, 2006.01]**

237/14 • • the carbon skeleton being saturated and containing rings **[5, 2006.01]**

237/16 • • the carbon skeleton being acyclic and unsaturated **[5, 2006.01]**

237/18 • • the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5, 2006.01]**

237/20 • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

237/22 • • having nitrogen atoms of amino groups bound to the carbon skeleton of the acid part, further acylated **[5, 2006.01]**

237/24 • having the carbon atom of at least one of the carboxamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring of the carbon skeleton **[5, 2006.01]**

237/26 • • of a ring being part of a condensed ring system formed by at least four rings, e.g. tetracycline **[5, 2006.01]**

237/28 • having the carbon atom of at least one of the carboxamide groups bound to a carbon atom of a non-condensed six-membered aromatic ring of the carbon skeleton **[5, 2006.01]**

237/30 • • having the nitrogen atom of the carboxamide group bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

237/32 • • having the nitrogen atom of the carboxamide group bound to an acyclic carbon atom of a hydrocarbon radical substituted by oxygen atoms **[5, 2006.01]**

237/34 • • having the nitrogen atom of the carboxamide group bound to an acyclic carbon atom of a hydrocarbon radical substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**

237/36 • • having the nitrogen atom of the carboxamide group bound to an acyclic carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5, 2006.01]**

237/38 • • having the nitrogen atom of the carboxamide group bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

237/40 • • having the nitrogen atom of the carboxamide group bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

237/42 • • having nitrogen atoms of amino groups bound to the carbon skeleton of the acid part, further acylated **[5, 2006.01]**

237/44 • • having carbon atoms of carboxamide groups, amino groups and singly-bound oxygen atoms bound to carbon atoms of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

237/46 • • having carbon atoms of carboxamide groups, amino groups and at least three atoms of bromine or iodine, bound to carbon atoms of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

237/48 • having the carbon atom of at least one of the carboxamide groups bound to a carbon atom of a six-membered aromatic ring being part of a condensed ring system of the same carbon skeleton **[5, 2006.01]**

237/50 • having the nitrogen atom of at least one of the carboxamide groups quaternised **[5, 2006.01]**

237/52 • having the nitrogen atom of at least one of the carboxamide groups further acylated **[5, 2006.01]**

239/00 Compounds containing nitrogen-to-halogen bonds; Hydroxylamino compounds or ethers or esters thereof [5, 2006.01]

239/02 • Compounds containing nitrogen-to-halogen bonds **[5, 2006.01]**

239/04 • • N-halogenated amines **[5, 2006.01]**

239/06 • • N-halogenated carboxamides **[5, 2006.01]**

239/08 • Hydroxylamino compounds or their ethers or esters **[5, 2006.01]**

239/10 • • having nitrogen atoms of hydroxylamino groups further bound to carbon atoms of unsubstituted hydrocarbon radicals or of hydrocarbon radicals substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**

239/12 • • having nitrogen atoms of hydroxylamino groups further bound to carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5, 2006.01]**

239/14 • • having nitrogen atoms of hydroxylamino groups further bound to carbon atoms of hydrocarbon radicals substituted by doubly-bound oxygen atoms **[5, 2006.01]**

239/16 • • having nitrogen atoms of hydroxylamino groups further bound to carbon atoms of hydrocarbon radicals substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**

239/18 • • having nitrogen atoms of hydroxylamino groups further bound to carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5, 2006.01]**

239/20 • • having oxygen atoms of hydroxylamino groups etherified **[5, 2006.01]**

239/22 • • having oxygen atoms of hydroxylamino groups esterified **[5, 2006.01]**

241/00 Preparation of compounds containing chains of nitrogen atoms singly-bound to each other, e.g. hydrazines, triazanes [5, 2006.01]

241/02 • Preparation of hydrazines **[5, 2006.01]**

241/04 • Preparation of hydrazides **[5, 2006.01]**

243/00 Compounds containing chains of nitrogen atoms singly-bound to each other, e.g. hydrazines, triazanes [5, 2006.01]

243/02 • N-nitro compounds **[5, 2006.01]**

243/04 • N-nitroso compounds **[5, 2006.01]**

243/06 • • N-nitroso-amines **[5, 2006.01]**

243/08 • • N-nitroso-carboxamides **[5, 2006.01]**

243/10 • Hydrazines **[5, 2006.01]**

243/12 • • having nitrogen atoms of hydrazine groups bound to acyclic carbon atoms **[5, 2006.01]**

243/14 • • • of a saturated carbon skeleton **[5, 2006.01]**

243/16 • • • of an unsaturated carbon skeleton **[5, 2006.01]**

243/18 • • • • containing rings **[5, 2006.01]**

243/20 • • having nitrogen atoms of hydrazine groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

243/22 • • having nitrogen atoms of hydrazine groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

243/24 • Hydrazines having nitrogen atoms of hydrazine groups acylated by carboxylic acids **[5, 2006.01]**

243/26 • • with acylating carboxyl groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

243/28 • • • to hydrogen atoms or to carbon atoms of a saturated carbon skeleton **[5, 2006.01]**

243/30 • • • to carbon atoms of an unsaturated carbon skeleton **[5, 2006.01]**

243/32 • • • • the carbon skeleton containing rings **[5, 2006.01]**

243/34 • • • to carbon atoms of a carbon skeleton further substituted by nitrogen atoms **[5, 2006.01]**

243/36 • • with acylating carboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

243/38 • • with acylating carboxyl groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

243/40 • Hydrazines having nitrogen atoms of hydrazine groups being quaternised **[5, 2006.01]**

243/42 • Hydrazines having nitrogen atoms of hydrazine groups further singly-bound to hetero atoms **[5, 2006.01]**

245/00 Compounds containing chains of at least two nitrogen atoms with at least one nitrogen-to-nitrogen multiple bond (azoxy compound C07C 291/08) **[5, 2006.01]**

245/02 • Azo compounds, i.e. compounds having the free valencies of —N=N— groups attached to different atoms, e.g. diazohydroxides **[5, 2006.01]**

245/04 • • with nitrogen atoms of azo groups bound to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

245/06 • • with nitrogen atoms of azo groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

245/08 • • • with the two nitrogen atoms of azo groups bound to carbon atoms of six-membered aromatic rings, e.g. azobenzene **[5, 2006.01]**

245/10 • • • with nitrogen atoms of azo groups bound to carbon atoms of six-membered aromatic rings being part of condensed ring systems **[5, 2006.01]**

245/12 • Diazo compounds, i.e. compounds having the free valencies of $>N_2$ groups attached to the same carbon atom **[5, 2006.01]**

245/14 • • having diazo groups bound to acyclic carbon atoms of a carbon skeleton **[5, 2006.01]**

245/16 • • • Diazomethane **[5, 2006.01]**

245/18 • • • the carbon skeleton being further substituted by carboxyl groups **[5, 2006.01]**

245/20 • Diazonium compounds **[5, 2006.01]**

245/22 • containing chains of three or more nitrogen atoms with one or more nitrogen-to-nitrogen double bonds **[5, 2006.01]**

245/24 • • Chains of only three nitrogen atoms, e.g. diazoamines **[5, 2006.01]**

247/00 Compounds containing azido groups [5, 2006.01]

247/02 • with azido groups bound to acyclic carbon atoms of a carbon skeleton **[5, 2006.01]**

247/04 • • being saturated **[5, 2006.01]**

247/06 • • • and containing rings **[5, 2006.01]**

247/08 • • being unsaturated **[5, 2006.01]**

247/10 • • • and containing rings **[5, 2006.01]**

247/12 • • being further substituted by carboxyl groups **[5, 2006.01]**

247/14 • with azido groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

247/16 • with azido groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5, 2006.01]**

247/18 • • being further substituted by carboxyl groups **[5, 2006.01]**

247/20 • with azido groups acylated by carboxylic acids **[5, 2006.01]**

247/22 • • with the acylating carboxyl groups bound to hydrogen atoms, to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

247/24 • • with at least one of the acylating carboxyl groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

249/00 Preparation of compounds containing nitrogen atoms doubly-bound to a carbon skeleton (of diazo compounds C07C 245/12) **[5, 2006.01]**

249/02 • of compounds containing imino groups **[5, 2006.01]**

249/04 • of oximes **[5, 2006.01]**

249/06 • • by nitrosation of hydrocarbons or substituted hydrocarbons **[5, 2006.01]**

249/08 • • by reaction of hydroxylamines with carbonyl compounds **[5, 2006.01]**

249/10 • • from nitro compounds or salts thereof **[5, 2006.01]**

249/12 • • by reactions not involving the formation of oxyimino groups **[5, 2006.01]**

249/14 • • Separation; Purification; Stabilisation; Use of additives **[5, 2006.01]**

249/16 • of hydrazones **[5, 2006.01]**

251/00 Compounds containing nitrogen atoms doubly-bound to a carbon skeleton (diazo compounds C07C 245/12) **[5, 2006.01]**

251/02 • containing imino groups **[5, 2006.01]**

251/04 • • having carbon atoms of imino groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

251/06 • • • to carbon atoms of a saturated carbon skeleton **[5, 2006.01]**

251/08 • • • • being acyclic **[5, 2006.01]**

251/10 • • • to carbon atoms of an unsaturated carbon skeleton **[5, 2006.01]**

251/12 • • • • being acyclic **[5, 2006.01]**

251/14 • • • • containing rings other than six-membered aromatic rings **[5, 2006.01]**

251/16 • • • • containing six-membered aromatic rings **[5, 2006.01]**

251/18 • • having carbon atoms of imino groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

251/20 • • having carbon atoms of imino groups being part of rings other than six-membered aromatic rings **[5, 2006.01]**

251/22 • • • Quinone imines **[5, 2006.01]**

251/24 • • having carbon atoms of imino groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**
251/26 • • having nitrogen atoms of imino groups further bound to halogen atoms **[5, 2006.01]**
251/28 • • having nitrogen atoms of imino groups acylated **[5, 2006.01]**
251/30 • • having nitrogen atoms of imino groups quaternised **[5, 2006.01]**
251/32 • Oximes **[5, 2006.01]**
251/34 • • with oxygen atoms of oxyimino groups bound to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5, 2006.01]**
251/36 • • • with the carbon atoms of the oxyimino groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**
251/38 • • • • to carbon atoms of a saturated carbon skeleton **[5, 2006.01]**
251/40 • • • • to carbon atoms of an unsaturated carbon skeleton **[5, 2006.01]**
251/42 • • • with the carbon atom of at least one of the oxyimino groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**
251/44 • • • with the carbon atom of at least one of the oxyimino groups being part of a ring other than a six-membered aromatic ring **[5, 2006.01]**
251/46 • • • • Quinone oximes **[5, 2006.01]**
251/48 • • • with the carbon atom of at least one of the oxyimino groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**
251/50 • • having oxygen atoms of oxyimino groups bound to carbon atoms of substituted hydrocarbon radicals **[5, 2006.01]**
251/52 • • • of hydrocarbon radicals substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**
251/54 • • • of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5, 2006.01]**
251/56 • • • of hydrocarbon radicals substituted by doubly-bound oxygen atoms **[5, 2006.01]**
251/58 • • • of hydrocarbon radicals substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**
251/60 • • • of hydrocarbon radicals substituted by carboxyl groups **[5, 2006.01]**
251/62 • • having oxygen atoms of oxyimino groups esterified **[5, 2006.01]**
251/64 • • • by carboxylic acids **[5, 2006.01]**
251/66 • • • • with the esterifying carboxyl groups bound to hydrogen atoms, to acyclic carbon atoms or to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**
251/68 • • • • with at least one of the esterifying carboxyl groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**
251/70 • • Metal complexes of oximes **[5, 2006.01]**
251/72 • Hydrazones **[5, 2006.01]**
251/74 • • having doubly-bound carbon atoms of hydrazone groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**
251/76 • • • to carbon atoms of a saturated carbon skeleton **[5, 2006.01]**
251/78 • • • to carbon atoms of an unsaturated carbon skeleton **[5, 2006.01]**
251/80 • • • • the carbon skeleton containing rings **[5, 2006.01]**
251/82 • • having doubly-bound carbon atoms of hydrazone groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**
251/84 • • having doubly-bound carbon atoms of hydrazone groups being part of rings other than six-membered aromatic rings **[5, 2006.01]**
251/86 • • having doubly-bound carbon atoms of hydrazone groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**
251/88 • • having also the other nitrogen atom doubly-bound to a carbon atom, e.g. azines **[5, 2006.01]**

253/00 **Preparation of carboxylic acid nitriles** (of cyanogen or compounds thereof C01C 3/00) **[5, 2006.01]**
253/02 • by reaction of nitrogen oxide with organic compounds **[5, 2006.01]**
253/04 • by reaction of cyanogen halides, e.g. ClCN, with organic compounds **[5, 2006.01]**
253/06 • from N-formylated amino compounds **[5, 2006.01]**
253/08 • by addition of hydrogen cyanide or salts thereof to unsaturated compounds **[5, 2006.01]**
253/10 • • to compounds containing carbon-to-carbon double bonds **[5, 2006.01]**
253/12 • • to compounds containing carbon-to-carbon triple bonds **[5, 2006.01]**
253/14 • by reaction of cyanides with halogen-containing compounds with replacement of halogen atoms by cyano groups **[5, 2006.01]**
253/16 • by reaction of cyanides with lactones or compounds containing hydroxy groups or etherified or esterified hydroxy groups **[5, 2006.01]**
253/18 • by reaction of ammonia or amines with compounds containing carbon-to-carbon multiple bonds other than in six-membered aromatic rings **[5, 2006.01]**
253/20 • by dehydratation of carboxylic acid amides **[5, 2006.01]**
253/22 • by reaction of ammonia with carboxylic acids with replacement of carboxyl groups by cyano groups **[5, 2006.01]**
253/24 • by ammoxidation of hydrocarbons or substituted hydrocarbons **[5, 2006.01]**
253/26 • • containing carbon-to-carbon multiple bonds, e.g. unsaturated aldehydes **[5, 2006.01]**
253/28 • • containing six-membered aromatic rings, e.g. styrene **[5, 2006.01]**
253/30 • by reactions not involving the formation of cyano groups **[5, 2006.01]**
253/32 • Separation; Purification; Stabilisation; Use of additives **[5, 2006.01]**
253/34 • • Separation; Purification **[5, 2006.01]**

255/00 **Carboxylic acid nitriles** (cyanogen or compounds thereof C01C 3/00) **[5, 2006.01]**
255/01 • having cyano groups bound to acyclic carbon atoms **[5, 2006.01]**
255/02 • • of an acyclic and saturated carbon skeleton **[5, 2006.01]**
255/03 • • • Mononitriles **[5, 2006.01]**
255/04 • • • containing two cyano groups bound to the carbon skeleton **[5, 2006.01]**
255/05 • • • containing at least three cyano groups bound to the carbon skeleton **[5, 2006.01]**
255/06 • • of an acyclic and unsaturated carbon skeleton **[5, 2006.01]**
255/07 • • • Mononitriles **[5, 2006.01]**
255/08 • • • • Acrylonitrile; Methacrylonitrile **[5, 2006.01]**

255/09 • • • containing at least two cyano groups bound to the carbon skeleton **[5, 2006.01]**
255/10 • • containing cyano groups and halogen atoms, or nitro or nitroso groups, bound to the same acyclic carbon skeleton **[5, 2006.01]**
255/11 • • containing cyano groups and singly-bound oxygen atoms bound to the same saturated acyclic carbon skeleton **[5, 2006.01]**
255/12 • • • containing cyano groups and hydroxy groups bound to the carbon skeleton **[5, 2006.01]**
255/13 • • • containing cyano groups and etherified hydroxy groups bound to the carbon skeleton **[5, 2006.01]**
255/14 • • • containing cyano groups and esterified hydroxy groups bound to the carbon skeleton **[5, 2006.01]**
255/15 • • containing cyano groups and singly-bound oxygen atoms bound to the same unsaturated acyclic carbon skeleton **[5, 2006.01]**
255/16 • • containing cyano groups and singly-bound oxygen atoms bound to the same carbon atom of an acyclic carbon skeleton **[5, 2006.01]**
255/17 • • containing cyano groups and doubly-bound oxygen atoms bound to the same acyclic carbon skeleton **[5, 2006.01]**
255/18 • • containing cyano groups bound to carbon atoms of carboxyl groups **[5, 2006.01]**
255/19 • • containing cyano groups and carboxyl groups, other than cyano groups, bound to the same saturated acyclic carbon skeleton **[5, 2006.01]**
255/20 • • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**
255/21 • • • the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5, 2006.01]**
255/22 • • • containing cyano groups and at least two carboxyl groups bound to the carbon skeleton **[5, 2006.01]**
255/23 • • containing cyano groups and carboxyl groups, other than cyano groups, bound to the same unsaturated acyclic carbon skeleton **[5, 2006.01]**
255/24 • • containing cyano groups and singly-bound nitrogen atoms, not being further bound to other hetero atoms, bound to the same saturated acyclic carbon skeleton **[5, 2006.01]**
255/25 • • • Aminoacetonitriles **[5, 2006.01]**
255/26 • • • containing cyano groups, amino groups and singly-bound oxygen atoms bound to the carbon skeleton **[5, 2006.01]**
255/27 • • • containing cyano groups, amino groups and doubly-bound oxygen atoms bound to the carbon skeleton **[5, 2006.01]**
255/28 • • • containing cyano groups, amino groups and carboxyl groups, other than cyano groups, bound to the carbon skeleton **[5, 2006.01]**
255/29 • • • containing cyano groups and acylated amino groups bound to the carbon skeleton **[5, 2006.01]**
255/30 • • containing cyano groups and singly-bound nitrogen atoms, not being further bound to other hetero atoms, bound to the same unsaturated acyclic carbon skeleton **[5, 2006.01]**
255/31 • • having cyano groups bound to acyclic carbon atoms of a carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**
255/32 • • having cyano groups bound to acyclic carbon atoms of a carbon skeleton containing at least one six-membered aromatic ring **[5, 2006.01]**
255/33 • • • with cyano groups linked to the six-membered aromatic ring, or to the condensed ring system containing that ring, by saturated carbon chains **[5, 2006.01]**
255/34 • • • with cyano groups linked to the six-membered aromatic ring, or to the condensed ring system containing that ring, by unsaturated carbon chains **[5, 2006.01]**
255/35 • • • the carbon skeleton being further substituted by halogen atoms, or by nitro or nitroso groups **[5, 2006.01]**
255/36 • • • the carbon skeleton being further substituted by hydroxy groups **[5, 2006.01]**
255/37 • • • the carbon skeleton being further substituted by etherified hydroxy groups **[5, 2006.01]**
255/38 • • • the carbon skeleton being further substituted by esterified hydroxy groups **[5, 2006.01]**
255/39 • • • • with hydroxy groups esterified by derivatives of 2,2-dimethylcyclopropane carboxylic acids, e.g. chrysanthemumic acids **[5, 2006.01]**
255/40 • • • the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5, 2006.01]**
255/41 • • • the carbon skeleton being further substituted by carboxyl groups, other than cyano groups **[5, 2006.01]**
255/42 • • • the carbon skeleton being further substituted by singly-bound nitrogen atoms, not being further bound to other hetero atoms **[5, 2006.01]**
255/43 • • • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**
255/44 • • • • at least one of the singly-bound nitrogen atoms being acylated **[5, 2006.01]**
255/45 • having cyano groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**
255/46 • • to carbon atoms of non-condensed rings **[5, 2006.01]**
255/47 • • to carbon atoms of rings being part of condensed ring systems **[5, 2006.01]**
255/48 • • to carbon atoms of 2,2-dimethylcyclopropane rings, e.g. nitrile of chrysanthemumic acids **[5, 2006.01]**
255/49 • having cyano groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5, 2006.01]**
255/50 • • to carbon atoms of non-condensed six-membered aromatic rings **[5, 2006.01]**
255/51 • • • containing at least two cyano groups bound to the carbon skeleton **[5, 2006.01]**
255/52 • • to carbon atoms of six-membered aromatic rings being part of condensed ring systems **[5, 2006.01]**
255/53 • • containing cyano groups and hydroxy groups bound to the carbon skeleton **[5, 2006.01]**
255/54 • • containing cyano groups and etherified hydroxy groups bound to the carbon skeleton **[5, 2006.01]**
255/55 • • containing cyano groups and esterified hydroxy groups bound to the carbon skeleton **[5, 2006.01]**
255/56 • • containing cyano groups and doubly-bound oxygen atoms bound to the carbon skeleton **[5, 2006.01]**
255/57 • • containing cyano groups and carboxyl groups, other than cyano groups, bound to the carbon skeleton **[5, 2006.01]**
255/58 • • containing cyano groups and singly-bound nitrogen atoms, not being further bound to other hetero atoms, bound to the carbon skeleton **[5, 2006.01]**

255/59 • • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

255/60 • • • at least one of the singly-bound nitrogen atoms being acylated **[5, 2006.01]**

255/61 • containing cyano groups and nitrogen atoms being part of imino groups bound to the same carbon skeleton **[5, 2006.01]**

255/62 • containing cyano groups and oxygen atoms being part of oxyimino groups bound to the same carbon skeleton **[5, 2006.01]**

255/63 • containing cyano groups and nitrogen atoms further bound to other hetero atoms, other than oxygen atoms of nitro or nitroso groups, bound to the same carbon skeleton **[5, 2006.01]**

255/64 • • with the nitrogen atoms further bound to oxygen atoms **[5, 2006.01]**

255/65 • • with the nitrogen atoms further bound to nitrogen atoms **[5, 2006.01]**

255/66 • • • having cyano groups and nitrogen atoms being part of hydrazine or hydrazone groups bound to the same carbon skeleton **[5, 2006.01]**

255/67 • • • having cyano groups and azido groups bound to the same carbon skeleton **[5, 2006.01]**

257/00 Compounds containing carboxyl groups, the doubly-bound oxygen atom of a carboxyl group being replaced by a doubly-bound nitrogen atom, this nitrogen atom not being further bound to an oxygen atom, e.g. imino-ethers, amidines [5, 2006.01]

257/02 • with replacement of the other oxygen atom of the carboxyl group by halogen atoms, e.g. imino-halides **[5, 2006.01]**

257/04 • without replacement of the other oxygen atom of the carboxyl group, e.g. imino-ethers **[5, 2006.01]**

257/06 • • having carbon atoms of imino-carboxyl groups bound to hydrogen atoms, to acyclic carbon atoms, or to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

257/08 • • having carbon atoms of imino-carboxyl groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

257/10 • with replacement of the other oxygen atom of the carboxyl group by nitrogen atoms, e.g. amidines **[5, 2006.01]**

257/12 • • having carbon atoms of amidino groups bound to hydrogen atoms **[5, 2006.01]**

257/14 • • having carbon atoms of amidino groups bound to acyclic carbon atoms **[5, 2006.01]**

257/16 • • having carbon atoms of amidino groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

257/18 • • having carbon atoms of amidino groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

257/20 • • having nitrogen atoms of amidino groups acylated **[5, 2006.01]**

257/22 • • having nitrogen atoms of amidino groups further bound to nitrogen atoms, e.g. hydrazidines **[5, 2006.01]**

259/00 Compounds containing carboxyl groups, an oxygen atom of a carboxyl group being replaced by a nitrogen atom, this nitrogen atom being further bound to an oxygen atom and not being part of nitro or nitroso groups [5, 2006.01]

259/02 • with replacement of the other oxygen atom of the carboxyl group by halogen atoms **[5, 2006.01]**

259/04 • without replacement of the other oxygen atom of the carboxyl group, e.g. hydroxamic acids **[5, 2006.01]**

259/06 • • having carbon atoms of hydroxamic groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

259/08 • • having carbon atoms of hydroxamic groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

259/10 • • having carbon atoms of hydroxamic groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

259/12 • with replacement of the other oxygen atom of the carboxyl group by nitrogen atoms, e.g. N-hydroxyamidines **[5, 2006.01]**

259/14 • • having carbon atoms of hydroxyamidine groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

259/16 • • having carbon atoms of hydroxyamidine groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

259/18 • • having carbon atoms of hydroxyamidine groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

259/20 • • with at least one nitrogen atom of hydroxyamidine groups bound to another nitrogen atom **[5, 2006.01]**

261/00 Derivatives of cyanic acid [5, 2006.01]

261/02 • Cyanates **[5, 2006.01]**

261/04 • Cyanamides (unsubstituted cyanamide C01C 3/16) **[5, 2006.01]**

263/00 Preparation of derivatives of isocyanic acid [5, 2006.01]

263/02 • by reaction of halides with isocyanic acid or its derivatives **[5, 2006.01]**

263/04 • from or via carbamates or carbamoyl halides **[5, 2006.01]**

263/06 • from or via ureas **[5, 2006.01]**

263/08 • from or via heterocyclic compounds, e.g. pyrolysis of furoxans **[5, 2006.01]**

263/10 • by reaction of amines with carbonyl halides, e.g. with phosgene **[5, 2006.01]**

263/12 • from or via nitrogen analogues of carboxylic acids, e.g. from hydroxamic acids, involving a Hofmann, Curtius or Lossen-type rearrangement (C07C 209/56 takes precedence) **[5, 2006.01]**

263/14 • by catalytic reaction of nitro compounds with carbon monoxide **[5, 2006.01]**

263/16 • by reactions not involving the formation of isocyanate groups **[5, 2006.01]**

263/18 • Separation; Purification; Stabilisation; Use of additives **[5, 2006.01]**

263/20 • • Separation; Purification **[5, 2006.01]**

265/00 Derivatives of isocyanic acid [5, 2006.01]

265/02 • having isocyanate groups bound to acyclic carbon atoms **[5, 2006.01]**

265/04 • • of a saturated carbon skeleton **[5, 2006.01]**

265/06 • • of an unsaturated carbon skeleton **[5, 2006.01]**

265/08 • • • the carbon skeleton containing rings **[5, 2006.01]**

265/10 • having isocyanate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

265/12 • having isocyanate groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

265/14 • containing at least two isocyanate groups bound to the same carbon skeleton **[5, 2006.01]**

265/16 • having isocyanate groups acylated **[5, 2006.01]**

267/00 Carbodiimides [5, 2006.01]

269/00 Preparation of derivatives of carbamic acid, i.e. compounds containing any of the groups

the nitrogen atom not being part of nitro or nitroso groups [5, 2006.01]

269/02 • from isocyanates with formation of carbamate groups **[5, 2006.01]**

269/04 • from amines with formation of carbamate groups **[5, 2006.01]**

269/06 • by reactions not involving the formation of carbamate groups **[5, 2006.01]**

269/08 • Separation; Purification; Stabilisation; Use of additives **[5, 2006.01]**

271/00 Derivatives of carbamic acid, i.e. compounds containing any of the groups

the nitrogen atom not being part of nitro or nitroso groups [5, 2006.01]

271/02 • Carbamic acids; Salts of carbamic acids (unsubstituted carbamic acid or salts thereof C01B 21/12) **[5, 2006.01]**

271/04 • Carbamic acid halides **[5, 2006.01]**

271/06 • Esters of carbamic acids **[5, 2006.01]**

271/08 • • having oxygen atoms of carbamate groups bound to acyclic carbon atoms **[5, 2006.01]**

271/10 • • • with the nitrogen atoms of the carbamate groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

271/12 • • • • to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5, 2006.01]**

271/14 • • • • to carbon atoms of hydrocarbon radicals substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**

271/16 • • • • to carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5, 2006.01]**

271/18 • • • • to carbon atoms of hydrocarbon radicals substituted by doubly-bound oxygen atoms **[5, 2006.01]**

271/20 • • • • to carbon atoms of hydrocarbon radicals substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**

271/22 • • • • to carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5, 2006.01]**

271/24 • • • with the nitrogen atom of at least one of the carbamate groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

271/26 • • • with the nitrogen atom of at least one of the carbamate groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

271/28 • • • • to a carbon atom of a non-condensed six-membered aromatic ring **[5, 2006.01]**

271/30 • • • • to a carbon atom of a six-membered aromatic ring being part of a condensed ring system **[5, 2006.01]**

271/32 • • having oxygen atoms of carbamate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

271/34 • • • with the nitrogen atoms of the carbamate groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

271/36 • • • with the nitrogen atom of at least one of the carbamate groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

271/38 • • • with the nitrogen atom of at least one of the carbamate groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

271/40 • • having oxygen atoms of carbamate groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

271/42 • • • with the nitrogen atoms of the carbamate groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

271/44 • • • • to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5, 2006.01]**

271/46 • • • • to carbon atoms of hydrocarbon radicals substituted by halogen atoms or by nitro or nitroso groups **[5, 2006.01]**

271/48 • • • • to carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5, 2006.01]**

271/50 • • • • to carbon atoms of hydrocarbon radicals substituted by doubly-bound oxygen atoms **[5, 2006.01]**

271/52 • • • • to carbon atoms of hydrocarbon radicals substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**

271/54 • • • • to carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5, 2006.01]**

271/56 • • • with the nitrogen atom of at least one of the carbamate groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

271/58 • • • with the nitrogen atom of at least one of the carbamate groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

271/60 • having oxygen atoms of carbamate groups bound to nitrogen atoms **[5, 2006.01]**

271/62 • Compounds containing any of the groups

X being a hetero atom, Y being any atom, e.g. N-acylcarbamates **[5, 2006.01]**

271/64 • • Y being a hydrogen or a carbon atom, e.g. benzoylcarbamates **[5, 2006.01]**

271/66 • • Y being a hetero atom **[5, 2006.01]**

271/68 • Compounds containing any of the groups

[5, 2006.01]

273/00 **Preparation of urea or its derivatives, i.e. compounds containing any of the groups** **the nitrogen atoms not being part of nitro or nitroso groups [5, 2006.01]**

273/02 • of urea, its salts, complexes or addition compounds **[5, 2006.01]**

273/04 • • from carbon dioxide and ammonia **[5, 2006.01]**

273/06 • • from cyanamide or calcium cyanamide **[5, 2006.01]**

273/08 • • from ammoniacal liquor **[5, 2006.01]**

273/10 • • combined with the synthesis of ammonia **[5, 2006.01]**

273/12 • • combined with the synthesis of melamine **[5, 2006.01]**

273/14 • • Separation; Purification; Stabilisation; Use of additives **[5, 2006.01]**

273/16 • • • Separation; Purification **[5, 2006.01]**

273/18 • of substituted ureas **[5, 2006.01]**

275/00 **Derivatives of urea, i.e. compounds containing any of the groups** **the nitrogen atoms not being part of nitro or nitroso groups [5, 2006.01]**

275/02 • Salts; Complexes; Addition compounds **[5, 2006.01]**

275/04 • having nitrogen atoms of urea groups bound to acyclic carbon atoms **[5, 2006.01]**

275/06 • • of an acyclic and saturated carbon skeleton **[5, 2006.01]**

275/08 • • • being further substituted by halogen atoms, or by nitro or nitroso groups **[5, 2006.01]**

275/10 • • • being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

275/12 • • • being further substituted by doubly-bound oxygen atoms **[5, 2006.01]**

275/14 • • • being further substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**

275/16 • • • being further substituted by carboxyl groups **[5, 2006.01]**

275/18 • • of a saturated carbon skeleton containing rings **[5, 2006.01]**

275/20 • • of an unsaturated carbon skeleton **[5, 2006.01]**

275/22 • • • containing rings other than six-membered aromatic rings **[5, 2006.01]**

275/24 • • • containing six-membered aromatic rings **[5, 2006.01]**

275/26 • having nitrogen atoms of urea groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

275/28 • having nitrogen atoms of urea groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5, 2006.01]**

275/30 • • being further substituted by halogen atoms, or by nitro or nitroso groups **[5, 2006.01]**

275/32 • • being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

275/34 • • • having nitrogen atoms of urea groups and singly-bound oxygen atoms bound to carbon atoms of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

275/36 • • • • with at least one of the oxygen atoms further bound to a carbon atom of a six-membered aromatic ring, e.g. N-aryloxyphenylureas **[5, 2006.01]**

275/38 • • being further substituted by doubly-bound oxygen atoms **[5, 2006.01]**

275/40 • • being further substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**

275/42 • • being further substituted by carboxyl groups **[5, 2006.01]**

275/44 • having nitrogen atoms of urea groups doubly-bound to carbon atoms **[5, 2006.01]**

275/46 • containing any of the groups X being a hetero atom, Y being any atom, e.g. acylureas **[5, 2006.01]**

275/48 • • Y being a hydrogen or a carbon atom **[5, 2006.01]**

275/50 • • • Y being a hydrogen or an acyclic carbon atom **[5, 2006.01]**

275/52 • • • Y being a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

275/54 • • • Y being a carbon atom of a six-membered aromatic ring, e.g. benzoylureas **[5, 2006.01]**

275/56 • • • X being a nitrogen atom **[5, 2006.01]**

275/58 • • Y being a hetero atom **[5, 2006.01]**

275/60 • • • Y being an oxygen atom, e.g. allophanic acids **[5, 2006.01]**

275/62 • • • Y being a nitrogen atom, e.g. biuret **[5, 2006.01]**

275/64 • having nitrogen atoms of urea groups singly-bound to oxygen atoms **[5, 2006.01]**

275/66 • having nitrogen atoms of urea groups bound to halogen atoms or to nitro or nitroso groups **[5, 2006.01]**

275/68 • • N-nitroso ureas **[5, 2006.01]**

275/70 • Compounds containing any of the groups e.g. isoureas **[5, 2006.01]**

277/00 **Preparation of guanidine or its derivatives, i.e. compounds containing the group** **the singly-bound nitrogen atoms not being part of nitro or nitroso groups [5, 2006.01]**

277/02 • of guanidine from cyanamide, calcium cyanamide or dicyandiamides **[5, 2006.01]**

277/04 • of guanidine from ammonium thiocyanate **[5, 2006.01]**

277/06 • Purification or separation of guanidine **[5, 2006.01]**

277/08 • of substituted guanidines **[5, 2006.01]**

279/00 **Derivatives of guanidine, i.e. compounds containing the group** **the singly-bound nitrogen atoms not being part of nitro or nitroso groups [5, 2006.01]**

279/02 • Guanidine; Salts, complexes or addition compounds thereof **[5, 2006.01]**

279/04 • having nitrogen atoms of guanidine groups bound to acyclic carbon atoms of a carbon skeleton **[5, 2006.01]**

279/06 • • being further substituted by halogen atoms, or by nitro or nitroso groups **[5, 2006.01]**

279/08 • • being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

279/10 • • being further substituted by doubly-bound oxygen atoms **[5, 2006.01]**

279/12 • • being further substituted by nitrogen atoms not being part of nitro or nitroso groups **[5, 2006.01]**

279/14 • • being further substituted by carboxyl groups **[5, 2006.01]**

279/16 • having nitrogen atoms of guanidine groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

279/18 • having nitrogen atoms of guanidine groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

279/20 • containing any of the groups

X being a hetero atom, Y being any atom, e.g. acylguanidines **[5, 2006.01]**

279/22 • • Y being a hydrogen or a carbon atom, e.g. benzoylguanidines **[5, 2006.01]**

279/24 • • Y being a hetero atom **[5, 2006.01]**

279/26 • • • X and Y being nitrogen atoms, i.e. biguanides **[5, 2006.01]**

279/28 • having nitrogen atoms of guanidine groups bound to cyano groups, e.g. cyanoguanidines, dicyandiamides **[5, 2006.01]**

279/30 • having nitrogen atoms of guanidine groups bound to nitro or nitroso groups **[5, 2006.01]**

279/32 • • N-nitroguanidines **[5, 2006.01]**

279/34 • • • N-nitroguanidine **[5, 2006.01]**

279/36 • • • Substituted N-nitroguanidines **[5, 2006.01]**

281/00 Derivatives of carbonic acid containing functional groups covered by groups C07C 269/00-C07C 279/00 in which at least one nitrogen atom of these functional groups is further bound to another nitrogen atom not being part of a nitro or nitroso group [5, 2006.01]

281/02 • Compounds containing any of the groups

e.g. carbazates **[5, 2006.01]**

281/04 • • the other nitrogen atom being further doubly-bound to a carbon atom **[5, 2006.01]**

281/06 • Compounds containing any of the groups

e.g. semicarbazides **[5, 2006.01]**

281/08 • • the other nitrogen atom being further doubly-bound to a carbon atom, e.g. semicarbazones **[5, 2006.01]**

281/10 • • • the carbon atom being further bound to an acyclic carbon atom or to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

281/12 • • • the carbon atom being part of a ring other than a six-membered aromatic ring **[5, 2006.01]**

281/14 • • • the carbon atom being further bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

281/16 • Compounds containing any of the groups

e.g. aminoguanidine **[5, 2006.01]**

281/18 • • the other nitrogen atom being further doubly-bound to a carbon atom, e.g. guanylhydrazones **[5, 2006.01]**

281/20 • the two nitrogen atoms of the functional groups being doubly-bound to each other, e.g. azoformamide **[5, 2006.01]**

291/00 Compounds containing carbon and nitrogen and having functional groups not covered by groups C07C 201/00-C07C 281/00 [5, 2006.01]

291/02 • containing nitrogen-oxide bonds **[5, 2006.01]**

291/04 • • containing amino-oxide bonds **[5, 2006.01]**

291/06 • • Nitrile oxides **[5, 2006.01]**

291/08 • • Azoxy compounds **[5, 2006.01]**

291/10 • Isocyanides **[5, 2006.01]**

291/12 • Fulminates **[5, 2006.01]**

291/14 • containing at least one carbon atom bound to a nitro or nitroso group and doubly-bound to a hetero atom **[5, 2006.01]**

<u>Compounds containing carbon together with sulfur, selenium or tellurium, with or without hydrogen, halogens, oxygen or nitrogen [5]</u>

301/00 Esters of sulfurous acid [5, 2006.01]

301/02 • having sulfite groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

303/00 Preparation of esters or amides of sulfuric acids; Preparation of sulfonic acids or of their esters, halides, anhydrides or amides [5, 2006.01]

303/02 • of sulfonic acids or halides thereof **[5, 2006.01]**

303/04 • • by substitution of hydrogen atoms by sulfo or halosulfonyl groups **[5, 2006.01]**

303/06 • • • by reaction with sulfuric acid or sulfur trioxide **[5, 2006.01]**

303/08 • • • by reaction with halogenosulfonic acids **[5, 2006.01]**

303/10 • • • by reaction with sulfur dioxide and halogen or by reaction with sulfuryl halides **[5, 2006.01]**

303/12 • • • by reaction with thionylhalides **[5, 2006.01]**

303/14 • • by sulfoxidation, i.e. by reaction with sulfur dioxide and oxygen with formation of sulfo or halosulfonyl groups **[5, 2006.01]**

303/16 • • by oxidation of thiols, sulfides, hydropolysulfides, or polysulfides with formation of sulfo or halosulfonyl groups **[5, 2006.01]**

303/18 • • by reaction of sulfides with compounds having functional groups with formation of sulfo or halosulfonyl groups **[5, 2006.01]**

303/20 • • by addition of sulfurous acid or salts thereof to compounds having carbon-to-carbon multiple bonds **[5, 2006.01]**

303/22 • • from sulfonic acids by reactions not involving the formation of sulfo or halosulfonyl groups **[5, 2006.01]**

303/24 • of esters of sulfuric acids **[5, 2006.01]**

303/26 • of esters of sulfonic acids **[5, 2006.01]**

303/28 • • by reaction of hydroxy compounds with sulfonic acids or derivatives thereof **[5, 2006.01]**

303/30 • • by reactions not involving the formation of esterified sulfo groups **[5, 2006.01]**

303/32 • of salts of sulfonic acids **[5, 2006.01]**

303/34 • of amides of sulfuric acids **[5, 2006.01]**

303/36 • of amides of sulfonic acids **[5, 2006.01]**

303/38 • • by reaction of ammonia or amines with sulfonic acids, or with esters, anhydrides, or halides thereof **[5, 2006.01]**

303/40 • • by reactions not involving the formation of sulfonamide groups **[5, 2006.01]**

303/42 • Separation; Purification; Stabilisation; Use of additives **[5, 2006.01]**

303/44 • • Separation; Purification **[5, 2006.01]**

303/46 • • • from by-products of refining mineral oils with sulfuric acid **[5, 2006.01]**

305/00 Esters of sulfuric acids [5, 2006.01]

305/02 • having oxygen atoms of sulfate groups bound to acyclic carbon atoms of a carbon skeleton **[5, 2006.01]**

305/04 • • being acyclic and saturated **[5, 2006.01]**

305/06 • • • Hydrogenosulfates **[5, 2006.01]**

305/08 • • • Dialkylsulfates; Substituted dialkylsulfates **[5, 2006.01]**

305/10 • • • being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

305/12 • • being saturated and containing rings **[5, 2006.01]**

305/14 • • being acyclic and unsaturated **[5, 2006.01]**

305/16 • • being unsaturated and containing rings **[5, 2006.01]**

305/18 • • • containing six-membered aromatic rings **[5, 2006.01]**

305/20 • having oxygen atoms of sulfate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

305/22 • having oxygen atoms of sulfate groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

305/24 • • of non-condensed six-membered aromatic rings **[5, 2006.01]**

305/26 • Halogenosulfates, i.e. monoesters of halogenosulfuric acids **[5, 2006.01]**

307/00 Amides of sulfuric acids, i.e. compounds having singly-bound oxygen atoms of sulfate groups replaced by nitrogen atoms, not being part of nitro or nitroso groups [5, 2006.01]

307/02 • Monoamides of sulfuric acids or esters thereof, e.g. sulfamic acids **[5, 2006.01]**

307/04 • Diamides of sulfuric acids **[5, 2006.01]**

307/06 • • having nitrogen atoms of the sulfamide groups bound to acyclic carbon atoms **[5, 2006.01]**

307/08 • • having nitrogen atoms of the sulfamide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

307/10 • • having nitrogen atoms of the sulfamide groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

309/00 Sulfonic acids; Halides, esters, or anhydrides thereof [5, 2006.01]

309/01 • Sulfonic acids **[5, 2006.01]**

309/02 • • having sulfo groups bound to acyclic carbon atoms **[5, 2006.01]**

309/03 • • • of an acyclic saturated carbon skeleton **[5, 2006.01]**

309/04 • • • • containing only one sulfo group **[5, 2006.01]**

309/05 • • • • containing at least two sulfo groups bound to the carbon skeleton **[5, 2006.01]**

309/06 • • • • containing halogen atoms, or nitro or nitroso groups bound to the carbon skeleton **[5, 2006.01]**

309/07 • • • • containing oxygen atoms bound to the carbon skeleton **[5, 2006.01]**

309/08 • • • • • containing hydroxy groups bound to the carbon skeleton **[5, 2006.01]**

309/09 • • • • • containing etherified hydroxy groups bound to the carbon skeleton **[5, 2006.01]**

309/10 • • • • • • with the oxygen atom of at least one of the etherified hydroxy groups further bound to an acyclic carbon atom **[5, 2006.01]**

309/11 • • • • • • with the oxygen atom of at least one of the etherified hydroxy groups further bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

309/12 • • • • • containing esterified hydroxy groups bound to the carbon skeleton **[5, 2006.01]**

309/13 • • • • containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5, 2006.01]**

309/14 • • • • • containing amino groups bound to the carbon skeleton **[5, 2006.01]**

309/15 • • • • • • the nitrogen atom of at least one of the amino groups being part of any of the groups X being a hetero atom, Y being any atom **[5, 2006.01]**

309/16 • • • • • containing doubly-bound nitrogen atoms bound to the carbon skeleton **[5, 2006.01]**

309/17 • • • • containing carboxyl groups bound to the carbon skeleton **[5, 2006.01]**

309/18 • • • • • containing amino groups bound to the same carbon skeleton **[5, 2006.01]**

309/19 • • • of a saturated carbon skeleton containing rings **[5, 2006.01]**

309/20 • • • of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

309/21 • • • • containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5, 2006.01]**

309/22 • • • • containing carboxyl groups bound to the carbon skeleton **[5, 2006.01]**

309/23 • • • of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5, 2006.01]**

309/24 • • • of a carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

309/25 • • having sulfo groups bound to carbon atoms of rings other than six-membered aromatic rings of a carbon skeleton **[5, 2006.01]**

309/26 • • • containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5, 2006.01]**

309/27 • • • containing carboxyl groups bound to the carbon skeleton **[5, 2006.01]**

309/28 • • having sulfo groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5, 2006.01]**

309/29 • • • of non-condensed six-membered aromatic rings **[5, 2006.01]**

309/30 • • • • of six-membered aromatic rings substituted by alkyl groups **[5, 2006.01]**

309/31 • • • • • by alkyl groups containing at least three carbon atoms **[5, 2006.01]**

309/32 • • • • containing at least two non-condensed six-membered aromatic rings in the carbon skeleton **[5, 2006.01]**

309/33 • • • of six-membered aromatic rings being part of condensed ring systems **[5, 2006.01]**

309/34 • • • • formed by two rings **[5, 2006.01]**

309/35 • • • • • Naphthalene sulfonic acids **[5, 2006.01]**

309/36 • • • • • • substituted by alkyl groups **[5, 2006.01]**

309/37 • • • • • • • by alkyl groups containing at least three carbon atoms **[5, 2006.01]**

309/38 • • • • formed by at least three rings **[5, 2006.01]**

309/39 • • • containing halogen atoms bound to the carbon skeleton **[5, 2006.01]**

309/40 • • • containing nitro or nitroso groups bound to the carbon skeleton **[5, 2006.01]**

309/41 • • • containing singly-bound oxygen atoms bound to the carbon skeleton **[5, 2006.01]**

309/42 • • • • having the sulfo groups bound to carbon atoms of non-condensed six-membered aromatic rings **[5, 2006.01]**

309/43 • • • • having at least one of the sulfo groups bound to a carbon atom of a six-membered aromatic ring being part of a condensed ring system **[5, 2006.01]**

309/44 • • • containing doubly-bound oxygen atoms bound to the carbon skeleton **[5, 2006.01]**

309/45 • • • containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5, 2006.01]**

309/46 • • • • having the sulfo groups bound to carbon atoms of non-condensed six-membered aromatic rings **[5, 2006.01]**

309/47 • • • • having at least one of the sulfo groups bound to a carbon atom of a six-membered aromatic ring being part of a condensed ring system **[5, 2006.01]**

309/48 • • • • the carbon skeleton being further substituted by halogen atoms **[5, 2006.01]**

309/49 • • • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

309/50 • • • • • having at least one of the sulfo groups bound to a carbon atom of a six-membered aromatic ring being part of a condensed ring system **[5, 2006.01]**

309/51 • • • • at least one of the nitrogen atoms being part of any of the groups X being a hetero atom, Y being any atom **[5, 2006.01]**

309/52 • • • • the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5, 2006.01]**

309/53 • • • • • the carbon skeleton containing carbon atoms of quinone rings **[5, 2006.01]**

309/54 • • • • • • at least one of the nitrogen atoms being part of any of the groups X being a hetero atom, Y being any atom **[5, 2006.01]**

309/55 • • • • • • • Y being a hydrogen or a carbon atom **[5, 2006.01]**

309/56 • • • • • • • Y being a hetero atom **[5, 2006.01]**

309/57 • • • containing carboxyl groups bound to the carbon skeleton **[5, 2006.01]**

309/58 • • • • Carboxylic acid groups or esters thereof **[5, 2006.01]**

309/59 • • • • Nitrogen analogues of carboxyl groups **[5, 2006.01]**

309/60 • • • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

309/61 • • • • the carbon skeleton being further substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

309/62 • • Sulfonated fats, oils or waxes of undetermined constitution **[5, 2006.01]**

309/63 • Esters of sulfonic acids **[5, 2006.01]**

309/64 • • having sulfur atoms of esterified sulfo groups bound to acyclic carbon atoms **[5, 2006.01]**

309/65 • • • of a saturated carbon skeleton **[5, 2006.01]**

309/66 • • • • Methanesulfonates **[5, 2006.01]**

309/67 • • • of an unsaturated carbon skeleton **[5, 2006.01]**

309/68 • • • of a carbon skeleton substituted by singly-bound oxygen atoms **[5, 2006.01]**

309/69 • • • of a carbon skeleton substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

309/70 • • • of a carbon skeleton substituted by carboxyl groups **[5, 2006.01]**

309/71 • • having sulfur atoms of esterified sulfo groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

309/72 • • having sulfur atoms of esterified sulfo groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5, 2006.01]**

309/73 • • • to carbon atoms of non-condensed six-membered aromatic rings **[5, 2006.01]**

309/74 • • • to carbon atoms of six-membered aromatic rings being part of condensed ring systems **[5, 2006.01]**

309/75 • • • containing singly-bound oxygen atoms bound to the carbon skeleton **[5, 2006.01]**

309/76 • • • containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5, 2006.01]**

309/77 • • • containing carboxyl groups bound to the carbon skeleton **[5, 2006.01]**

309/78 • Halides of sulfonic acids **[5, 2006.01]**

309/79 • • having halosulfonyl groups bound to acyclic carbon atoms **[5, 2006.01]**

309/80 • • • of a saturated carbon skeleton **[5, 2006.01]**

309/81 • • • of an unsaturated carbon skeleton **[5, 2006.01]**

309/82 • • • of a carbon skeleton substituted by singly-bound oxygen atoms **[5, 2006.01]**

309/83 • • • of a carbon skeleton substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

309/84 • • • of a carbon skeleton substituted by carboxyl groups **[5, 2006.01]**

309/85 • • having halosulfonyl groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

309/86 • • having halosulfonyl groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5, 2006.01]**

309/87 • • • containing singly-bound oxygen atoms bound to the carbon skeleton **[5, 2006.01]**

309/88 • • • containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5, 2006.01]**

309/89 • • • containing carboxyl groups bound to the carbon skeleton **[5, 2006.01]**

311/00 Amides of sulfonic acids, i.e. compounds having singly-bound oxygen atoms of sulfo groups replaced by nitrogen atoms, not being part of nitro or nitroso groups [5, 2006.01]

311/01 • Sulfonamides having sulfur atoms of sulfonamide groups bound to acyclic carbon atoms **[5, 2006.01]**

311/02 • • of an acyclic saturated carbon skeleton **[5, 2006.01]**

311/03 • • • having the nitrogen atoms of the sulfonamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

311/04 • • • • to acyclic carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5, 2006.01]**

311/05 • • • • to acyclic carbon atoms of hydrocarbon radicals substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

311/06 • • • • to acyclic carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5, 2006.01]**

311/07 • • • having the nitrogen atom of at least one of the sulfonamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

311/08 • • • having the nitrogen atom of at least one of the sulfonamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

311/09 • • • the carbon skeleton being further substituted by at least two halogen atoms **[5, 2006.01]**

311/10 • • of a saturated carbon skeleton containing rings **[5, 2006.01]**

311/11 • • of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

311/12 • • of an unsaturated carbon skeleton containing rings **[5, 2006.01]**

311/13 • • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

311/14 • Sulfonamides having sulfur atoms of sulfonamide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

311/15 • Sulfonamides having sulfur atoms of sulfonamide groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

311/16 • • having the nitrogen atom of at least one of the sulfonamide groups bound to hydrogen atoms or to an acyclic carbon atom **[5, 2006.01]**

311/17 • • • to an acyclic carbon atom of a hydrocarbon radical substituted by singly-bound oxygen atoms **[5, 2006.01]**

311/18 • • • to an acyclic carbon atom of a hydrocarbon radical substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

311/19 • • • to an acyclic carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5, 2006.01]**

311/20 • • having the nitrogen atom of at least one of the sulfonamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

311/21 • • having the nitrogen atom of at least one of the sulfonamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

311/22 • Sulfonamides, the carbon skeleton of the acid part being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

311/23 • • having the sulfur atoms of the sulfonamide groups bound to acyclic carbon atoms **[5, 2006.01]**

311/24 • • • of an acyclic saturated carbon skeleton **[5, 2006.01]**

311/25 • • • of a saturated carbon skeleton containing rings **[5, 2006.01]**

311/26 • • • of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

311/27 • • • of an unsaturated carbon skeleton containing rings **[5, 2006.01]**

311/28 • • having the sulfur atom of at least one of the sulfonamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

311/29 • • having the sulfur atom of at least one of the sulfonamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

311/30 • Sulfonamides, the carbon skeleton of the acid part being further substituted by singly-bound nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

311/31 • • having the sulfur atoms of the sulfonamide groups bound to acyclic carbon atoms **[5, 2006.01]**

311/32 • • • of an acyclic saturated carbon skeleton **[5, 2006.01]**

311/33 • • • of a saturated carbon skeleton containing rings **[5, 2006.01]**

311/34 • • • of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

311/35 • • • of an unsaturated carbon skeleton containing rings **[5, 2006.01]**

311/36 • • having the sulfur atom of at least one of the sulfonamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

311/37 • • having the sulfur atom of at least one of the sulfonamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

311/38 • • • having sulfur atoms of sulfonamide groups and amino groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5, 2006.01]**

311/39 • • • • having the nitrogen atom of at least one of the sulfonamide groups bound to hydrogen atoms or to an acyclic carbon atom **[5, 2006.01]**

311/40 • • • • • to an acyclic carbon atom of a hydrocarbon radical substituted by singly-bound oxygen atoms **[5, 2006.01]**

311/41 • • • • • to an acyclic carbon atom of a hydrocarbon radical substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

311/42 • • • • • to an acyclic carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5, 2006.01]**

311/43 • • • • having the nitrogen atom of at least one of the sulfonamide groups bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

311/44 • • • • having the nitrogen atom of at least one of the sulfonamide groups bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

311/45 • • at least one of the singly-bound nitrogen atoms being part of any of the groups

X being a hetero atom, Y being any atom, e.g. N-acylaminosulfonamides **[5, 2006.01]**

311/46 • • • Y being a hydrogen or a carbon atom **[5, 2006.01]**

311/47 • • • Y being a hetero atom **[5, 2006.01]**

311/48 • having nitrogen atoms of sulfonamide groups further bound to another hetero atom **[5, 2006.01]**

311/49 • • to nitrogen atoms **[5, 2006.01]**

311/50 • Compounds containing any of the groups

X being a hetero atom, Y being any atom **[5, 2006.01]**

311/51 • • Y being a hydrogen or a carbon atom **[5, 2006.01]**

311/52 • • Y being a hetero atom **[5, 2006.01]**

311/53 • • • X and Y not being nitrogen atoms, e.g. N-sulfonylcarbamic acid **[5, 2006.01]**

311/54 • • • either X or Y, but not both, being nitrogen atoms, e.g. N-sulfonylurea **[5, 2006.01]**

311/55 • • • • having sulfur atoms of the sulfonylurea groups bound to acyclic carbon atoms **[5, 2006.01]**

311/56 • • • • having sulfur atoms of the sulfonylurea groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

311/57 • • • • having sulfur atoms of the sulfonylurea groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

311/58 • • • • • having nitrogen atoms of the sulfonylurea groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

311/59 • • • • • having nitrogen atoms of the sulfonylurea groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

311/60 • • • • • having nitrogen atoms of the sulfonylurea groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

311/61 • • • • • having nitrogen atoms of the sulfonylurea groups further bound to another hetero atom **[5, 2006.01]**

311/62 • • • • • having nitrogen atoms of the sulfonylurea groups further acylated **[5, 2006.01]**

311/63 • • • • N-sulfonylisoureas **[5, 2006.01]**

311/64 • • • X and Y being nitrogen atoms, e.g. N-sulfonylguanidine **[5, 2006.01]**

311/65 • N-sulfonylisocyanates **[5, 2006.01]**

313/00 Sulfinic acids; Sulfenic acids; Halides, esters or anhydrides thereof; Amides of sulfinic or sulfenic acids, i.e. compounds having singly-bound oxygen atoms of sulfinic or sulfenic groups replaced by nitrogen atoms, not being part of nitro or nitroso groups [5, 2006.01]

313/02 • Sulfinic acids; Derivatives thereof **[5, 2006.01]**

313/04 • • Sulfinic acids; Esters thereof **[5, 2006.01]**

313/06 • • Sulfinamides **[5, 2006.01]**

313/08 • Sulfenic acids; Derivatives thereof **[5, 2006.01]**

313/10 • • Sulfenic acids; Esters thereof **[5, 2006.01]**

313/12 • • • having sulfur atoms of sulfenic groups bound to acyclic carbon atoms **[5, 2006.01]**

313/14 • • • having sulfur atoms of sulfenic groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

313/16 • • • having sulfur atoms of sulfenic groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

313/18 • • Sulfenamides **[5, 2006.01]**

313/20 • • • having sulfur atoms of sulfenamide groups bound to acyclic carbon atoms **[5, 2006.01]**

313/22 • • • having sulfur atoms of sulfenamide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

313/24 • • • having sulfur atoms of sulfenamide groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

313/26 • • • Compounds containing any of the groups

X being a hetero atom, Y being any atom **[5, 2006.01]**

313/28 • • • • Y being a hydrogen or a carbon atom **[5, 2006.01]**

313/30 • • • • Y being a hetero atom **[5, 2006.01]**

313/32 • • • • • X and Y not being nitrogen atoms, e.g. N-sulfenylcarbamic acid **[5, 2006.01]**

313/34 • • • • • either X or Y, but not both, being nitrogen atoms, e.g. N-sulfenylureas **[5, 2006.01]**

313/36 • • • having nitrogen atoms of sulfenamide groups further bound to other hetero atoms **[5, 2006.01]**

313/38 • • • N-sulfenylisocyanates **[5, 2006.01]**

315/00 Preparation of sulfones; Preparation of sulfoxides [5, 2006.01]

315/02 • by formation of sulfone or sulfoxide groups by oxidation of sulfides, or by formation of sulfone groups by oxidation of sulfoxides **[5, 2006.01]**

315/04 • by reactions not involving the formation of sulfone or sulfoxide groups **[5, 2006.01]**

315/06 • Separation; Purification; Stabilisation; Use of additives **[5, 2006.01]**

317/00 Sulfones; Sulfoxides [5, 2006.01]

317/02 • having sulfone or sulfoxide groups bound to acyclic carbon atoms **[5, 2006.01]**

317/04 • • of an acyclic saturated carbon skeleton **[5, 2006.01]**

317/06 • • of a saturated carbon skeleton containing rings **[5, 2006.01]**

317/08 • • of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

317/10 • • of an unsaturated carbon skeleton containing rings **[5, 2006.01]**

317/12 • having sulfone or sulfoxide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

317/14 • having sulfone or sulfoxide groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

317/16 • having sulfone or sulfoxide groups and singly-bound oxygen atoms bound to the same carbon skeleton **[5, 2006.01]**

317/18 • • with sulfone or sulfoxide groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

317/20 • • with sulfone or sulfoxide groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

317/22 • • with sulfone or sulfoxide groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

317/24 • having sulfone or sulfoxide groups and doubly-bound oxygen atoms bound to the same carbon skeleton **[5, 2006.01]**

317/26 • having sulfone or sulfoxide groups and nitrogen atoms, not being part of nitro or nitroso groups, bound to the same carbon skeleton **[5, 2006.01]**

317/28 • • with sulfone or sulfoxide groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

317/30 • • with sulfone or sulfoxide groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

317/32 • • with sulfone or sulfoxide groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

317/34 • • • having sulfone or sulfoxide groups and amino groups bound to carbon atoms of six-membered aromatic rings being part of the same non-condensed ring or of a condensed ring system containing that ring **[5, 2006.01]**

317/36 • • • • with the nitrogen atoms of the amino groups bound to hydrogen atoms or to carbon atoms **[5, 2006.01]**

317/38 • • • • with the nitrogen atom of at least one amino group being part of any of the groups

X being a hetero atom, Y being any atom, e.g. N-acylaminosulfones **[5, 2006.01]**

317/40 • • • • • Y being a hydrogen or a carbon atom **[5, 2006.01]**

317/42 • • • • • Y being a hetero atom **[5, 2006.01]**

317/44 • having sulfone or sulfoxide groups and carboxyl groups bound to the same carbon skeleton **[5, 2006.01]**

317/46 • • the carbon skeleton being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

317/48 • • the carbon skeleton being further substituted by singly-bound nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

317/50 • • • at least one of the nitrogen atoms being part of any of the groups

X being a hetero atom, Y being any atom **[5, 2006.01]**

319/00 Preparation of thiols, sulfides, hydropolysulfides or polysulfides [5, 2006.01]

319/02 • of thiols **[5, 2006.01]**

319/04 • • by addition of hydrogen sulfide or its salts to unsaturated compounds **[5, 2006.01]**

319/06 • • from sulfides, hydropolysulfides or polysulfides **[5, 2006.01]**

319/08 • • by replacement of hydroxy groups or etherified or esterified hydroxy groups **[5, 2006.01]**

319/10 • • • by replacement of hydroxy groups or etherified or esterified hydroxy groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

319/12 • • by reactions not involving the formation of mercapto groups **[5, 2006.01]**

319/14 • of sulfides **[5, 2006.01]**

319/16 • • by addition of hydrogen sulfide or its salts to unsaturated compounds **[5, 2006.01]**

319/18 • • by addition of thiols to unsaturated compounds **[5, 2006.01]**

319/20 • • by reactions not involving the formation of sulfide groups **[5, 2006.01]**

319/22 • of hydropolysulfides or polysulfides **[5, 2006.01]**

319/24 • • by reactions involving the formation of sulfur-to-sulfur bonds **[5, 2006.01]**

319/26 • Separation; Purification; Stabilisation; Use of additives **[5, 2006.01]**

319/28 • • Separation; Purification **[5, 2006.01]**

319/30 • • • from the by-products of refining mineral oils **[5, 2006.01]**

321/00 Thiols, sulfides, hydropolysulfides or polysulfides [5, 2006.01]

321/02 • Thiols having mercapto groups bound to acyclic carbon atoms **[5, 2006.01]**

321/04 • • of an acyclic saturated carbon skeleton **[5, 2006.01]**

321/06 • • of a saturated carbon skeleton containing rings **[5, 2006.01]**

321/08 • • of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

321/10 • • of an unsaturated carbon skeleton containing rings **[5, 2006.01]**

321/12 • Sulfides, hydropolysulfides, or polysulfides having thio groups bound to acyclic carbon atoms **[5, 2006.01]**

321/14 • • of an acyclic saturated carbon skeleton **[5, 2006.01]**

321/16 • • of a saturated carbon skeleton containing rings **[5, 2006.01]**

321/18 • • of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

321/20 • • of an unsaturated carbon skeleton containing rings **[5, 2006.01]**

321/22 • Thiols, sulfides, hydropolysulfides, or polysulfides having thio groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

321/24 • Thiols, sulfides, hydropolysulfides, or polysulfides having thio groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

321/26 • • Thiols **[5, 2006.01]**

321/28 • • Sulfides, hydropolysulfides, or polysulfides having thio groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

321/30 • • • Sulfides having the sulfur atom of at least one thio group bound to two carbon atoms of six-membered aromatic rings **[5, 2006.01]**

323/00 Thiols, sulfides, hydropolysulfides or polysulfides substituted by halogen, oxygen or nitrogen atoms, or by sulfur atoms not being part of thio groups [5, 2006.01]

323/01 • containing thio groups and halogen atoms, or nitro or nitroso groups bound to the same carbon skeleton **[5, 2006.01]**

323/02 • • having sulfur atoms of thio groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

323/03 • • • the carbon skeleton being acyclic and saturated **[5, 2006.01]**

323/04 • • • the carbon skeleton being saturated and containing rings **[5, 2006.01]**

323/05 • • • the carbon skeleton being acyclic and unsaturated **[5, 2006.01]**

323/06 • • • the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5, 2006.01]**

323/07 • • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

323/08 • • having sulfur atoms of thio groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

323/09 • • having sulfur atoms of thio groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5, 2006.01]**

323/10 • containing thio groups and singly-bound oxygen atoms bound to the same carbon skeleton **[5, 2006.01]**

323/11 • • having the sulfur atoms of the thio groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

323/12 • • • the carbon skeleton being acyclic and saturated **[5, 2006.01]**

323/13 • • • the carbon skeleton being saturated and containing rings **[5, 2006.01]**

323/14 • • • the carbon skeleton being acyclic and unsaturated **[5, 2006.01]**

323/15 • • • the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5, 2006.01]**

323/16 • • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

323/17 • • having the sulfur atom of at least one of the thio groups bound to a carbon atom of a ring other than a six-membered aromatic ring of the carbon skeleton **[5, 2006.01]**

323/18 • • having the sulfur atom of at least one of the thio groups bound to a carbon atom of a six-membered aromatic ring of the carbon skeleton **[5, 2006.01]**

323/19 • • • with singly-bound oxygen atoms bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

323/20 • • • with singly-bound oxygen atoms bound to carbon atoms of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

323/21 • • • with the sulfur atom of the thio group bound to a carbon atom of a six-membered aromatic ring being part of a condensed ring system **[5, 2006.01]**

323/22 • containing thio groups and doubly-bound oxygen atoms bound to the same carbon skeleton **[5, 2006.01]**

323/23 • containing thio groups and nitrogen atoms, not being part of nitro or nitroso groups, bound to the same carbon skeleton **[5, 2006.01]**

323/24 • • having the sulfur atoms of the thio groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

323/25 • • • the carbon skeleton being acyclic and saturated **[5, 2006.01]**

323/26 • • • the carbon skeleton being saturated and containing rings **[5, 2006.01]**

323/27 • • • the carbon skeleton being acyclic and unsaturated **[5, 2006.01]**

323/28 • • • the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5, 2006.01]**

323/29 • • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

323/30 • • having the sulfur atom of at least one of the thio groups bound to a carbon atom of a ring other than a six-membered aromatic ring of the carbon skeleton **[5, 2006.01]**

323/31 • • having the sulfur atom of at least one of the thio groups bound to a carbon atom of a six-membered aromatic ring of the carbon skeleton **[5, 2006.01]**

323/32 • • • having at least one of the nitrogen atoms bound to an acyclic carbon atom of the carbon skeleton **[5, 2006.01]**

323/33 • • • having at least one of the nitrogen atoms bound to a carbon atom of the same non-condensed six-membered aromatic ring **[5, 2006.01]**

323/34 • • • • the thio group being a mercapto group **[5, 2006.01]**

323/35 • • • • the thio group being a sulfide group **[5, 2006.01]**

323/36 • • • • • the sulfur atom of the sulfide group being further bound to an acyclic carbon atom **[5, 2006.01]**

323/37 • • • • • the sulfur atom of the sulfide group being further bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

323/38 • • • with the sulfur atom of the thio group bound to a carbon atom of a six-membered aromatic ring being part of a condensed ring system **[5, 2006.01]**

323/39 • • at least one of the nitrogen atoms being part of any of the groups X being a hetero atom, Y being any atom **[5, 2006.01]**

323/40 • • • Y being a hydrogen or a carbon atom **[5, 2006.01]**

323/41 • • • • Y being a hydrogen or an acyclic carbon atom **[5, 2006.01]**

323/42 • • • • Y being a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

323/43 • • • Y being a hetero atom **[5, 2006.01]**

323/44 • • • • X or Y being nitrogen atoms **[5, 2006.01]**

323/45 • • having at least one of the nitrogen atoms doubly-bound to the carbon skeleton **[5, 2006.01]**

323/46 • • having at least one of the nitrogen atoms, not being part of nitro or nitroso groups, further bound to other hetero atoms **[5, 2006.01]**

323/47 • • • to oxygen atoms **[5, 2006.01]**

323/48 • • • to nitrogen atoms **[5, 2006.01]**

323/49 • • • to sulfur atoms **[5, 2006.01]**

323/50 • containing thio groups and carboxyl groups bound to the same carbon skeleton **[5, 2006.01]**

323/51 • • having the sulfur atoms of the thio groups bound to acyclic carbon atoms of the carbon skeleton **[5, 2006.01]**

323/52 • • • the carbon skeleton being acyclic and saturated **[5, 2006.01]**

323/53 • • • the carbon skeleton being saturated and containing rings **[5, 2006.01]**

323/54 • • • the carbon skeleton being acyclic and unsaturated **[5, 2006.01]**

323/55 • • • the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5, 2006.01]**

323/56 • • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

323/57 • • • the carbon skeleton being further substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

323/58 • • • • with amino groups bound to the carbon skeleton **[5, 2006.01]**

323/59 • • • • • with acylated amino groups bound to the carbon skeleton **[5, 2006.01]**

323/60 • • • with the carbon atom of at least one of the carboxyl groups bound to nitrogen atoms **[5, 2006.01]**

323/61 • • having the sulfur atom of at least one of the thio groups bound to a carbon atom of a ring other than a six-membered aromatic ring of the carbon skeleton **[5, 2006.01]**

323/62 • • having the sulfur atom of at least one of the thio groups bound to a carbon atom of a six-membered aromatic ring of the carbon skeleton **[5, 2006.01]**

323/63 • • • the carbon skeleton being further substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

323/64 • containing thio groups and sulfur atoms, not being part of thio groups, bound to the same carbon skeleton **[5, 2006.01]**

323/65 • • containing sulfur atoms of sulfone or sulfoxide groups bound to the carbon skeleton **[5, 2006.01]**

323/66 • • containing sulfur atoms of sulfo, esterified sulfo or halosulfonyl groups, bound to the carbon skeleton **[5, 2006.01]**

323/67 • • containing sulfur atoms of sulfonamide groups, bound to the carbon skeleton **[5, 2006.01]**

325/00 Thioaldehydes; Thioketones; Thioquinones; Oxides thereof [5, 2006.01]

325/02 • Thioketones; Oxides thereof **[5, 2006.01]**

325/04 • Thioquinones; Oxides thereof **[5, 2006.01]**

327/00 Thiocarboxylic acids [5, 2006.01]

327/02 • Monothiocarboxylic acids **[5, 2006.01]**

327/04 • • having carbon atoms of thiocarboxyl groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

327/06 • • • to hydrogen atoms or to carbon atoms of an acyclic saturated carbon skeleton **[5, 2006.01]**

327/08 • • • to carbon atoms of a saturated carbon skeleton containing rings **[5, 2006.01]**

327/10 • • • to carbon atoms of an acyclic unsaturated carbon skeleton **[5, 2006.01]**

327/12 • • • to carbon atoms of an unsaturated carbon skeleton containing rings **[5, 2006.01]**

327/14 • • having carbon atoms of thiocarboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

327/16 • • having carbon atoms of thiocarboxyl groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

327/18 • Dithiocarboxylic acids **[5, 2006.01]**

327/20 • Esters of monothiocarboxylic acids **[5, 2006.01]**

327/22 • • having carbon atoms of esterified thiocarboxyl groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

327/24 • • having carbon atoms of esterified thiocarboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

327/26 • • having carbon atoms of esterified thiocarboxyl groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

327/28 • • having sulfur atoms of esterified thiocarboxyl groups bound to carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5, 2006.01]**

327/30 • • having sulfur atoms of esterified thiocarboxyl groups bound to carbon atoms of hydrocarbon radicals substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

327/32 • • having sulfur atoms of esterified thiocarboxyl groups bound to carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5, 2006.01]**

327/34 • • • with amino groups bound to the same hydrocarbon radicals **[5, 2006.01]**

327/36 • Esters of dithiocarboxylic acids **[5, 2006.01]**

327/38 • Amides of thiocarboxylic acids **[5, 2006.01]**

327/40 • • having carbon atoms of thiocarboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

327/42 • • • to hydrogen atoms or to carbon atoms of a saturated carbon skeleton **[5, 2006.01]**

327/44 • • • to carbon atoms of an unsaturated carbon skeleton **[5, 2006.01]**

327/46 • • having carbon atoms of thiocarboxamide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

327/48 • • having carbon atoms of thiocarboxamide groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

327/50 • • Compounds containing any of the groups

X being a hetero atom, Y being any atom **[5, 2006.01]**

327/52 • • • Y being a hydrogen or a carbon atom **[5, 2006.01]**

327/54 • • • Y being a hetero atom **[5, 2006.01]**

327/56 • • having nitrogen atoms of thiocarboxamide groups further bound to another hetero atom **[5, 2006.01]**

327/58 • Derivatives of thiocarboxylic acids, the doubly-bound oxygen atoms being replaced by nitrogen atoms, e.g. imino-thio ethers **[5, 2006.01]**

327/60 • Thiocarboxylic acids having sulfur atoms of thiocarboxyl groups further doubly-bound to oxygen atoms **[5, 2006.01]**

329/00 Thiocarbonic acids; Halides, esters or anhydrides thereof [5, 2006.01]

329/02 • Monothiocarbonic acids; Derivatives thereof **[5, 2006.01]**

329/04 • • Esters of monothiocarbonic acids **[5, 2006.01]**

329/06 • • • having sulfur atoms of thiocarbonic groups bound to acyclic carbon atoms **[5, 2006.01]**

329/08 • • • having sulfur atoms of thiocarbonic groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

329/10 • • • having sulfur atoms of thiocarbonic groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

329/12 • Dithiocarbonic acids; Derivatives thereof **[5, 2006.01]**

329/14 • • Esters of dithiocarbonic acids **[5, 2006.01]**

329/16 • • • having sulfur atoms of dithiocarbonic groups bound to acyclic carbon atoms **[5, 2006.01]**

329/18 • • • having sulfur atoms of dithiocarbonic groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

329/20 • • • having sulfur atoms of dithiocarbonic groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

331/00 Derivatives of thiocyanic acid or of isothiocyanic acid [5, 2006.01]

331/02 • Thiocyanates **[5, 2006.01]**

331/04 • • having sulfur atoms of thiocyanate groups bound to acyclic carbon atoms **[5, 2006.01]**

331/06 • • having sulfur atoms of thiocyanate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

331/08 • • having sulfur atoms of thiocyanate groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

331/10 • • having sulfur atoms of thiocyanate groups bound to carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5, 2006.01]**

331/12 • • having sulfur atoms of thiocyanate groups bound to carbon atoms of hydrocarbon radicals substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

331/14 • • having sulfur atoms of thiocyanate groups bound to carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5, 2006.01]**

331/16 • Isothiocyanates **[5, 2006.01]**

331/18 • • having isothiocyanate groups bound to acyclic carbon atoms **[5, 2006.01]**

331/20 • • • of a saturated carbon skeleton **[5, 2006.01]**

331/22 • • • of an unsaturated carbon skeleton **[5, 2006.01]**

331/24 • • • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

331/26 • • having isothiocyanate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

331/28 • • having isothiocyanate groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

331/30 • • containing at least two isothiocyanate groups bound to the same carbon skeleton **[5, 2006.01]**

331/32 • • having isothiocyanate groups acylated **[5, 2006.01]**

333/00 Derivatives of thiocarbamic acids, i.e. compounds containing any of the groups

the nitrogen atom not being part of nitro or nitroso groups [5, 2006.01]

333/02 • Monothiocarbamic acids; Derivatives thereof **[5, 2006.01]**

333/04 • • having nitrogen atoms of thiocarbamic groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

333/06 • • having nitrogen atoms of thiocarbamic groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

333/08 • • having nitrogen atoms of thiocarbamic groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

333/10 • • having nitrogen atoms of thiocarbamic groups being part of any of the groups

X being a hetero atom, Y being any atom, e.g., N-acyl-thiocarbamates **[5, 2006.01]**

333/12 • • having nitrogen atoms of thiocarbamic groups bound to other hetero atoms **[5, 2006.01]**

333/14 • Dithiocarbamic acids; Derivatives thereof **[5, 2006.01]**

333/16 • • Salts of dithiocarbamic acids **[5, 2006.01]**

333/18 • • Esters of dithiocarbamic acids **[5, 2006.01]**

333/20 • • • having nitrogen atoms of dithiocarbamate groups bound to hydrogen atoms or to acyclic carbon atoms **[5, 2006.01]**

333/22 • • • having nitrogen atoms of dithiocarbamate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

333/24 • • • having nitrogen atoms of dithiocarbamate groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

333/26 • • • containing any of the groups

X being a hetero atom, Y being any atom, e.g. N-acyldithiocarbamates **[5, 2006.01]**

333/28 • • • having nitrogen atoms of dithiocarbamate groups bound to other hetero atoms **[5, 2006.01]**

333/30 • • having sulfur atoms of dithiocarbamic groups bound to other sulfur atoms **[5, 2006.01]**

333/32 • • • Thiuramsulfides; Thiurampolysulfides **[5, 2006.01]**

335/00 Thioureas, i.e. compounds containing any of the groups **the nitrogen atoms not being part of nitro or nitroso groups [5, 2006.01]**

335/02 • Thiourea **[5, 2006.01]**

335/04 • Derivatives of thiourea **[5, 2006.01]**

335/06 • • having nitrogen atoms of thiourea groups bound to acyclic carbon atoms **[5, 2006.01]**

335/08 • • • of a saturated carbon skeleton **[5, 2006.01]**

335/10 • • • of an unsaturated carbon skeleton **[5, 2006.01]**

335/12 • • • • the carbon skeleton containing six-membered aromatic rings **[5, 2006.01]**

335/14 • • having nitrogen atoms of thiourea groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

335/16 • • having nitrogen atoms of thiourea groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5, 2006.01]**

335/18 • • • being further substituted by singly-bound oxygen atoms **[5, 2006.01]**

335/20 • • • being further substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5, 2006.01]**

335/22 • • • being further substituted by carboxyl groups **[5, 2006.01]**

335/24 • • containing any of the groups

X being a hetero atom, Y being any atom **[5, 2006.01]**

335/26 • • • Y being a hydrogen or a carbon atom, e.g. benzoylthioureas **[5, 2006.01]**

335/28 • • • Y being a hetero atom, e.g. thiobiuret **[5, 2006.01]**

335/30 • Isothioureas **[5, 2006.01]**

335/32 • • having sulfur atoms of isothiourea groups bound to acyclic carbon atoms **[5, 2006.01]**

335/34 • • having sulfur atoms of isothiourea groups bound to carbon atoms of rings other than six-membered aromatic rings **[5, 2006.01]**

335/36 • • having sulfur atoms of isothiourea groups bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

335/38 • • containing any of the groups

X being a hetero atom, Y being any atom **[5, 2006.01]**

335/40 • having nitrogen atoms of thiourea or isothiourea groups further bound to other hetero atoms **[5, 2006.01]**

335/42 • • Sulfonylthioureas; Sulfonylisothioureas **[5, 2006.01]**

335/44 • • Sulfenylthioureas; Sulfenylisothioureas **[5, 2006.01]**

337/00 Derivatives of thiocarbonic acids containing functional groups covered by groups C07C 333/00 or C07C 335/00 in which at least one nitrogen atom of these functional groups is further bound to another nitrogen atom not being part of a nitro or nitroso group [5, 2006.01]

337/02 • Compounds containing any of the groups

e.g. thiocarbazates **[5, 2006.01]**

337/04 • • the other nitrogen atom being further doubly-bound to a carbon atom **[5, 2006.01]**

337/06 • Compounds containing any of the groups

e.g. thiosemicarbazides **[5, 2006.01]**

337/08 • • the other nitrogen atom being further doubly-bound to a carbon atom, e.g. thiosemicarbazones **[5, 2006.01]**

337/10 • the two nitrogen atoms of the functional group being doubly-bound to each other **[5, 2006.01]**

381/00 Compounds containing carbon and sulfur and having functional groups not covered by groups C07C 301/00-C07C 337/00 [5, 2006.01]

381/02 • Thiosulfates **[5, 2006.01]**

381/04 • Thiosulfonates **[5, 2006.01]**

381/06 • Compounds containing sulfur atoms only bound to two nitrogen atoms **[5, 2006.01]**

381/08 • • having at least one of the nitrogen atoms acylated **[5, 2006.01]**

381/10 • Compounds containing sulfur atoms doubly-bound to nitrogen atoms **[5, 2006.01]**

381/12 • Sulfonium compounds **[5, 2006.01]**

381/14 • Compounds containing a carbon atom having four bonds to hetero atoms, with a double bond to one hetero atom and at least one bond to a sulfur atom further doubly-bound to oxygen atoms **[5, 2006.01]**

391/00 Compounds containing selenium [5, 2006.01]

391/02 • having selenium atoms bound to carbon atoms of six-membered aromatic rings **[5, 2006.01]**

395/00 Compounds containing tellurium [5, 2006.01]

401/00 Irradiation products of cholesterol or its derivatives; Vitamin D derivatives, 9,10-seco cyclopenta[a]phenanthrene or analogues obtained by chemical preparation without irradiation [5, 2006.01]

403/00 Derivatives of cyclohexane or of a cyclohexene, having a side-chain containing an acyclic unsaturated part of at least four carbon atoms, this part being directly attached to the cyclohexane or cyclohexene rings, e.g. vitamin A, beta-carotene, beta-ionone [5, 2006.01]

403/02 • having side-chains containing only carbon and hydrogen atoms **[5, 2006.01]**

403/04 • having side-chains substituted by halogen atoms **[5, 2006.01]**

403/06 • having side-chains substituted by singly-bound oxygen atoms **[5, 2006.01]**

403/08 • • by hydroxy groups **[5, 2006.01]**

403/10 • • by etherified hydroxy groups **[5, 2006.01]**

403/12 • • by esterified hydroxy groups **[5, 2006.01]**

403/14 • having side-chains substituted by doubly-bound oxygen atoms **[5, 2006.01]**

403/16 • • not being part of —CHO groups **[5, 2006.01]**

403/18 • having side-chains substituted by nitrogen atoms **[5, 2006.01]**

403/20 • having side-chains substituted by carboxyl groups **[5, 2006.01]**

403/22 • having side-chains substituted by sulfur atoms **[5, 2006.01]**

403/24 • having side-chains substituted by six-membered non-aromatic rings, e.g. beta-carotene **[5, 2006.01]**

405/00 Compounds containing a five-membered ring having two side-chains in ortho position to each other, and having oxygen atoms directly attached to the ring in ortho position to one of the side-chains, one side-chain containing, not directly attached to the ring, a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, and the other side-chain having oxygen atoms attached in gamma-position to the ring, e.g. prostaglandins [5, 2006.01]

407/00 Preparation of peroxy compounds [5, 2006.01]

409/00 Peroxy compounds [5, 2006.01]

409/02 • the —O—O— group being bound between a carbon atom, not further substituted by oxygen atoms, and hydrogen, i.e. hydroperoxides **[5, 2006.01]**

409/04 • • the carbon atom being acyclic **[5, 2006.01]**

409/06 • • • Compounds containing rings other than six-membered aromatic rings **[5, 2006.01]**

409/08 • • • Compounds containing six-membered aromatic rings **[5, 2006.01]**

409/10 • • • • Cumene hydroperoxide **[5, 2006.01]**

409/12 • • • • with two alpha,alpha-dialkylmethyl-hydroperoxy groups bound to carbon atoms of the same six-membered aromatic ring **[5, 2006.01]**

409/14 • • the carbon atom belonging to a ring other than a six-membered aromatic ring **[5, 2006.01]**

409/16 • the —O—O— group being bound between two carbon atoms not further substituted by oxygen atoms, i.e. peroxides **[5, 2006.01]**

409/18 • • at least one of the carbon atoms belonging to a ring other than a six-membered aromatic ring **[5, 2006.01]**

409/20 • the —O—O— group being bound to a carbon atom further substituted by singly-bound oxygen atoms **[5, 2006.01]**

409/22 • • having two —O—O— groups bound to the carbon atom **[5, 2006.01]**

409/24 • the —O—O— group being bound between a ›C=O group and hydrogen, i.e. peroxy acids **[5, 2006.01]**

409/26 • • Peracetic acid **[5, 2006.01]**

409/28 • • a ›C=O group being bound to a carbon atom of a ring other than a six-membered aromatic ring **[5, 2006.01]**

409/30 • • a ›C=O group being bound to a carbon atom of a six-membered aromatic ring **[5, 2006.01]**

409/32 • the —O—O— group being bound between two ›C=O groups **[5, 2006.01]**

409/34 • • both belonging to carboxylic acids **[5, 2006.01]**

409/36 • • • Diacetyl peroxide **[5, 2006.01]**

409/38 • the —O—O— group being bound between a ›C=O group and a carbon atom, not further substituted by oxygen atoms, i.e. esters of peroxy acids **[5, 2006.01]**

409/40 • containing nitrogen atoms **[5, 2006.01]**

409/42 • containing sulfur atoms **[5, 2006.01]**

409/44 • • with sulfur atoms directly bound to the —O—O— groups, e.g. persulfonic acids **[5, 2006.01]**

C07D HETEROCYCLIC COMPOUNDS (macromolecular compounds C08) **[2]**

Note(s) [2, 3, 7, 2006.01]

1. This subclass does not cover compounds containing saccharide radicals (as defined in Note (3) following the title of subclass C07H), which are covered by subclass C07H.
2. In this subclass, in compounds containing a hetero ring covered by group C07D 295/00 and at least one other hetero ring, the hetero ring covered by group C07D 295/00 is considered as an acyclic chain containing nitrogen atoms.
3. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "hetero ring" is a ring having at least one halogen, nitrogen, oxygen, sulfur, selenium or tellurium atom as a ring member;
   - "bridged" means the presence of at least one fusion other than ortho, peri or spiro;
   - two rings are "condensed" if they share at least one ring member, i.e. "spiro" and "bridged" are considered as condensed;
   - "condensed ring system" is a ring system in which all rings are condensed among themselves;
   - "number of relevant rings" in a condensed ring system equals the number of scissions necessary to convert the ring system into one acyclic chain;
   - "relevant rings" in a condensed ring system, i.e. the rings which taken together describe all the links between every atom of the ring system, are chosen according to the following criteria consecutively:
     a. lowest number of ring members;
     b. highest number of hetero atoms as ring members;
     c. lowest number of members shared with other rings;
     d. last place in the classification scheme.
4. Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C-C07K and within these subclasses.
5. Therapeutic activity of compounds is further classified in subclass A61P.
6. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary:
   a. compounds having only one hetero ring are classified in the last appropriate place in one of the groups C07D 203/00-C07D 347/00. The same applies for compounds having more hetero rings covered by the same main group, neither condensed among themselves nor condensed with a common carbocyclic ring system;
   b. compounds having two or more hetero rings covered by different main groups neither condensed among themselves nor condensed with a common carbocyclic ring system are classified in the last appropriate place in one of the groups C07D 401/00-C07D 421/00;
   c. compounds having two or more relevant hetero rings, covered by the same or by different main groups, which are condensed among themselves or condensed with a common carbocyclic ring system, are classified in the last appropriate place in one of the groups C07D 451/00-C07D 519/00.
7. In this subclass:
   - where a compound may exist in tautomeric forms, it is classified as though existing in the form which is classified last in the system. Therefore, double bonds between ring members and non-ring members and double bonds between ring members themselves are considered equivalent in determining the degree of hydrogenation of the ring. Formulae are considered to be written in Kekule form;
   - hydrocarbon radicals containing a carbocyclic ring and an acyclic chain by which it is linked to the hetero ring and being substituted on both the carbocyclic ring and the acyclic chain by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, are classified according to the substituents on the acyclic chain. For example, the compound

is classified in group C07D 233/22, and the compound
is classified in groups C07D 233/24 and C07D 233/26, where X —NH_2, —$NHCOCH_3$, or —$COOCH_3$.

Subclass index

COMPOUNDS CONTAINING ONE HETERO RING
HAVING NITROGEN AS RING HETERO ATOM
only nitrogen atoms
one nitrogen atom
Polymethyleneimine.....295/00
Preparation of lactams.....201/00
three-membered ring.....203/00
four-membered ring.....205/00
five-membered ring.....207/00, 209/00
six-membered ring.....211/00, 213/00, 215/00, 217/00, 219/00, 221/00
seven-membered ring.....223/00
Other compounds.....225/00, 227/00
two nitrogen atoms
four-membered ring.....229/00
five-membered ring.....231/00, 233/00, 235/00
six-membered ring.....237/00, 239/00, 241/00
Piperazine.....295/00
seven-membered ring.....243/00
Other compounds.....245/00, 247/00
three nitrogen atoms
five-membered ring.....249/00
six-membered ring.....251/00, 253/00
Other compounds.....255/00
four or more nitrogen atoms.....257/00, 259/00
nitrogen and oxygen atoms
five-membered ring.....261/00, 263/00, 271/00
six-membered ring.....265/00, 273/00
morpholine.....295/00
Other compounds.....267/00, 269/00, 273/00
nitrogen and sulfur atoms
five-membered ring.....275/00, 277/00, 285/00
six-membered ring.....279/00, 285/00
Thiomorpholine.....295/00
Other compounds.....281/00, 283/00, 285/00
nitrogen, oxygen, and sulfur atoms.....291/00
HAVING OXYGEN AS RING HETERO ATOM
only oxygen atoms
one oxygen atom
three-membered ring.....301/00, 303/00
four-membered ring.....305/00
five-membered ring.....307/00
six-membered ring.....309/00, 311/00
Other compounds.....313/00, 315/00
two oxygen atoms
five-membered ring.....317/00
six-membered ring.....319/00
Other compounds.....321/00
three or more oxygen atoms.....323/00
Other compounds.....325/00
oxygen and nitrogen atoms
five-membered ring.....261/00, 263/00, 271/00
six-membered ring.....265/00, 273/00
Morpholine.....295/00

Other compounds....267/00, 269/00, 273/00
oxygen and sulfur atoms....327/00
oxygen, nitrogen and sulfur atoms....291/00
HAVING SULFUR AS RING HETERO ATOM
only sulfur atoms
one sulfur atom
five-membered ring....333/00
six-membered ring....335/00
Other compounds....331/00, 337/00
two or more sulfur atoms....339/00, 341/00
sulfur and nitrogen atoms
five-membered ring....275/00, 277/00, 285/00
six-membered ring....279/00, 285/00
Thiomorpholine....295/00
Other compounds....281/00, 283/00, 285/00
sulfur and oxygen atoms....327/00
sulfur, nitrogen, and oxygen atoms....291/00
HAVING SELENIUM OR TELLURIUM AS RING HETERO ATOM
only selenium or tellurium atoms....345/00
together with nitrogen atoms....293/00
together with oxygen atoms....329/00
together with sulfur atoms....343/00
HAVING HALOGEN AS RING HETERO ATOM....347/00
COMPOUNDS CONTAINING TWO OR MORE HETERO RINGS
IN THE SAME RING SYSTEM
HAVING NITROGEN AS RING HETERO ATOM
only nitrogen
at least one six-membered ring with one nitrogen atom....471/00
Tropane, granatane....451/00
Quinine, quinuclidine, isoquinuclidine....453/00
Emetine, berberine....455/00
Lysergic acid, ergot alkaloids....457/00
Yohimbine....459/00
Vincamine....461/00
Carbacephalosporins....463/00
Other compounds....487/00, 507/00, 513/00
Purine....473/00
Pteridine....475/00
Thienamycin....477/00
nitrogen and oxygen....491/00, 498/00, 507/00
Morphine....489/00
Oxapenicillins....503/00
Oxacephalosporins....505/00
nitrogen and sulfur....507/00, 513/00
Penicillins....499/00
Cephalosporins....501/00
nitrogen, oxygen, and sulfur....507/00, 515/00
HAVING OXYGEN AS RING HETERO ATOM
only oxygen....493/00
oxygen and nitrogen....491/00, 498/00, 507/00
Morphine....489/00
Oxapenicillins....503/00
Oxacephalosporins....505/00
oxygen and sulfur....497/00
oxygen, nitrogen, and sulfur....507/00, 515/00
HAVING SULFUR AS RING HETERO ATOM
only sulfur in a particular ring....495/00
sulfur and oxygen....497/00
sulfur, nitrogen, and oxygen....507/00, 515/00

HAVING SELENIUM, TELLURIUM, OR HALOGEN AS RING HETERO ATOM.....517/00
IN DIFFERENT RING SYSTEMS, EACH CONTAINING ONLY ONE HETERO RING
HAVING NITROGEN AS RING HETERO ATOM
only nitrogen
at least one six-membered ring with one nitrogen atom.....401/00
Other compounds.....403/00
nitrogen and oxygen.....405/00, 413/00
nitrogen and sulfur.....417/00
thiamine.....415/00
nitrogen, oxygen, and sulfur.....419/00
HAVING OXYGEN AS RING HETERO ATOM
only oxygen.....407/00
oxygen and nitrogen.....405/00, 413/00
oxygen and sulfur.....411/00
oxygen, nitrogen, and sulfur.....419/00
HAVING SULFUR AS RING HETERO ATOM
only sulfur in a particular ring.....409/00
sulfur and nitrogen.....417/00
thiamine.....415/00
sulfur and oxygen.....411/00
sulfur, nitrogen, and oxygen.....419/00
HAVING SELENIUM, TELLURIUM, OR HALOGEN AS RING HETERO ATOM.....421/00
COMPOUNDS CONTAINING TWO OR MORE RING SYSTEMS, HAVING EACH TWO OR MORE HETERO RINGS.....519/00
ALKALOIDS
Emetine.....455/00
Ergot.....457/00, 519/00
Granatanine.....451/00
Morphine.....489/00
Nicotine.....401/00
Papaverine.....217/20
Quinine.....453/00
Strychnine.....498/00
Tropane.....451/00
CEPHALOSPORIN.....501/00
PENICILLIN.....499/00
PTERIDINE.....475/00
THIENAMYCIN.....477/00
PURINE.....473/00
THIAMINE.....415/00
COMPOUNDS CONTAINING UNSPECIFIED HETERO RINGS.....521/00

Heterocyclic compounds having only nitrogen as ring hetero atom [2]

201/00 Preparation, separation, purification, or stabilisation of unsubstituted lactams [2, 2006.01]

201/02 • Preparation of lactams **[2, 2006.01]**

201/04 • • from or via oximes by Beckmann rearrangement **[2, 2006.01]**

201/06 • • • from ketones by simultaneous oxime formation and rearrangement **[2, 2006.01]**

201/08 • • from carboxylic acids or derivatives thereof, e.g. hydroxy carboxylic acids, lactones, nitriles **[2, 2006.01]**

201/10 • • from cycloaliphatic compounds by simultaneous nitrosylation and rearrangement **[2, 2006.01]**

201/12 • • by depolymerising polyamides **[2, 2006.01]**

201/14 • Preparation of salts or adducts of lactams **[2, 2006.01]**

201/16 • Separation or purification **[2, 2006.01]**

201/18 • Stabilisation **[2, 2006.01]**

203/00 Heterocyclic compounds containing three-membered rings with one nitrogen atom as the only ring hetero atom [2, 2006.01]

203/02 • Preparation by ring-closure **[2, 2006.01]**

203/04 • not condensed with other rings **[2, 2006.01]**

203/06 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

203/08 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring nitrogen atom **[2, 2006.01]**

203/10 • • • • Radicals substituted by singly bound oxygen atoms **[2, 2006.01]**

203/12 • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

203/14 • • • • with carbocyclic rings directly attached to the ring nitrogen atom **[2, 2006.01]**
203/16 • • • with acylated ring nitrogen atoms **[2, 2006.01]**
203/18 • • • • by carboxylic acids, or by sulfur or nitrogen analogues thereof **[2, 2006.01]**
203/20 • • • • by carbonic acid, or by sulfur or nitrogen analogues thereof, e.g. carbamates **[2, 2006.01]**
203/22 • • • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
203/24 • • • • Sulfur atoms **[2, 2006.01]**
203/26 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

205/00 Heterocyclic compounds containing four-membered rings with one nitrogen atom as the only ring hetero atom [2, 2006.01]

205/02 • not condensed with other rings **[2, 2006.01]**
205/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
205/06 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
205/08 • • • with one oxygen atom directly attached in position 2, e.g. beta-lactams **[2, 2006.01]**
205/085 • • • • with a nitrogen atom directly attached in position 3 **[5, 2006.01]**
205/09 • • • • with a sulfur atom directly attached in position 4 **[5, 2006.01]**
205/095 • • • • • and with a nitrogen atom directly attached in position 3 **[5, 2006.01]**
205/10 • • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
205/12 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

207/00 Heterocyclic compounds containing five-membered rings not condensed with other rings, with one nitrogen atom as the only ring hetero atom [2, 2006.01]

Note(s) [2]

Pyrrolidines having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00.

207/02 • with only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
207/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
207/06 • • • with radicals, containing only hydrogen and carbon atoms, attached to ring carbon atoms **[2, 2006.01]**
207/08 • • • with hydrocarbon radicals, substituted by hetero atoms, attached to ring carbon atoms **[2, 2006.01]**
207/09 • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[3, 2006.01]**
207/10 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
207/12 • • • • Oxygen or sulfur atoms **[2, 2006.01]**
207/14 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
207/16 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
207/18 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
207/20 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
207/22 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
207/24 • • • • Oxygen or sulfur atoms **[2, 2006.01]**
207/26 • • • • • 2-Pyrrolidones **[2, 2006.01]**
207/263 • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms **[3, 2006.01]**
207/267 • • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to the ring nitrogen atom **[3, 2006.01]**
207/27 • • • • • • • with substituted hydrocarbon radicals directly attached to the ring nitrogen atom **[3, 2006.01]**
207/273 • • • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to other ring carbon atoms **[3, 2006.01]**
207/277 • • • • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[3, 2006.01]**
207/28 • • • • • • • • 2-Pyrrolidone-5- carboxylic acids; Functional derivatives thereof, e.g. esters, nitriles **[2, 3, 2006.01]**
207/30 • • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
207/32 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
207/323 • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to the ring nitrogen atoms **[3, 2006.01]**
207/325 • • • • with substituted hydrocarbon radicals directly attached to the ring nitrogen atom **[3, 2006.01]**
207/327 • • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[3, 2006.01]**
207/33 • • • • with substituted hydrocarbon radicals, directly attached to ring carbon atoms **[3, 2006.01]**
207/333 • • • • • Radicals substituted by oxygen or sulfur atoms **[3, 2006.01]**
207/335 • • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[3, 2006.01]**

207/337 • • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[3, 2006.01]**
207/34 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
207/36 • • • • Oxygen or sulfur atoms **[2, 2006.01]**
207/38 • • • • • 2-Pyrrolones **[2, 2006.01]**
207/40 • • • • • 2,5-Pyrrolidine-diones **[2, 2006.01]**
207/404 • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms, e.g. succinimide **[3, 2006.01]**
207/408 • • • • • • • Radicals containing only hydrogen and carbon atoms attached to ring carbon atoms **[3, 2006.01]**
207/412 • • • • • • • • Acyclic radicals containing more than six carbon atoms **[3, 2006.01]**
207/416 • • • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to other ring carbon atoms **[3, 2006.01]**
207/42 • • • • Nitro radicals **[2, 2006.01]**
207/44 • • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
207/444 • • • having two doubly-bound oxygen atoms directly attached in positions 2 and 5 **[3, 2006.01]**
207/448 • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms, e.g. maleimide **[3, 2006.01]**
207/452 • • • • • with hydrocarbon radicals, substituted by hetero atoms, directly attached to the ring nitrogen atom **[3, 2006.01]**
207/456 • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to other ring carbon atoms **[3, 2006.01]**
207/46 • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
207/48 • • Sulfur atoms **[2, 2006.01]**
207/50 • • Nitrogen atoms **[2, 2006.01]**

209/00 Heterocyclic compounds containing five-membered rings, condensed with other rings, with one nitrogen atom as the only ring hetero atom [2, 2006.01]

209/02 • condensed with one carbocyclic ring **[2, 2006.01]**
209/04 • • Indoles; Hydrogenated indoles **[2, 2006.01]**
209/06 • • • Preparation of indole from coal-tar **[2, 2006.01]**
209/08 • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
209/10 • • • with substituted hydrocarbon radicals attached to carbon atoms of the hetero ring **[2, 2006.01]**
209/12 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
209/14 • • • • Radicals substituted by nitrogen atoms, not forming part of a nitro radical **[2, 2006.01]**
209/16 • • • • • Tryptamines **[2, 2006.01]**
209/18 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
209/20 • • • • • substituted additionally by nitrogen atoms, e.g. tryptophane **[2, 2006.01]**
209/22 • • • • • with an aralkyl radical attached to the ring nitrogen atom **[2, 2006.01]**
209/24 • • • • • with an alkyl or cycloalkyl radical attached to the ring nitrogen atom **[2, 2006.01]**
209/26 • • • • • with an acyl radical attached to the ring nitrogen atom **[2, 2006.01]**
209/28 • • • • • • 1-(4-Chlorobenzoyl)-2-methyl-indolyl-3-acetic acid, substituted in position 5 by an oxygen or nitrogen atom; Esters thereof **[2, 2006.01]**
209/30 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
209/32 • • • • Oxygen atoms **[2, 2006.01]**
209/34 • • • • • in position 2 **[2, 2006.01]**
209/36 • • • • • in position 3, e.g. adrenochrome **[2, 2006.01]**
209/38 • • • • • in positions 2 and 3, e.g. isatin **[2, 2006.01]**
209/40 • • • • Nitrogen atoms, not forming part of a nitro radical, e.g. isatin semicarbazone **[2, 2006.01]**
209/42 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
209/43 • • • with an —$OCH_2CH(OH)CH_2NH_2$ radical, which may be further substituted, attached in positions 4, 5, 6 or 7 **[5, 2006.01]**
209/44 • • Iso-indoles; Hydrogenated iso-indoles **[2, 2006.01]**
209/46 • • • with an oxygen atom in position 1 **[2, 2006.01]**
209/48 • • • with oxygen atoms in positions 1 and 3, e.g. phthalimide **[2, 2006.01]**
209/49 • • • • and having in the molecule an acyl radical containing a saturated three-membered ring, e.g. chrysanthemumic acid esters **[5, 2006.01]**
209/50 • • • with oxygen and nitrogen atoms in positions 1 and 3 **[2, 2006.01]**
209/52 • • condensed with a ring other than six-membered **[2, 2006.01]**
209/54 • • Spiro-condensed **[2, 2006.01]**
209/56 • Ring systems containing three or more rings **[2, 2006.01]**
209/58 • • [b]- or [c]-condensed **[2, 2006.01]**
209/60 • • • Naphtho [b] pyrroles; Hydrogenated naphtho [b] pyrroles **[2, 2006.01]**
209/62 • • • Naphtho [c] pyrroles; Hydrogenated naphtho [c] pyrroles **[2, 2006.01]**
209/64 • • • • with an oxygen atom in position 1 **[2, 2006.01]**
209/66 • • • • with oxygen atoms in positions 1 and 3 **[2, 2006.01]**
209/68 • • • • with oxygen and nitrogen atoms in positions 1 and 3 **[2, 2006.01]**

209/70 • • • containing carbocyclic rings other than six-membered **[2, 2006.01]**
209/72 • • • 4,7-Endo-alkylene-iso-indoles **[2, 2006.01]**
209/74 • • • • with an oxygen atom in position 1 **[2, 2006.01]**
209/76 • • • • with oxygen atoms in positions 1 and 3 **[2, 2006.01]**
209/78 • • • • with oxygen and nitrogen atoms in positions 1 and 3 **[2, 2006.01]**
209/80 • • [b, c]- or [b, d]-condensed **[2, 2006.01]**
209/82 • • • Carbazoles; Hydrogenated carbazoles **[2, 2006.01]**
209/84 • • • • Separation, e.g. from tar; Purification **[2, 2006.01]**
209/86 • • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the ring system **[2, 2006.01]**
209/88 • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the ring system **[2, 2006.01]**
209/90 • • • Benzo [c, d] indoles; Hydrogenated benzo [c, d] indoles **[2, 2006.01]**
209/92 • • • • Naphthostyrils **[2, 2006.01]**
209/94 • • • containing carbocyclic rings other than six-membered **[4, 2006.01]**
209/96 • • Spiro-condensed ring systems **[2, 2006.01]**

211/00 Heterocyclic compounds containing hydrogenated pyridine rings, not condensed with other rings [2, 2006.01]

Note(s) [2]

1. In this group, the following term is used with the meaning indicated:
   - "hydrogenated" means having less than three double bonds between ring members or between ring members and non-ring members.
2. Piperidines having only hydrogen atoms attached to ring carbon atoms are classified in group C07D 295/00.

211/02 • Preparation by ring-closure or hydrogenation **[2, 2006.01]**
211/04 • with only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
211/06 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
211/08 • • • with hydrocarbon or substituted hydrocarbon radicals directly attached to ring carbon atoms **[2, 3, 2006.01]**
211/10 • • • • with radicals containing only carbon and hydrogen atoms attached to ring carbon atoms **[2, 3, 2006.01]**
211/12 • • • • • with only hydrogen atoms attached to the ring nitrogen atom **[2, 3, 2006.01]**
211/14 • • • • • with hydrocarbon or substituted hydrocarbon radicals attached to the ring nitrogen atom **[2, 2006.01]**
211/16 • • • • • with acylated ring nitrogen atom **[2, 2006.01]**
211/18 • • • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**
211/20 • • • • • with hydrocarbon radicals, substituted by singly bound oxygen or sulfur atoms **[2, 2006.01]**
211/22 • • • • • • by oxygen atoms **[2, 2006.01]**
211/24 • • • • • • by sulfur atoms to which a second hetero atom is attached **[2, 2006.01]**
211/26 • • • • • with hydrocarbon radicals, substituted by nitrogen atoms **[2, 2006.01]**
211/28 • • • • • • to which a second hetero atom is attached **[2, 2006.01]**
211/30 • • • • • with hydrocarbon radicals, substituted by doubly bound oxygen or sulfur atoms or by two oxygen or sulfur atoms singly bound to the same carbon atom **[2, 2006.01]**
211/32 • • • • • • by oxygen atoms **[2, 2006.01]**
211/34 • • • • • with hydrocarbon radicals, substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
211/36 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
211/38 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**
211/40 • • • • Oxygen atoms **[2, 2006.01]**
211/42 • • • • • attached in position 3 or 5 **[2, 2006.01]**
211/44 • • • • • attached in position 4 **[2, 2006.01]**
211/46 • • • • • • having a hydrogen atom as the second substituent in position 4 **[2, 2006.01]**
211/48 • • • • • • having an acyclic carbon atom attached in position 4 **[2, 2006.01]**
211/50 • • • • • • • Aroyl radical **[2, 2006.01]**
211/52 • • • • • • having an aryl radical as the second substituent in position 4 **[2, 2006.01]**
211/54 • • • • Sulfur atoms **[2, 2006.01]**
211/56 • • • • Nitrogen atoms (nitro radicals C07D 211/38) **[2, 2006.01]**
211/58 • • • • • attached in position 4 **[2, 2006.01]**
211/60 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
211/62 • • • • • attached in position 4 **[2, 2006.01]**
211/64 • • • • • • having an aryl radical as the second substituent in position 4 **[2, 2006.01]**
211/66 • • • • • • having a hetero atom as the second substituent in position 4 **[2, 2006.01]**
211/68 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
211/70 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
211/72 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, directly attached to ring carbon atoms **[2, 2006.01]**
211/74 • • • • Oxygen atoms **[2, 2006.01]**
211/76 • • • • • attached in position 2 or 6 **[2, 2006.01]**
211/78 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
211/80 • • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

211/82 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
211/84 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms **[2, 2006.01]**
211/86 • • • • Oxygen atoms **[2, 2006.01]**
211/88 • • • • • attached in positions 2 and 6, e.g. glutarimide **[2, 2006.01]**
211/90 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
211/92 • with a hetero atom directly attached to the ring nitrogen atom **[2, 2006.01]**
211/94 • • Oxygen atom, e.g. piperidine N-oxide **[2, 2006.01]**
211/96 • • Sulfur atom **[2, 2006.01]**
211/98 • • Nitrogen atom **[2, 2006.01]**

213/00 Heterocyclic compounds containing six-membered rings, not condensed with other rings, with one nitrogen atom as the only ring hetero atom and three or more double bonds between ring members or between ring members and non-ring members [2, 2006.01]
213/02 • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
213/04 • • having no bond between the ring nitrogen atom and a non-ring member or having only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
213/06 • • • containing only hydrogen and carbon atoms in addition to the ring nitrogen atom **[2, 2006.01]**
213/08 • • • • Preparation by ring-closure **[2, 2006.01]**
213/09 • • • • • involving the use of ammonia, amines, amine salts, or nitriles **[3, 2006.01]**
213/10 • • • • • • from acetaldehyde or cyclic polymers thereof **[3, 2006.01]**
213/12 • • • • • • from unsaturated compounds **[3, 2006.01]**
213/127 • • • • Preparation from compounds containing pyridine rings **[3, 2006.01]**
213/133 • • • • Preparation by dehydrogenation of hydrogenated pyridine compounds **[3, 2006.01]**
213/14 • • • • Preparation from compounds containing heterocyclic oxygen **[2, 2006.01]**
213/16 • • • • containing only one pyridine ring **[2, 2006.01]**
213/18 • • • • • Salts thereof **[2, 2006.01]**
213/20 • • • • • Quaternary compounds thereof **[2, 2006.01]**
213/22 • • • • containing two or more pyridine rings directly linked together, e.g. bipyridyl **[2, 2006.01]**
213/24 • • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**
213/26 • • • • Radicals substituted by halogen atoms or nitro radicals **[2, 2006.01]**
213/28 • • • • Radicals substituted by singly-bound oxygen or sulfur atoms **[2, 2006.01]**
213/30 • • • • • Oxygen atoms **[2, 2006.01]**
213/32 • • • • • Sulfur atoms **[2, 2006.01]**
213/34 • • • • • • to which a second hetero atom is attached **[2, 2006.01]**
213/36 • • • • Radicals substituted by singly-bound nitrogen atoms (nitro radicals C07D 213/26) **[2, 2006.01]**
213/38 • • • • • having only hydrogen or hydrocarbon radicals attached to the substituent nitrogen atom **[2, 2006.01]**
213/40 • • • • • Acylated substituent nitrogen atom **[2, 2006.01]**
213/42 • • • • • having hetero atoms attached to the substituent nitrogen atom (nitro radicals C07D 213/26) **[2, 2006.01]**
213/44 • • • • Radicals substituted by doubly-bound oxygen, sulfur, or nitrogen atoms, or by two such atoms singly-bound to the same carbon atom **[2, 2006.01]**
213/46 • • • • • Oxygen atoms **[2, 2006.01]**
213/48 • • • • • • Aldehydo radicals **[2, 2006.01]**
213/50 • • • • • • Ketonic radicals **[2, 2006.01]**
213/51 • • • • • • Acetal radicals **[2, 2006.01]**
213/52 • • • • • Sulfur atoms **[2, 2006.01]**
213/53 • • • • • Nitrogen atoms **[2, 2006.01]**
213/54 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
213/55 • • • • • Acids; Esters **[2, 2006.01]**
213/56 • • • • • Amides **[2, 2006.01]**
213/57 • • • • • Nitriles **[2, 2006.01]**
213/58 • • • • • Amidines **[2, 2006.01]**
213/59 • • • • • with at least one of the bonds being to sulfur **[2, 2006.01]**
213/60 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
213/61 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**
213/62 • • • • Oxygen or sulfur atoms **[2, 2006.01]**
213/63 • • • • • One oxygen atom **[2, 2006.01]**
213/64 • • • • • • attached in position 2 or 6 **[2, 2006.01]**
213/643 • • • • • • • 2-Phenoxypyridines; Derivatives thereof **[5, 2006.01]**
213/647 • • • • • • • and having in the molecule an acyl radical containing a saturated three-membered ring, e.g. chrysanthemumic acid esters **[5, 2006.01]**
213/65 • • • • • • attached in position 3 or 5 **[2, 2006.01]**
213/66 • • • • • • • having in position 3 an oxygen atom and in each of the positions 4 and 5 a carbon atom bound to an oxygen, sulfur, or nitrogen atom, e.g. pyridoxal **[2, 2006.01]**
213/67 • • • • • • • • 2-Methyl-3-hydroxy-4,5-bis (hydroxy-methyl) pyridine, i.e. pyridoxine **[2, 2006.01]**
213/68 • • • • • • attached in position 4 **[2, 2006.01]**
213/69 • • • • • Two or more oxygen atoms **[2, 2006.01]**
213/70 • • • • • Sulfur atoms **[4, 2006.01]**
213/71 • • • • • • to which a second hetero atom is attached **[4, 2006.01]**
213/72 • • • • Nitrogen atoms (nitro radicals C07D 213/61) **[2, 2006.01]**
213/73 • • • • • Unsubstituted amino or imino radicals **[2, 2006.01]**

213/74 • • • • • Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals **[2, 2006.01]**
213/75 • • • • • Amino or imino radicals, acylated by carboxylic or carbonic acids, or by sulfur or nitrogen analogues thereof, e.g. carbamates **[2, 2006.01]**
213/76 • • • • • to which a second hetero atom is attached (nitro radicals C07D 213/61) **[2, 2006.01]**
213/77 • • • • • • Hydrazine radicals **[2, 2006.01]**
213/78 • • • • Carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
213/79 • • • • • Acids; Esters **[2, 2006.01]**
213/80 • • • • • • in position 3 **[2, 2006.01]**
213/803 • • • • • • Processes of preparation **[3, 2006.01]**
213/807 • • • • • • • by oxidation of pyridines or condensed pyridines **[3, 2006.01]**
213/81 • • • • • Amides; Imides **[2, 2006.01]**
213/82 • • • • • • in position 3 **[2, 2006.01]**
213/83 • • • • • Thioacids; Thioesters; Thioamides; Thioimides **[2, 2006.01]**
213/84 • • • • • Nitriles **[2, 2006.01]**
213/85 • • • • • • in position 3 **[2, 2006.01]**
213/86 • • • • • Hydrazides; Thio or imino analogues thereof **[2, 2006.01]**
213/87 • • • • • • in position 3 **[2, 2006.01]**
213/88 • • • • • Nicotinoylhydrazones **[2, 2006.01]**
213/89 • • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
213/90 • having more than three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

215/00 Heterocyclic compounds containing quinoline or hydrogenated quinoline ring systems [2, 2006.01]
215/02 • having no bond between the ring nitrogen atom and a non-ring member or having only hydrogen atoms or carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
215/04 • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to the ring carbon atoms **[2, 2006.01]**
215/06 • • • having only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to the ring nitrogen atom **[2, 2006.01]**
215/08 • • • with acylated ring nitrogen atom **[2, 2006.01]**
215/10 • • • Quaternary compounds **[2, 2006.01]**
215/12 • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**
215/14 • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
215/16 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
215/18 • • • Halogen atoms or nitro radicals **[2, 2006.01]**
215/20 • • • Oxygen atoms **[2, 2006.01]**
215/22 • • • • attached in position 2 or 4 **[2, 2006.01]**
215/227 • • • • • only one oxygen atom which is attached in position 2 **[5, 2006.01]**
215/233 • • • • • only one oxygen atom which is attached in position 4 **[5, 2006.01]**
215/24 • • • • attached in position 8 **[2, 2006.01]**
215/26 • • • • • Alcohols; Ethers thereof **[2, 2006.01]**
215/28 • • • • • • with halogen atoms or nitro radicals in positions 5, 6 or 7 **[2, 2006.01]**
215/30 • • • • • • Metal salts; Chelates **[2, 2006.01]**
215/32 • • • • • • Esters **[2, 2006.01]**
215/34 • • • • • • • Carbamates **[2, 2006.01]**
215/36 • • • Sulfur atoms (C07D 215/24 takes precedence) **[2, 2006.01]**
215/38 • • • Nitrogen atoms (nitro radicals C07D 215/18) **[2, 2006.01]**
215/40 • • • • attached in position 8 **[2, 2006.01]**
215/42 • • • • attached in position 4 **[2, 2006.01]**
215/44 • • • • • with aryl radicals attached to said nitrogen atoms **[2, 2006.01]**
215/46 • • • • • with hydrocarbon radicals, substituted by nitrogen atoms, attached to said nitrogen atoms **[2, 2006.01]**
215/48 • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
215/50 • • • • attached in position 4 **[2, 2006.01]**
215/52 • • • • • with aryl radicals attached in position 2 **[2, 2006.01]**
215/54 • • • • attached in position 3 **[2, 2006.01]**
215/56 • • • • • with oxygen atoms in position 4 **[2, 2006.01]**
215/58 • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
215/60 • • N-oxides **[2, 2006.01]**

217/00 Heterocyclic compounds containing isoquinoline or hydrogenated isoquinoline ring systems [2, 2006.01]
217/02 • with only hydrogen atoms or radicals containing only carbon and hydrogen atoms, directly attached to carbon atoms of the nitrogen-containing ring; Alkylene-bis-isoquinolines **[2, 2006.01]**
217/04 • • with hydrocarbon or substituted hydrocarbon radicals attached to the ring nitrogen atom **[2, 2006.01]**
217/06 • • with the ring nitrogen atom acylated by carboxylic or carbonic acids, or with sulfur or nitrogen analogues thereof, e.g. carbamates **[2, 2006.01]**
217/08 • • with a hetero atom directly attached to the ring nitrogen atom **[2, 2006.01]**
217/10 • • Quaternary compounds **[2, 2006.01]**
217/12 • with radicals, substituted by hetero atoms, attached to carbon atoms of the nitrogen-containing ring **[2, 2006.01]**
217/14 • • other than aralkyl radicals **[2, 2006.01]**
217/16 • • • substituted by oxygen atoms **[2, 2006.01]**
217/18 • • Aralkyl radicals **[2, 2006.01]**
217/20 • • • with oxygen atoms directly attached to the aromatic ring of said aralkyl radical, e.g. papaverine **[2, 2006.01]**
217/22 • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the nitrogen-containing ring **[2, 2006.01]**
217/24 • • Oxygen atoms **[2, 2006.01]**
217/26 • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**

219/00 Heterocyclic compounds containing acridine or hydrogenated acridine ring systems [2, 2006.01]
219/02 • with only hydrogen, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the ring system **[2, 2006.01]**

219/04 • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the ring system **[2, 2006.01]**
219/06 • • Oxygen atoms **[2, 2006.01]**
219/08 • • Nitrogen atoms **[2, 2006.01]**
219/10 • • • attached in position 9 **[2, 2006.01]**
219/12 • • • • Aminoalkyl-amino radicals attached in position 9 **[2, 2006.01]**
219/14 • with hydrocarbon radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom **[2, 2006.01]**
219/16 • with acyl radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom **[2, 2006.01]**

221/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom as the only ring hetero atom, not provided for by groups C07D 211/00-C07D 219/00 [2, 2006.01]
221/02 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
221/04 • • Ortho- or peri-condensed ring systems **[2, 2006.01]**
221/06 • • • Ring systems of three rings **[2, 2006.01]**
221/08 • • • • Aza-anthracenes **[2, 2006.01]**
221/10 • • • • Aza-phenanthrenes **[2, 2006.01]**
221/12 • • • • • Phenanthridines **[2, 2006.01]**
221/14 • • • • Aza-phenalenes, e.g. 1,8-naphthalimide **[2, 2006.01]**
221/16 • • • • containing carbocyclic rings other than six-membered **[2, 2006.01]**
221/18 • • • Ring systems of four or more rings **[2, 2006.01]**
221/20 • • Spiro-condensed ring systems **[2, 2006.01]**
221/22 • • Bridged ring systems **[2, 2006.01]**
221/24 • • • Camphidines **[2, 2006.01]**
221/26 • • • Benzomorphans **[2, 2006.01]**
221/28 • • • Morphinans **[2, 2006.01]**

223/00 Heterocyclic compounds containing seven-membered rings having one nitrogen atom as the only ring hetero atom [2, 2006.01]

Note(s) [2]

Hexamethylene imines or 3-azabicyclo [3.2.2] nonanes, having only hydrogen atoms attached to the ring carbon atoms, are classified in group C07D 295/00.

223/02 • not condensed with other rings **[2, 2006.01]**
223/04 • • with only hydrogen atoms, halogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
223/06 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms (halogen atoms C07D 223/04) **[2, 2006.01]**
223/08 • • • Oxygen atoms **[2, 2006.01]**
223/10 • • • • attached in position 2 **[2, 2006.01]**
223/12 • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
223/14 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
223/16 • • Benzazepines; Hydrogenated benzazepines **[2, 2006.01]**
223/18 • • Dibenzazepines; Hydrogenated dibenzazepines **[2, 2006.01]**
223/20 • • • Dibenz [b, e] azepines; Hydrogenated dibenz [b, e] azepines **[2, 2006.01]**
223/22 • • • Dibenz [b, f] azepines; Hydrogenated dibenz [b, f] azepines **[2, 2006.01]**
223/24 • • • • with hydrocarbon radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom **[2, 2006.01]**
223/26 • • • • • having a double bond between positions 10 and 11 **[2, 2006.01]**
223/28 • • • • • having a single bond between positions 10 and 11 **[2, 2006.01]**
223/30 • • • • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
223/32 • • containing carbocyclic rings other than six-membered **[2, 2006.01]**

225/00 Heterocyclic compounds containing rings of more than seven members having one nitrogen atom as the only ring hetero atom [2, 2006.01]

Note(s) [3]

Polymethyleneimines with at least five ring members and having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00.

225/02 • not condensed with other rings **[2, 2006.01]**
225/04 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
225/06 • • condensed with one six-membered ring **[2, 2006.01]**
225/08 • • condensed with two six-membered rings **[2, 2006.01]**

227/00 Heterocyclic compounds containing rings having one nitrogen atom as the only ring hetero atom, according to more than one of groups C07D 203/00-C07D 225/00 [2, 2006.01]

Note(s) [3]

Polymethyleneimines with at least five ring members and having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00.

227/02 • with only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
227/04 • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to ring carbon atoms **[2, 2006.01]**
227/06 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
227/08 • • • Oxygen atoms **[2, 2006.01]**
227/087 • • • • One doubly-bound oxygen atom in position 2, e.g. lactams **[3, 2006.01]**
227/093 • • • • Two doubly-bound oxygen atoms attached to the carbon atoms adjacent to the ring nitrogen atom, e.g. dicarboxylic acid imides **[3, 2006.01]**
227/10 • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
227/12 • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

229/00 Heterocyclic compounds containing rings of less than five members having two nitrogen atoms as the only ring hetero atoms [2, 2006.01]
229/02 • containing three-membered rings **[3, 2006.01]**

231/00 Heterocyclic compounds containing 1,2-diazole or hydrogenated 1,2-diazole rings [2, 2006.01]
231/02 • not condensed with other rings **[2, 2006.01]**

231/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
231/06 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
231/08 • • • with oxygen or sulfur atoms directly attached to ring carbon atoms **[2, 2006.01]**
231/10 • • having two or three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
231/12 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
231/14 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
231/16 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**
231/18 • • • • One oxygen or sulfur atom **[2, 2006.01]**
231/20 • • • • • One oxygen atom attached in position 3 or 5 **[2, 2006.01]**
231/22 • • • • • • with aryl radicals attached to ring nitrogen atoms **[2, 2006.01]**
231/24 • • • • • • • having sulfone or sulfonic acid radicals in the molecule **[2, 2006.01]**
231/26 • • • • • • • 1-Phenyl-3-methyl-5- pyrazolones, unsubstituted or substituted on the phenyl ring **[2, 2006.01]**
231/28 • • • • Two oxygen or sulfur atoms **[2, 2006.01]**
231/30 • • • • • attached in position 3 and 5 **[2, 2006.01]**
231/32 • • • • • • Oxygen atoms **[2, 2006.01]**
231/34 • • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached in position 4 **[2, 2006.01]**
231/36 • • • • • • • with hydrocarbon radicals, substituted by hetero atoms, attached in position 4 **[2, 2006.01]**
231/38 • • • • Nitrogen atoms (nitro radicals C07D 231/16) **[2, 2006.01]**
231/40 • • • • • Acylated on said nitrogen atom **[2, 2006.01]**
231/42 • • • • • Benzene-sulfonamido pyrazoles **[2, 2006.01]**
231/44 • • • • Oxygen and nitrogen or sulfur and nitrogen atoms **[2, 2006.01]**
231/46 • • • • • Oxygen atom in position 3 or 5 and nitrogen atom in position 4 **[2, 2006.01]**
231/48 • • • • • • with hydrocarbon radicals attached to said nitrogen atom **[2, 2006.01]**
231/50 • • • • • • Acylated on said nitrogen atom **[2, 2006.01]**
231/52 • • • • • Oxygen atom in position 3 and nitrogen atom in position 5, or vice-versa **[2, 2006.01]**
231/54 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
231/56 • • Benzopyrazoles; Hydrogenated benzopyrazoles **[2, 2006.01]**

233/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, not condensed with other rings [2, 2006.01]

233/02 • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
233/04 • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
233/06 • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2, 2006.01]**
233/08 • • • with alkyl radicals, containing more than four carbon atoms, directly attached to ring carbon atoms **[2, 2006.01]**
233/10 • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring nitrogen atoms **[2, 2006.01]**
233/12 • • • • with substituted hydrocarbon radicals attached to ring nitrogen atoms **[2, 2006.01]**
233/14 • • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
233/16 • • • • • Radicals substituted by nitrogen atoms **[2, 2006.01]**
233/18 • • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
233/20 • • with substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
233/22 • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
233/24 • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
233/26 • • • Radicals substituted by carbon atoms having three bonds to hetero atoms **[2, 2006.01]**
233/28 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
233/30 • • • Oxygen or sulfur atoms **[2, 2006.01]**
233/32 • • • • One oxygen atom **[2, 2006.01]**
233/34 • • • • • Ethylene-urea **[2, 2006.01]**
233/36 • • • • • with hydrocarbon radicals, substituted by nitrogen atoms, attached to ring nitrogen atoms **[2, 2006.01]**
233/38 • • • • • with acyl radicals or hetero atoms directly attached to ring nitrogen atoms **[2, 2006.01]**
233/40 • • • • Two or more oxygen atoms **[2, 2006.01]**
233/42 • • • • Sulfur atoms **[2, 2006.01]**
233/44 • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
233/46 • • • • with only hydrogen atoms attached to said nitrogen atoms **[2, 2006.01]**
233/48 • • • • with acyclic hydrocarbon or substituted acyclic hydrocarbon radicals, attached to said nitrogen atoms **[2, 2006.01]**
233/50 • • • • with carbocyclic radicals directly attached to said nitrogen atoms **[2, 2006.01]**
233/52 • • • • with hetero atoms directly attached to said nitrogen atoms **[2, 2006.01]**
233/54 • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
233/56 • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring carbon atoms **[2, 2006.01]**

233/58 • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring nitrogen atoms **[2, 2006.01]**
233/60 • • • with hydrocarbon radicals, substituted by oxygen or sulfur atoms, attached to ring nitrogen atoms **[2, 2006.01]**
233/61 • • • with hydrocarbon radicals, substituted by nitrogen atoms not forming part of a nitro radical, attached to ring nitrogen atoms **[3, 2006.01]**
233/62 • • • with triarylmethyl radicals attached to ring nitrogen atoms **[2, 2006.01]**
233/64 • • with substituted hydrocarbon radicals attached to ring carbon atoms, e.g. histidine **[2, 2006.01]**
233/66 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
233/68 • • • Halogen atoms **[2, 2006.01]**
233/70 • • • One oxygen atom **[2, 2006.01]**
233/72 • • • Two oxygen atoms, e.g. hydantoin **[2, 2006.01]**
233/74 • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to other ring members **[2, 2006.01]**
233/76 • • • • with substituted hydrocarbon radicals attached to the third ring carbon atom **[2, 2006.01]**
233/78 • • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
233/80 • • • • with hetero atoms or acyl radicals directly attached to ring nitrogen atoms **[2, 2006.01]**
233/82 • • • • • Halogen atoms **[2, 2006.01]**
233/84 • • • Sulfur atoms **[2, 2006.01]**
233/86 • • • Oxygen and sulfur atoms, e.g. thiohydantoin **[2, 2006.01]**
233/88 • • • Nitrogen atoms, e.g. allantoin **[2, 2006.01]**
233/90 • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
233/91 • • • Nitro radicals **[2, 2006.01]**
233/92 • • • • attached in position 4 or 5 **[2, 2006.01]**
233/93 • • • • • with hydrocarbon radicals, substituted by halogen atoms, attached to other ring members **[2, 2006.01]**
233/94 • • • • • with hydrocarbon radicals, substituted by oxygen or sulfur atoms, attached to other ring members **[2, 2006.01]**
233/95 • • • • • with hydrocarbon radicals, substituted by nitrogen atoms, attached to other ring members **[2, 2006.01]**
233/96 • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

235/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, condensed with other rings [2, 2006.01]

235/02 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
235/04 • • Benzimidazoles; Hydrogenated benzimidazoles **[2, 2006.01]**
235/06 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2 **[2, 2006.01]**
235/08 • • • • Radicals containing only hydrogen and carbon atoms **[2, 2006.01]**
235/10 • • • • Radicals substituted by halogen atoms or nitro radicals **[2, 2006.01]**
235/12 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
235/14 • • • • Radicals substituted by nitrogen atoms (by nitro radicals C07D 235/10) **[2, 2006.01]**
235/16 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
235/18 • • • with aryl radicals directly attached in position 2 **[2, 2006.01]**
235/20 • • • Two benzimidazolyl-2 radicals linked together directly or via a hydrocarbon or substituted hydrocarbon radical **[2, 2006.01]**
235/22 • • • with hetero atoms directly attached to ring nitrogen atoms (C07D 235/10 takes precedence) **[2, 2006.01]**
235/24 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2 **[2, 2006.01]**
235/26 • • • • Oxygen atoms **[2, 2006.01]**
235/28 • • • • Sulfur atoms **[2, 2006.01]**
235/30 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
235/32 • • • • • Benzimidazole-2-carbamic acids, unsubstituted or substituted; Esters thereof; Thio-analogues thereof **[2, 2006.01]**

237/00 Heterocyclic compounds containing 1,2-diazine or hydrogenated 1,2-diazine rings [2, 2006.01]

237/02 • not condensed with other rings **[2, 2006.01]**
237/04 • • having less than three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
237/06 • • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
237/08 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
237/10 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
237/12 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**
237/14 • • • • Oxygen atoms **[2, 2006.01]**
237/16 • • • • • Two oxygen atoms **[2, 2006.01]**
237/18 • • • • Sulfur atoms **[2, 2006.01]**
237/20 • • • • Nitrogen atoms (nitro radicals C07D 237/12) **[2, 2006.01]**
237/22 • • • • Nitrogen and oxygen atoms **[2, 2006.01]**
237/24 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
237/26 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
237/28 • • Cinnolines **[2, 2006.01]**
237/30 • • Phthalazines **[2, 2006.01]**
237/32 • • • with oxygen atoms directly attached to carbon atoms of the nitrogen-containing ring **[2, 2006.01]**

237/34 • • • with nitrogen atoms directly attached to carbon atoms of the nitrogen-containing ring, e.g. hydrazine radicals **[2, 2006.01]**

237/36 • • Benzo-cinnolines **[2, 2006.01]**

239/00 Heterocyclic compounds containing 1,3-diazine or hydrogenated 1,3-diazine rings [2, 2006.01]

239/02 • not condensed with other rings **[2, 2006.01]**

239/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

239/06 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**

239/08 • • • with hetero atoms directly attached in position 2 **[2, 2006.01]**

239/10 • • • • Oxygen or sulfur atoms **[2, 2006.01]**

239/12 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

239/14 • • • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to said nitrogen atoms **[2, 2006.01]**

239/16 • • • • • acylated on said nitrogen atoms **[2, 2006.01]**

239/18 • • • • • with hetero atoms attached to said nitrogen atoms, except nitro radicals, e.g. hydrazine radicals **[2, 2006.01]**

239/20 • • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

239/22 • • • with hetero atoms directly attached to ring carbon atoms **[2, 2006.01]**

239/24 • • having three or more double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

239/26 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**

239/28 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms **[2, 2006.01]**

239/30 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**

239/32 • • • • One oxygen, sulfur or nitrogen atom **[2, 2006.01]**

239/34 • • • • • One oxygen atom **[2, 2006.01]**

239/36 • • • • • • as doubly bound oxygen atom or as unsubstituted hydroxy radical **[2, 2006.01]**

239/38 • • • • • One sulfur atom **[2, 2006.01]**

239/40 • • • • • • as doubly bound sulfur atom or as unsubstituted mercapto radical **[2, 2006.01]**

239/42 • • • • • One nitrogen atom (nitro radicals C07D 239/30) **[2, 2006.01]**

239/46 • • • • Two or more oxygen, sulfur or nitrogen atoms **[2, 2006.01]**

239/47 • • • • • One nitrogen atom and one oxygen or sulfur atom, e.g. cytosine **[3, 2006.01]**

239/48 • • • • • Two nitrogen atoms **[2, 2006.01]**

239/49 • • • • • • with an aralkyl radical, or substituted aralkyl radical, attached in position 5, e.g. trimethoprim **[3, 2006.01]**

239/50 • • • • • Three nitrogen atoms **[2, 2006.01]**

239/52 • • • • • Two oxygen atoms **[2, 2006.01]**

239/54 • • • • • • as doubly bound oxygen atoms or as unsubstituted hydroxy radicals **[2, 2006.01]**

239/545 • • • • • • • with other hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms **[5, 2006.01]**

239/553 • • • • • • • • with halogen atoms or nitro radicals directly attached to ring carbon atoms, e.g. fluorouracil **[5, 2006.01]**

239/557 • • • • • • • • with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms, e.g. orotic acid **[5, 2006.01]**

239/56 • • • • • One oxygen atom and one sulfur atom **[2, 2006.01]**

239/58 • • • • • Two sulfur atoms **[2, 2006.01]**

239/60 • • • • • Three or more oxygen or sulfur atoms **[2, 2006.01]**

239/62 • • • • • • Barbituric acids **[2, 2006.01]**

239/64 • • • • • • • Salts of organic bases; Organic double compounds **[2, 2006.01]**

239/66 • • • • • • Thiobarbituric acids **[2, 2006.01]**

239/68 • • • • • • • Salts of organic bases; Organic double compounds **[2, 2006.01]**

239/69 • • • • Benzenesulfonamido-pyrimidines **[3, 2006.01]**

239/70 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

239/72 • • Quinazolines; Hydrogenated quinazolines **[2, 2006.01]**

239/74 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to ring carbon atoms of the hetero ring **[2, 2006.01]**

239/76 • • • • N-oxides **[2, 2006.01]**

239/78 • • • with hetero atoms directly attached in position 2 **[2, 2006.01]**

239/80 • • • • Oxygen atoms **[2, 2006.01]**

239/82 • • • • • with an aryl radical attached in position 4 **[2, 2006.01]**

239/84 • • • • Nitrogen atoms **[2, 2006.01]**

239/86 • • • with hetero atoms directly attached in position 4 **[2, 2006.01]**

239/88 • • • • Oxygen atoms **[2, 2006.01]**

239/90 • • • • • with acyclic radicals attached in position 2 or 3 **[2, 2006.01]**

239/91 • • • • • with aryl or aralkyl radicals attached in position 2 or 3 **[2, 2006.01]**

239/92 • • • • • with hetero atoms directly attached to nitrogen atoms of the hetero ring **[2, 2006.01]**

239/93 • • • • Sulfur atoms **[2, 2006.01]**

239/94 • • • • Nitrogen atoms **[2, 2006.01]**

239/95 • • • with hetero atoms directly attached in positions 2 and 4 **[2, 2006.01]**

239/96 • • • • Two oxygen atoms **[2, 2006.01]**

241/00 Heterocyclic compounds containing 1,4-diazine or hydrogenated 1,4-diazine rings [2, 2006.01]

Note(s) [2]

Piperazines with only hydrogen atoms directly attached to ring carbon atoms are classified in group C07D 295/00.

241/02 • not condensed with other rings **[2, 2006.01]**
241/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
241/06 • • having one or two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
241/08 • • • with oxygen atoms directly attached to ring carbon atoms **[2, 2006.01]**
241/10 • • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
241/12 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
241/14 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
241/16 • • • • Halogen atoms; Nitro radicals **[2, 2006.01]**
241/18 • • • • Oxygen or sulfur atoms **[2, 2006.01]**
241/20 • • • • Nitrogen atoms (nitro radicals C07D 241/16) **[2, 2006.01]**
241/22 • • • • • Benzenesulfonamido pyrazines **[2, 2006.01]**
241/24 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
241/26 • • • • • with nitrogen atoms directly attached to ring carbon atoms **[2, 2006.01]**
241/28 • • • • • • in which said hetero-bound carbon atoms have double bonds to oxygen, sulfur or nitrogen atoms **[2, 5, 2006.01]**
241/30 • • • • • • • in which said hetero-bound carbon atoms are part of a substructure —C(=X)—X—C(=X)—X— in which X is an oxygen or sulfur atom or an imino radical, e.g. imidoylguanidines **[2, 5, 2006.01]**
241/32 • • • • • • • • (Amino-pyrazinoyl) guanidines **[2, 5, 2006.01]**
241/34 • • • • • • • • (Amino-pyrazine carbonamido) guanidines **[2, 5, 2006.01]**
241/36 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
241/38 • • with only hydrogen or carbon atoms directly attached to the ring nitrogen atoms **[2, 2006.01]**
241/40 • • • Benzopyrazines **[2, 2006.01]**
241/42 • • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
241/44 • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
241/46 • • • Phenazines **[2, 2006.01]**
241/48 • • • • with hydrocarbon radicals, substituted by nitrogen atoms, directly attached to the ring nitrogen atoms **[2, 2006.01]**
241/50 • • with hetero atoms directly attached to ring nitrogen atoms **[2, 2006.01]**
241/52 • • • Oxygen atoms **[2, 2006.01]**
241/54 • • • Nitrogen atoms **[2, 2006.01]**

243/00 Heterocyclic compounds containing seven-membered rings having two nitrogen atoms as the only ring hetero atoms [2, 2006.01]

243/02 • having the nitrogen atoms in positions 1 and 2 **[2, 2006.01]**
243/04 • having the nitrogen atoms in positions 1 and 3 **[2, 2006.01]**
243/06 • having the nitrogen atoms in positions 1 and 4 **[2, 2006.01]**
243/08 • • not condensed with other rings **[2, 2006.01]**
243/10 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
243/12 • • • 1,5-Benzodiazepines; Hydrogenated 1,5-benzodiazepines **[2, 2006.01]**
243/14 • • • 1,4-Benzodiazepines; Hydrogenated 1,4-benzodiazepines **[2, 2006.01]**
243/16 • • • • substituted in position 5 by aryl radicals **[2, 2006.01]**
243/18 • • • • • substituted in position 2 by nitrogen, oxygen or sulfur atoms **[2, 2006.01]**
243/20 • • • • • • Nitrogen atoms **[2, 2006.01]**
243/22 • • • • • • Sulfur atoms **[2, 2006.01]**
243/24 • • • • • • Oxygen atoms **[2, 2006.01]**
243/26 • • • • • • • Preparation from compounds already containing the benzodiazepine skeleton **[2, 2006.01]**
243/28 • • • • • • • Preparation including building-up the benzodiazepine skeleton from compounds containing no hetero rings **[2, 2006.01]**
243/30 • • • • • • • Preparation including building-up the benzodiazepine skeleton from compounds already containing hetero rings **[2, 2006.01]**
243/32 • • • • • • • • containing a phthalimide or hydrogenated phthalimide ring system **[2, 2006.01]**
243/34 • • • • • • • • containing a quinazoline or hydrogenated quinazoline ring system **[2, 2006.01]**
243/36 • • • • • • • • containing an indole or hydrogenated indole ring system **[2, 2006.01]**
243/38 • • • [b, e]- or [b, f]-condensed with six-membered rings **[2, 2006.01]**

245/00 Heterocyclic compounds containing rings of more than seven members having two nitrogen atoms as the only ring hetero atoms [2, 2006.01]

245/02 • not condensed with other rings **[2, 2006.01]**
245/04 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
245/06 • • condensed with one six-membered ring **[2, 2006.01]**

247/00 Heterocyclic compounds containing rings having two nitrogen atoms as the only ring hetero atoms, according to more than one of groups C07D 229/00-C07D 245/00 [2, 2006.01]

247/02 • having the nitrogen atoms in positions 1 and 3 **[2, 2006.01]**

249/00 Heterocyclic compounds containing five-membered rings having three nitrogen atoms as the only ring hetero atoms [2, 2006.01]

249/02 • not condensed with other rings **[2, 2006.01]**
249/04 • • 1,2,3-Triazoles; Hydrogenated 1,2,3-triazoles **[2, 2006.01]**
249/06 • • • with aryl radicals directly attached to ring atoms **[2, 2006.01]**
249/08 • • 1,2,4-Triazoles; Hydrogenated 1,2,4-triazoles **[2, 2006.01]**
249/10 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
249/12 • • • • Oxygen or sulfur atoms **[2, 2006.01]**
249/14 • • • • Nitrogen atoms **[2, 2006.01]**
249/16 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
249/18 • • Benzotriazoles **[2, 2006.01]**
249/20 • • • with aryl radicals directly attached in position 2 **[2, 2006.01]**
249/22 • • Naphthotriazoles **[2, 2006.01]**
249/24 • • • with stilbene radicals directly attached in position 2 **[2, 2006.01]**

251/00 Heterocyclic compounds containing 1,3,5-triazine rings [2, 2006.01]

251/02 • not condensed with other rings **[2, 2006.01]**
251/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
251/06 • • • with hetero atoms directly attached to ring nitrogen atoms **[2, 2006.01]**
251/08 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
251/10 • • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
251/12 • • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
251/14 • • • with hydrogen or carbon atoms directly attached to at least one ring carbon atom **[2, 2006.01]**
251/16 • • • • to only one ring carbon atom **[2, 2006.01]**
251/18 • • • • • with nitrogen atoms directly attached to the two other ring carbon atoms, e.g. guanamines **[2, 2006.01]**
251/20 • • • • • with no nitrogen atoms directly attached to a ring carbon atom **[2, 2006.01]**
251/22 • • • • to two ring carbon atoms **[2, 2006.01]**
251/24 • • • • to three ring carbon atoms **[2, 2006.01]**
251/26 • • • with only hetero atoms directly attached to ring carbon atoms **[2, 2006.01]**
251/28 • • • • Only halogen atoms, e.g. cyanuric chloride **[2, 2006.01]**
251/30 • • • • Only oxygen atoms **[2, 2006.01]**
251/32 • • • • • Cyanuric acid; Isocyanuric acid **[2, 2006.01]**
251/34 • • • • • Cyanuric or isocyanuric esters **[2, 2006.01]**
251/36 • • • • • having halogen atoms directly attached to ring nitrogen atoms **[2, 2006.01]**
251/38 • • • • Sulfur atoms **[2, 2006.01]**
251/40 • • • • Nitrogen atoms **[2, 2006.01]**
251/42 • • • • • One nitrogen atom **[2, 2006.01]**
251/44 • • • • • • with halogen atoms attached to the two other ring carbon atoms **[2, 2006.01]**
251/46 • • • • • • with oxygen or sulfur atoms attached to the two other ring carbon atoms **[2, 2006.01]**
251/48 • • • • • Two nitrogen atoms **[2, 2006.01]**
251/50 • • • • • • with a halogen atom attached to the third ring carbon atom **[2, 2006.01]**
251/52 • • • • • • with an oxygen or sulfur atom attached to the third ring carbon atom **[2, 2006.01]**
251/54 • • • • • Three nitrogen atoms **[2, 2006.01]**
251/56 • • • • • • Preparation of melamine **[2, 2006.01]**
251/58 • • • • • • • from cyanamide, dicyanamide or calcium cyanamide **[2, 2006.01]**
251/60 • • • • • • • from urea or from carbon dioxide and ammonia **[2, 2006.01]**
251/62 • • • • • • Purification of melamine **[2, 2006.01]**
251/64 • • • • • • Condensation products of melamine with aldehydes; Derivatives thereof (polycondensation products C08G) **[2, 2006.01]**
251/66 • • • • • • Derivatives of melamine in which a hetero atom is directly attached to a nitrogen atom of melamine **[2, 2006.01]**
251/68 • • • • • • Triazinylamino stilbenes **[2, 2006.01]**
251/70 • • • • • • Other substituted melamines **[2, 2006.01]**
251/72 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

253/00 Heterocyclic compounds containing six-membered rings having three nitrogen atoms as the only ring hetero atoms, not provided for by group C07D 251/00 [2, 2006.01]

253/02 • not condensed with other rings **[2, 2006.01]**
253/04 • • 1,2,3-Triazines **[2, 2006.01]**
253/06 • • 1,2,4-Triazines **[2, 2006.01]**
253/065 • • • having three double bonds between ring members or between ring members and non-ring members **[5, 2006.01]**
253/07 • • • • with hetero atoms, or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[5, 2006.01]**
253/075 • • • • • Two hetero atoms, in positions 3 and 5 **[5, 2006.01]**
253/08 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
253/10 • • Condensed 1,2,4-triazines; Hydrogenated condensed 1,2,4-triazines **[5, 2006.01]**

255/00 Heterocyclic compounds containing rings having three nitrogen atoms as the only ring hetero atoms, not provided for by groups C07D 249/00-C07D 253/00 [2, 2006.01]

255/02 • not condensed with other rings **[2, 2006.01]**
255/04 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

257/00 Heterocyclic compounds containing rings having four nitrogen atoms as the only ring hetero atoms [2, 2006.01]

257/02 • not condensed with other rings **[2, 2006.01]**
257/04 • • Five-membered rings **[2, 2006.01]**

257/06 • • • with nitrogen atoms directly attached to the ring carbon atom **[2, 2006.01]**
257/08 • • Six-membered rings **[2, 2006.01]**
257/10 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
257/12 • • Six-membered rings having four nitrogen atoms **[2, 2006.01]**

259/00 Heterocyclic compounds containing rings having more than four nitrogen atoms as the only ring hetero atoms [2, 2006.01]

Heterocyclic compounds having nitrogen and oxygen as the only ring hetero atoms [2]

261/00 Heterocyclic compounds containing 1,2-oxazole or hydrogenated 1,2-oxazole rings [2, 2006.01]
261/02 • not condensed with other rings **[2, 2006.01]**
261/04 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
261/06 • • having two or more double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
261/08 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
261/10 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
261/12 • • • • Oxygen atoms **[2, 2006.01]**
261/14 • • • • Nitrogen atoms **[2, 2006.01]**
261/16 • • • • • Benzene-sulfonamido isoxazoles **[2, 2006.01]**
261/18 • • • • Carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen **[2, 2006.01]**
261/20 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

263/00 Heterocyclic compounds containing 1,3-oxazole or hydrogenated 1,3-oxazole rings [2, 2006.01]
263/02 • not condensed with other rings **[2, 2006.01]**
263/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
263/06 • • • with hydrocarbon radicals, substituted by oxygen atoms, attached to ring carbon atoms **[2, 2006.01]**
263/08 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
263/10 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
263/12 • • • • with radicals containing only hydrogen and carbon atoms **[2, 2006.01]**
263/14 • • • • with radicals substituted by oxygen atoms **[2, 2006.01]**
263/16 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
263/18 • • • • Oxygen atoms **[2, 2006.01]**
263/20 • • • • • attached in position 2 **[2, 2006.01]**
263/22 • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to other ring carbon atoms **[2, 2006.01]**
263/24 • • • • • • with hydrocarbon radicals, substituted by oxygen atoms, attached to other ring carbon atoms **[2, 2006.01]**
263/26 • • • • • • with hetero atoms or acyl radicals directly attached to the ring nitrogen atom **[2, 2006.01]**
263/28 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
263/30 • • having two or three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
263/32 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
263/34 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
263/36 • • • • One oxygen atom **[2, 2006.01]**
263/38 • • • • • attached in position 2 **[2, 2006.01]**
263/40 • • • • • attached in position 4 **[2, 2006.01]**
263/42 • • • • • attached in position 5 **[2, 2006.01]**
263/44 • • • • Two oxygen atoms **[2, 2006.01]**
263/46 • • • • Sulfur atoms **[2, 2006.01]**
263/48 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
263/50 • • • • • Benzene-sulfonamido oxazoles **[2, 2006.01]**
263/52 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
263/54 • • Benzoxazoles; Hydrogenated benzoxazoles **[2, 2006.01]**
263/56 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2 **[2, 2006.01]**
263/57 • • • • Aryl or substituted aryl radicals **[5, 2006.01]**
263/58 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2 **[2, 2006.01]**
263/60 • • Naphthoxazoles; Hydrogenated naphthoxazoles **[2, 2006.01]**
263/62 • • having two or more ring systems containing condensed 1,3-oxazole rings **[2, 2006.01]**
263/64 • • • linked in positions 2 and 2' by chains containing six-membered aromatic rings or ring systems containing such rings **[5, 2006.01]**

265/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom and one oxygen atom as the only ring hetero atoms [2, 2006.01]

Note(s) [2]

Morpholines having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00.

265/02 • 1,2-Oxazines; Hydrogenated 1,2-oxazines **[2, 2006.01]**
265/04 • 1,3-Oxazines; Hydrogenated 1,3-oxazines **[2, 2006.01]**

265/06 • • not condensed with other rings **[2, 2006.01]**
265/08 • • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
265/10 • • • • with oxygen atoms directly attached to ring carbon atoms **[2, 2006.01]**
265/12 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
265/14 • • • condensed with one six-membered ring **[2, 2006.01]**
265/16 • • • • with only hydrogen or carbon atoms directly attached in positions 2 and 4 **[2, 2006.01]**
265/18 • • • • with hetero atoms directly attached in position 2 **[2, 2006.01]**
265/20 • • • • with hetero atoms directly attached in position 4 **[2, 2006.01]**
265/22 • • • • • Oxygen atoms **[2, 2006.01]**
265/24 • • • • with hetero atoms directly attached in positions 2 and 4 **[2, 2006.01]**
265/26 • • • • • Two oxygen atoms, e.g. isatoic anhydride **[2, 2006.01]**
265/28 • 1,4-Oxazines; Hydrogenated 1,4-oxazines **[2, 2006.01]**
265/30 • • not condensed with other rings **[2, 2006.01]**
265/32 • • • with oxygen atoms directly attached to ring carbon atoms **[2, 2006.01]**
265/33 • • • • Two oxygen atoms, in positions 3 and 5 **[5, 2006.01]**
265/34 • • condensed with carbocyclic rings **[2, 2006.01]**
265/36 • • • condensed with one six-membered ring **[2, 2006.01]**
265/38 • • • [b, e]-condensed with two six-membered rings **[2, 2006.01]**

267/00 Heterocyclic compounds containing rings of more than six members having one nitrogen atom and one oxygen atom as the only ring hetero atoms [2, 2006.01]
267/02 • Seven-membered rings **[2, 2006.01]**
267/04 • • having the hetero atoms in positions 1 and 2 **[2, 2006.01]**
267/06 • • having the hetero atoms in positions 1 and 3 **[2, 2006.01]**
267/08 • • having the hetero atoms in positions 1 and 4 **[2, 2006.01]**
267/10 • • • not condensed with other rings **[2, 2006.01]**
267/12 • • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
267/14 • • • • condensed with one six-membered ring **[2, 2006.01]**
267/16 • • • • condensed with two six-membered rings **[2, 2006.01]**
267/18 • • • • • [b, e]-condensed **[2, 2006.01]**
267/20 • • • • • [b, f]-condensed **[2, 2006.01]**
267/22 • Eight-membered rings **[2, 2006.01]**

269/00 Heterocyclic compounds containing rings having one nitrogen atom and one oxygen atom as the only ring hetero atoms according to more than one of groups C07D 261/00-C07D 267/00 [2, 2006.01]
269/02 • having the hetero atoms in positions 1 and 3 **[2, 2006.01]**

271/00 Heterocyclic compounds containing five-membered rings having two nitrogen atoms and one oxygen atom as the only ring hetero atoms [2, 2006.01]
271/02 • not condensed with other rings **[2, 2006.01]**
271/04 • • 1,2,3-Oxadiazoles; Hydrogenated 1,2,3-oxadiazoles **[2, 2006.01]**
271/06 • • 1,2,4-Oxadiazoles; Hydrogenated 1,2,4-oxadiazoles **[2, 2006.01]**
271/07 • • • with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical **[5, 2006.01]**
271/08 • • 1,2,5-Oxadiazoles; Hydrogenated 1,2,5-oxadiazoles **[2, 2006.01]**
271/10 • • 1,3,4-Oxadiazoles; Hydrogenated 1,3,4-oxadiazoles **[2, 2006.01]**
271/107 • • • with two aryl or substituted aryl radicals attached in positions 2 and 5 **[5, 2006.01]**
271/113 • • • with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical **[5, 2006.01]**
271/12 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

273/00 Heterocyclic compounds containing rings having nitrogen and oxygen atoms as the only ring hetero atoms, not provided for by groups C07D 261/00-C07D 271/00 [2, 2006.01]
273/01 • having one nitrogen atom **[3, 2006.01]**
273/02 • having two nitrogen atoms and only one oxygen atom **[2, 2006.01]**
273/04 • • Six-membered rings **[2, 2006.01]**
273/06 • • Seven-membered rings **[2, 2006.01]**
273/08 • having two nitrogen atoms and more than one oxygen atom **[3, 2006.01]**

Heterocyclic compounds having nitrogen and sulfur as the only ring hetero atoms [2]

275/00 Heterocyclic compounds containing 1, 2-thiazole or hydrogenated 1,2-thiazole rings [2, 2006.01]
275/02 • not condensed with other rings **[2, 2006.01]**
275/03 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[5, 2006.01]**
275/04 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
275/06 • • with hetero atoms directly attached to the ring sulfur atom **[2, 2006.01]**

277/00 Heterocyclic compounds containing 1,3-thiazole or hydrogenated 1,3-thiazole rings [2, 2006.01]
277/02 • not condensed with other rings **[2, 2006.01]**
277/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
277/06 • • • with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
277/08 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
277/10 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**

277/12 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
277/14 • • • • Oxygen atoms **[2, 2006.01]**
277/16 • • • • Sulfur atoms **[2, 2006.01]**
277/18 • • • • Nitrogen atoms **[2, 2006.01]**
277/20 • • having two or three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
277/22 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
277/24 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
277/26 • • • • Radicals substituted by sulfur atoms **[2, 2006.01]**
277/28 • • • • Radicals substituted by nitrogen atoms **[2, 2006.01]**
277/30 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
277/32 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
277/34 • • • • Oxygen atoms **[2, 2006.01]**
277/36 • • • • Sulfur atoms **[2, 2006.01]**
277/38 • • • • Nitrogen atoms **[2, 2006.01]**
277/40 • • • • • Unsubstituted amino or imino radicals **[2, 2006.01]**
277/42 • • • • • Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals **[2, 2006.01]**
277/44 • • • • • Acylated amino or imino radicals **[2, 2006.01]**
277/46 • • • • • • by carboxylic acids, or sulfur or nitrogen analogues thereof **[2, 2006.01]**
277/48 • • • • • • by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof, e.g. carbonylguanidines **[2, 2006.01]**
277/50 • • • • • Nitrogen atoms bound to hetero atoms **[2, 2006.01]**
277/52 • • • • • • to sulfur atoms, e.g. sulfonamides **[2, 2006.01]**
277/54 • • • • Nitrogen and either oxygen or sulfur atoms **[2, 2006.01]**
277/56 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
277/58 • • • • Nitro radicals **[2, 2006.01]**
277/587 • • • with aliphatic hydrocarbon radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms, said aliphatic radicals being substituted in the alpha-position to the ring by a hetero atom, e.g. with m ≥ 0, Z being a singly or a doubly bound hetero atom **[5, 2006.01]**
277/593 • • • • Z being doubly bound oxygen or doubly bound nitrogen, which nitrogen is part of a possibly substituted oximino radical **[5, 2006.01]**
277/60 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
277/62 • • Benzothiazoles **[2, 2006.01]**
277/64 • • • with only hydrocarbon or substituted hydrocarbon radicals attached in position 2 **[2, 2006.01]**
277/66 • • • • with aromatic rings or ring systems directly attached in position 2 **[2, 2006.01]**
277/68 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2 **[2, 2006.01]**
277/70 • • • • Sulfur atoms **[2, 2006.01]**
277/72 • • • • • 2-Mercaptobenzothiazole **[2, 2006.01]**
277/74 • • • • • Sulfur atoms substituted by carbon atoms **[2, 2006.01]**
277/76 • • • • • Sulfur atoms attached to a second hetero atom **[2, 2006.01]**
277/78 • • • • • • to a second sulfur atom **[2, 2006.01]**
277/80 • • • • • • to a nitrogen atom **[2, 2006.01]**
277/82 • • • • Nitrogen atoms **[2, 2006.01]**
277/84 • • Naphthothiazoles **[2, 2006.01]**

279/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom and one sulfur atom as the only ring hetero atoms [2, 2006.01]

Note(s) [2]

Thiomorpholines having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00.

279/02 • 1,2-Thiazines; Hydrogenated 1,2-thiazines **[2, 2006.01]**
279/04 • 1,3-Thiazines; Hydrogenated 1,3-thiazines **[2, 2006.01]**
279/06 • • not condensed with other rings **[2, 2006.01]**
279/08 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
279/10 • 1,4-Thiazines; Hydrogenated 1,4-thiazines **[2, 2006.01]**
279/12 • • not condensed with other rings **[2, 2006.01]**
279/14 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
279/16 • • • condensed with one six-membered ring **[2, 2006.01]**
279/18 • • • [b, e]-condensed with two six-membered rings **[2, 2006.01]**
279/20 • • • • with hydrogen atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
279/22 • • • • with carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
279/24 • • • • • with hydrocarbon radicals, substituted by amino radicals, attached to the ring nitrogen atom **[2, 2006.01]**
279/26 • • • • • • without other substituents attached to the ring system **[2, 2006.01]**
279/28 • • • • • • with other substituents attached to the ring system **[2, 2006.01]**
279/30 • • • • • with acyl radicals attached to the ring nitrogen atom **[2, 2006.01]**
279/32 • • • • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

279/34 • • • • with hetero atoms directly attached to the ring sulfur atom **[2, 2006.01]**

279/36 • • • [b, e]-condensed, at least one with a further condensed benzene ring **[2, 2006.01]**

281/00 Heterocyclic compounds containing rings of more than six members having one nitrogen atom and one sulfur atom as the only ring hetero atoms [2, 2006.01]

281/02 • Seven-membered rings **[2, 2006.01]**

281/04 • • having the hetero atoms in positions 1 and 4 **[2, 2006.01]**

281/06 • • • not condensed with other rings **[2, 2006.01]**

281/08 • • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

281/10 • • • • condensed with one six-membered ring **[2, 2006.01]**

281/12 • • • • condensed with two six-membered rings **[2, 2006.01]**

281/14 • • • • • [b, e]-condensed **[2, 2006.01]**

281/16 • • • • • [b, f]-condensed **[2, 2006.01]**

281/18 • Eight-membered rings **[2, 2006.01]**

283/00 Heterocyclic compounds containing rings having one nitrogen atom and one sulfur atom as the only ring hetero atoms, according to more than one of groups C07D 275/00-C07D 281/00 [2, 2006.01]

283/02 • having the hetero atoms in positions 1 and 3 **[2, 2006.01]**

285/00 Heterocyclic compounds containing rings having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by groups C07D 275/00-C07D 283/00 [2, 2006.01]

285/01 • Five-membered rings **[5, 2006.01]**

285/02 • • Thiadiazoles; Hydrogenated thiadiazoles **[2, 5, 2006.01]**

285/04 • • • not condensed with other rings **[2, 5, 2006.01]**

285/06 • • • • 1,2,3-Thiadiazoles; Hydrogenated 1,2,3-thiadiazoles **[2, 5, 2006.01]**

285/08 • • • • 1,2,4-Thiadiazoles; Hydrogenated 1,2,4-thiadiazoles **[2, 5, 2006.01]**

285/10 • • • • 1,2,5-Thiadiazoles; Hydrogenated 1,2,5-thiadiazoles **[2, 5, 2006.01]**

285/12 • • • • 1,3,4-Thiadiazoles; Hydrogenated 1,3,4-thiadiazoles **[2, 5, 2006.01]**

285/125 • • • • • with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical **[5, 2006.01]**

285/13 • • • • • • Oxygen atoms **[5, 2006.01]**

285/135 • • • • • • Nitrogen atoms **[5, 2006.01]**

285/14 • • • condensed with carbocyclic rings or ring systems **[2, 5, 2006.01]**

285/15 • Six-membered rings **[5, 2006.01]**

285/16 • • Thiadiazines; Hydrogenated thiadiazines **[2, 5, 2006.01]**

285/18 • • • 1,2,4-Thiadiazines; Hydrogenated 1,2,4-thiadiazines **[2, 5, 2006.01]**

285/20 • • • • condensed with carbocyclic rings or ring systems **[2, 5, 2006.01]**

285/22 • • • • • condensed with one six-membered ring **[2, 5, 2006.01]**

285/24 • • • • • • with oxygen atoms directly attached to the ring sulfur atom **[2, 5, 2006.01]**

285/26 • • • • • • • substituted in position 6 or 7 by sulfamoyl or substituted sulfamoyl radicals **[2, 5, 2006.01]**

285/28 • • • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached in position 3 **[2, 5, 2006.01]**

285/30 • • • • • • • • with hydrocarbon radicals, substituted by hetero atoms, attached in position 3 **[2, 5, 2006.01]**

285/32 • • • • • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 3 **[2, 5, 2006.01]**

285/34 • • • 1,3,5-Thiadiazines; Hydrogenated 1,3,5-thiadiazines **[2, 5, 2006.01]**

285/36 • Seven-membered rings **[2, 2006.01]**

285/38 • Eight-membered rings **[2, 2006.01]**

291/00 Heterocyclic compounds containing rings having nitrogen, oxygen and sulfur atoms as the only ring hetero atoms [2, 2006.01]

291/02 • not condensed with other rings **[2, 2006.01]**

291/04 • • Five-membered rings **[2, 2006.01]**

291/06 • • Six-membered rings **[2, 2006.01]**

291/08 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

293/00 Heterocyclic compounds containing rings having nitrogen and selenium or nitrogen and tellurium, with or without oxygen or sulfur atoms, as the ring hetero atoms [2, 2006.01]

293/02 • not condensed with other rings **[2, 2006.01]**

293/04 • • Five-membered rings **[2, 2006.01]**

293/06 • • • Selenazoles; Hydrogenated selenazoles **[2, 2006.01]**

293/08 • • Six-membered rings **[2, 2006.01]**

293/10 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

293/12 • • Selenazoles; Hydrogenated selenazoles **[2, 2006.01]**

295/00 Heterocyclic compounds containing polymethylene-imine rings with at least five ring members, 3-azabicyclo [3.2.2] nonane, piperazine, morpholine or thiomorpholine rings, having only hydrogen atoms directly attached to the ring carbon atoms [2, 2006.01]

295/02 • containing only hydrogen and carbon atoms in addition to the ring hetero elements **[2, 2006.01]**

295/023 • • Preparation; Separation; Stabilisation; Use of additives **[5, 2006.01]**

295/027 • • containing only one hetero ring **[5, 2006.01]**

295/03 • • • with the ring nitrogen atoms directly attached to acyclic carbon atoms **[5, 2006.01]**

295/033 • • • with the ring nitrogen atoms directly attached to carbocyclic rings **[5, 2006.01]**

295/037 • • with quaternary ring nitrogen atoms **[5, 2006.01]**

295/04 • with substituted hydrocarbon radicals attached to ring nitrogen atoms **[2, 2006.01]**

295/06 • • substituted by halogen atoms or nitro radicals **[2, 2006.01]**

295/067 • • • with the ring nitrogen atoms and the substituents attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5, 2006.01]**
295/073 • • • with the ring nitrogen atoms and the substituents separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5, 2006.01]**
295/08 • • substituted by singly bound oxygen or sulfur atoms **[2, 2006.01]**
295/084 • • • with the ring nitrogen atoms and the oxygen or sulfur atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5, 2006.01]**
295/088 • • • • to an acyclic saturated chain **[5, 2006.01]**
295/092 • • • • with aromatic radicals attached to the chain **[5, 2006.01]**
295/096 • • • with the ring nitrogen atoms and the oxygen or sulfur atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5, 2006.01]**
295/10 • • substituted by doubly bound oxygen or sulfur atoms **[2, 2006.01]**
295/104 • • • with the ring nitrogen atoms and the doubly bound oxygen or sulfur atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5, 2006.01]**
295/108 • • • • to an acyclic saturated chain **[5, 2006.01]**
295/112 • • • with the ring nitrogen atoms and the doubly bound oxygen or sulfur atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5, 2006.01]**
295/116 • • • • with the doubly bound oxygen or sulfur atoms directly attached to a carbocyclic ring **[5, 2006.01]**
295/12 • • substituted by singly or doubly bound nitrogen atoms (nitro radicals C07D 295/06) **[2, 2006.01]**
295/125 • • • with the ring nitrogen atoms and the substituent nitrogen atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5, 2006.01]**
295/13 • • • • to an acyclic saturated chain **[5, 2006.01]**
295/135 • • • with the ring nitrogen atoms and the substituent nitrogen atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5, 2006.01]**
295/14 • • substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
295/145 • • • with the ring nitrogen atoms and the carbon atoms with three bonds to hetero atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5, 2006.01]**
295/15 • • • • to an acyclic saturated chain **[5, 2006.01]**
295/155 • • • with the ring nitrogen atoms and the carbon atoms with three bonds to hetero atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5, 2006.01]**
295/16 • acylated on ring nitrogen atoms **[2, 2006.01]**
295/18 • • by radicals derived from carboxylic acids, or sulfur or nitrogen analogues thereof **[2, 2006.01]**
295/182 • • • Radicals derived from carboxylic acids **[5, 2006.01]**
295/185 • • • • from aliphatic carboxylic acids **[5, 2006.01]**
295/192 • • • • from aromatic carboxylic acids **[5, 2006.01]**
295/194 • • • Radicals derived from thio- or thiono carboxylic acids **[5, 2006.01]**
295/195 • • • Radicals derived from nitrogen analogues of carboxylic acids **[5, 2006.01]**
295/20 • • by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof **[2, 2006.01]**
295/205 • • • Radicals derived from carbonic acid **[5, 2006.01]**
295/21 • • • Radicals derived from sulfur analogues of carbonic acid **[5, 2006.01]**
295/215 • • • Radicals derived from nitrogen analogues of carbonic acid **[5, 2006.01]**
295/22 • with hetero atoms directly attached to ring nitrogen atoms **[2, 2006.01]**
295/24 • • Oxygen atoms **[5, 2006.01]**
295/26 • • Sulfur atoms **[5, 2006.01]**
295/28 • • Nitrogen atoms **[5, 2006.01]**
295/30 • • • non-acylated **[5, 2006.01]**
295/32 • • • acylated with carboxylic or carbonic acids, or their nitrogen or sulfur analogues **[5, 2006.01]**

Heterocyclic compounds having oxygen atoms, with or without sulfur, selenium, or tellurium atoms, as ring hetero atoms [2]

301/00 Preparation of oxiranes [2, 2006.01]
301/02 • Synthesis of the oxirane ring **[2, 2006.01]**
301/03 • • by oxidation of unsaturated compounds, or of mixtures of unsaturated and saturated compounds **[3, 2006.01]**
301/04 • • • with air or molecular oxygen **[2, 3, 2006.01]**
301/06 • • • • in the liquid phase **[2, 3, 2006.01]**
301/08 • • • • in the gaseous phase **[2, 3, 2006.01]**
301/10 • • • • • with catalysts containing silver or gold **[2, 3, 2006.01]**
301/12 • • • with hydrogen peroxide or inorganic peroxides or peracids **[2, 3, 2006.01]**
301/14 • • • with organic peracids, or salts, anhydrides or esters thereof **[2, 3, 2006.01]**
301/16 • • • • formed in situ, e.g. from carboxylic acids and hydrogen peroxide **[2, 3, 2006.01]**
301/18 • • • • • from polybasic carboxylic acids **[2, 3, 2006.01]**
301/19 • • • with organic hydroperoxides **[3, 2006.01]**
301/22 • • by oxidation of saturated compounds with air or molecular oxygen (of mixtures of unsaturated and saturated compounds C07D 301/04) **[2, 2006.01]**
301/24 • • by splitting-off Hal—Y from compounds containing the radical Hal—C—C—OY **[2, 2006.01]**
301/26 • • • Y being hydrogen **[2, 2006.01]**
301/27 • Condensation of epihalohydrins or halohydrins with compounds containing active hydrogen atoms (macromolecular compounds C08) **[3, 2006.01]**
301/28 • • by reaction with hydroxyl radicals **[2, 3, 2006.01]**
301/30 • • by reaction with carboxyl radicals **[2, 3, 2006.01]**
301/32 • Separation; Purification **[2, 2006.01]**
301/36 • Use of additives, e.g. for stabilisation **[3, 2006.01]**

303/00 Compounds containing three-membered rings having one oxygen atom as the only ring hetero atom [2, 2006.01]
303/02 • Compounds containing oxirane rings **[2, 2006.01]**
303/04 • • containing only hydrogen and carbon atoms in addition to the ring oxygen atoms **[2, 2006.01]**
303/06 • • • in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings **[2, 2006.01]**

303/08 • • with hydrocarbon radicals, substituted by halogen atoms, nitro radicals or nitroso radicals **[2, 2006.01]**

303/10 • • • in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings **[2, 2006.01]**

303/12 • • with hydrocarbon radicals, substituted by singly or doubly bound oxygen atoms **[2, 2006.01]**

303/14 • • • by free hydroxyl radicals **[2, 2006.01]**

303/16 • • • by esterified hydroxyl radicals **[2, 2006.01]**

303/17 • • • • containing oxirane rings condensed with carbocyclic ring systems having three or more relevant rings **[3, 2006.01]**

303/18 • • • by etherified hydroxyl radicals **[2, 2006.01]**

303/20 • • • • Ethers with hydroxy compounds containing no oxirane rings **[2, 2006.01]**

303/22 • • • • • with monohydroxy compounds **[2, 2006.01]**

303/23 • • • • • • Oxiranylmethyl ethers of compounds having one hydroxy group bound to a six-membered aromatic ring, the oxiranylmethyl radical not being further substituted, i.e.

[5, 2006.01]

303/24 • • • • • with polyhydroxy compounds **[2, 2006.01]**

303/26 • • • • • • having one or more free hydroxyl radicals **[2, 2006.01]**

303/27 • • • • • • having all hydroxyl radicals etherified with oxirane containing compounds **[3, 2006.01]**

303/28 • • • • Ethers with hydroxy compounds containing oxirane rings **[2, 2006.01]**

303/30 • • • • • Ethers of oxirane-containing polyhydroxy compounds in which all hydroxyl radicals are etherified with oxirane-containing hydroxy compounds **[2, 2006.01]**

303/31 • • • • in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings **[3, 2006.01]**

303/32 • • • by aldehydo- or ketonic radicals **[2, 2006.01]**

303/34 • • with hydrocarbon radicals, substituted by sulfur, selenium, or tellurium atoms **[2, 2006.01]**

303/36 • • with hydrocarbon radicals, substituted by nitrogen atoms (nitro, nitroso radicals C07D 303/08) **[2, 2006.01]**

303/38 • • with hydrocarbon radicals, substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**

303/40 • • • by ester radicals **[2, 2006.01]**

303/42 • • • • Acyclic compounds having a chain of seven or more carbon atoms, e.g. epoxidised fats **[2, 2006.01]**

303/44 • • • • Esterified with oxirane-containing hydroxy compounds **[2, 2006.01]**

303/46 • • • by amide or nitrile radicals **[2, 2006.01]**

303/48 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms, e.g. ester or nitrile radicals **[3, 2006.01]**

305/00 Heterocyclic compounds containing four-membered rings having one oxygen atom as the only ring hetero atoms [2, 2006.01]

305/02 • not condensed with other rings **[2, 2006.01]**

305/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

305/06 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring atoms **[2, 2006.01]**

305/08 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring atoms **[2, 2006.01]**

305/10 • • having one or more double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

305/12 • • • Beta-lactones **[2, 2006.01]**

305/14 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

307/00 Heterocyclic compounds containing five-membered rings having one oxygen atom as the only ring hetero atom [2, 2006.01]

307/02 • not condensed with other rings **[2, 2006.01]**

307/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

307/06 • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2, 2006.01]**

307/08 • • • • Preparation of tetrahydrofuran **[2, 2006.01]**

307/10 • • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**

307/12 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**

307/14 • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

307/16 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**

307/18 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

307/20 • • • • Oxygen atoms **[2, 2006.01]**

307/22 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

307/24 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**

307/26 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**

307/28 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**

307/30 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

307/32 • • • • Oxygen atoms **[2, 2006.01]**

307/33 • • • • • in position 2, the oxygen atom being in its keto or unsubstituted enol form **[5, 2006.01]**

307/34 • • having two or three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
307/36 • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2, 2006.01]**
307/38 • • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**
307/40 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
307/42 • • • • • Singly bound oxygen atoms **[2, 2006.01]**
307/44 • • • • • • Furfuryl alcohol **[2, 2006.01]**
307/45 • • • • • • Oxygen atoms acylated by a cyclopropane containing carboxylic acyl radical, e.g. chrysanthemumates **[3, 2006.01]**
307/46 • • • • • Doubly bound oxygen atoms, or two oxygen atoms singly bound to the same carbon atom **[2, 2006.01]**
307/48 • • • • • • Furfural **[2, 2006.01]**
307/50 • • • • • • • Preparation from natural products **[2, 2006.01]**
307/52 • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
307/54 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
307/56 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
307/58 • • • • One oxygen atom, e.g. butenolide **[2, 2006.01]**
307/60 • • • • Two oxygen atoms, e.g. succinic anhydride **[2, 2006.01]**
307/62 • • • • Three oxygen atoms, e.g. ascorbic acid **[2, 2006.01]**
307/64 • • • • Sulfur atoms **[2, 2006.01]**
307/66 • • • • Nitrogen atoms **[2, 2006.01]**
307/68 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
307/70 • • • • Nitro radicals **[2, 2006.01]**
307/71 • • • • • attached in position 5 **[2, 2006.01]**
307/72 • • • • • • with hydrocarbon radicals, substituted by nitrogen-containing radicals, attached in position 2 **[2, 2006.01]**
307/73 • • • • • • • by amino or imino, or substituted amino or imino radicals **[2, 2006.01]**
307/74 • • • • • • • by hydrazino or hydrazono or such substituted radicals **[2, 2006.01]**
307/75 • • • • • • • • having carboxylic acyl radicals or their thio or nitrogen analogues directly attached to the hydrazino or hydrazono radical, e.g. hydrazides **[2, 2006.01]**
307/76 • • • • • • • • having carbonic acyl radicals or their thio or nitrogen analogues directly attached to the hydrazino or hydrazono radical, e.g. semicarbazides **[2, 3, 2006.01]**
307/77 • ortho- or peri-condensed with carbocyclic rings or ring systems **[2, 2006.01]**
307/78 • • Benzo [b] furans; Hydrogenated benzo [b] furans **[2, 2006.01]**
307/79 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
307/80 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
307/81 • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
307/82 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
307/83 • • • • Oxygen atoms **[2, 2006.01]**
307/84 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
307/85 • • • • • attached in position 2 **[2, 2006.01]**
307/86 • • • with an oxygen atom directly attached in position 7 **[2, 2006.01]**
307/87 • • Benzo [c] furans; Hydrogenated benzo [c] furans **[2, 2006.01]**
307/88 • • • with one oxygen atom directly attached in position 1 or 3 **[2, 2006.01]**
307/885 • • • • 3,3-Diphenylphthalides **[5, 2006.01]**
307/89 • • • with two oxygen atoms directly attached in positions 1 and 3 **[2, 2006.01]**
307/90 • • • with an oxygen atom in position 1 and a nitrogen atom in position 3, or vice versa **[2, 2006.01]**
307/91 • • Dibenzofurans; Hydrogenated dibenzofurans **[2, 2006.01]**
307/92 • • Naphthofurans; Hydrogenated naphthofurans **[2, 2006.01]**
307/93 • • condensed with a ring other than six-membered **[2, 2006.01]**
307/935 • • • Not further condensed cyclopenta [b] furans or hydrogenated cyclopenta [b] furans **[3, 2006.01]**
307/937 • • • • with hydrocarbon or substituted hydrocarbon radicals directly attached in position 2, e.g. prostacyclins **[5, 2006.01]**
307/94 • spiro-condensed with carbocyclic rings or ring systems, e.g. griseofulvins **[2, 2006.01]**

309/00 Heterocyclic compounds containing six-membered rings having one oxygen atom as the only ring hetero atom, not condensed with other rings [2, 2006.01]
309/02 • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
309/04 • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
309/06 • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
309/08 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
309/10 • • • Oxygen atoms **[2, 2006.01]**
309/12 • • • • only hydrogen atoms and one oxygen atom directly attached to ring carbon atoms, e.g. tetrahydropyranyl ethers **[2, 2006.01]**
309/14 • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

309/16 • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
309/18 • • containing only hydrogen and carbon atoms in addition to the ring hetero atom **[2, 2006.01]**
309/20 • • with hydrogen atoms and substituted hydrocarbon radicals directly attached to ring carbon atoms **[2, 2006.01]**
309/22 • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
309/24 • • • • Methylol radicals **[2, 2006.01]**
309/26 • • • • Carboxaldehyde radicals **[2, 2006.01]**
309/28 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
309/30 • • • Oxygen atoms, e.g. delta-lactones **[2, 2006.01]**
309/32 • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
309/34 • having three or more double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
309/36 • • with oxygen atoms directly attached to ring carbon atoms **[2, 2006.01]**
309/38 • • • one oxygen atom in position 2 or 4, e.g. pyrones **[2, 2006.01]**
309/40 • • • Oxygen atoms attached in positions 3 and 4, e.g. maltol **[2, 2006.01]**

311/00 Heterocyclic compounds containing six-membered rings having one oxygen atom as the only hetero atom, condensed with other rings [2, 2006.01]
311/02 • ortho- or peri-condensed with carbocyclic rings or ring systems **[2, 2006.01]**
311/04 • • Benzo [b] pyrans, not hydrogenated in the carbocyclic ring **[2, 2006.01]**
311/06 • • • with oxygen or sulfur atoms directly attached in position 2 **[2, 2006.01]**
311/08 • • • • not hydrogenated in the hetero ring **[2, 2006.01]**
311/10 • • • • • unsubstituted **[2, 2006.01]**
311/12 • • • • • substituted in position 3 and unsubstituted in position 7 **[2, 2006.01]**
311/14 • • • • • substituted in position 6 and unsubstituted in position 7 **[2, 2006.01]**
311/16 • • • • • substituted in position 7 **[2, 2006.01]**
311/18 • • • • • substituted otherwise than in position 3 or 7 **[2, 2006.01]**
311/20 • • • • hydrogenated in the hetero ring **[2, 2006.01]**
311/22 • • • with oxygen or sulfur atoms directly attached in position 4 **[2, 2006.01]**
311/24 • • • • with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2 **[2, 2006.01]**
311/26 • • • • with aromatic rings attached in position 2 or 3 **[2, 2006.01]**
311/28 • • • • • with aromatic rings attached in position 2 only **[2, 2006.01]**
311/30 • • • • • • not hydrogenated in the hetero ring, e.g. flavones **[2, 2006.01]**
311/32 • • • • • • 2, 3-Dihydro derivatives, e.g. flavanones **[2, 2006.01]**
311/34 • • • • • with aromatic rings attached in position 3 only **[2, 2006.01]**
311/36 • • • • • • not hydrogenated in the hetero ring, e.g. isoflavones **[2, 2006.01]**
311/38 • • • • • • 2, 3-Dihydro derivatives, e.g. isoflavanones **[2, 2006.01]**
311/40 • • • • • Separation, e.g. from natural material; Purification **[2, 2006.01]**
311/42 • • • with oxygen or sulfur atoms in positions 2 and 4 **[2, 2006.01]**
311/44 • • • • with one hydrogen atom in position 3 **[2, 2006.01]**
311/46 • • • • • unsubstituted in the carbocyclic ring **[2, 2006.01]**
311/48 • • • • • • with two such benzopyran radicals linked together by a carbon chain **[2, 2006.01]**
311/50 • • • • • • with elements other than carbon and hydrogen in position 3 **[2, 2006.01]**
311/52 • • • • • • Enol-esters or -ethers, or sulfur analogues thereof **[2, 2006.01]**
311/54 • • • • • substituted in the carbocyclic ring **[2, 2006.01]**
311/56 • • • • without hydrogen atoms in position 3 **[2, 2006.01]**
311/58 • • • other than with oxygen or sulfur atoms in position 2 or 4 **[2, 2006.01]**
311/60 • • • • with aryl radicals attached in position 2 **[2, 2006.01]**
311/62 • • • • • with oxygen atoms directly attached in position 3, e.g. anthocyanidins **[2, 2006.01]**
311/64 • • • • with oxygen atoms directly attached in position 8 **[2, 2006.01]**
311/66 • • • • with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2 **[2, 2006.01]**
311/68 • • • • with nitrogen atoms directly attached in position 4 **[2, 2006.01]**
311/70 • • • • with two hydrocarbon radicals attached in position 2 and elements other than carbon and hydrogen in position 6 **[2, 2006.01]**
311/72 • • • • • 3, 4-Dihydro derivatives having in position 2 at least one methyl radical and in position 6 one oxygen atom, e.g. tocopherols **[2, 2006.01]**
311/74 • • Benzo [b] pyrans, hydrogenated in the carbocyclic ring **[2, 2006.01]**
311/76 • • Benzo [c] pyrans **[2, 2006.01]**
311/78 • • Ring systems having three or more relevant rings **[2, 2006.01]**
311/80 • • • Dibenzopyrans; Hydrogenated dibenzopyrans **[2, 2006.01]**
311/82 • • • • Xanthenes **[2, 2006.01]**
311/84 • • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 9 **[2, 2006.01]**
311/86 • • • • • • Oxygen atoms, e.g. xanthones **[2, 2006.01]**
311/88 • • • • • • Nitrogen atoms **[2, 2006.01]**
311/90 • • • • • with hydrocarbon radicals, substituted by amino radicals, directly attached in position 9 **[2, 2006.01]**
311/92 • • • Naphthopyrans; Hydrogenated naphthopyrans **[2, 2006.01]**

311/94 • • condensed with rings other than six-membered or with ring systems containing such rings **[2, 5, 2006.01]**
311/96 • spiro-condensed with carbocyclic rings or ring systems **[2, 2006.01]**

313/00 Heterocyclic compounds containing rings of more than six members having one oxygen atom as the only ring hetero atom [2, 2006.01]
313/02 • Seven-membered rings **[2, 2006.01]**
313/04 • • not condensed with other rings **[2, 2006.01]**
313/06 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
313/08 • • • condensed with one six-membered ring **[2, 2006.01]**
313/10 • • • condensed with two six-membered rings **[2, 2006.01]**
313/12 • • • • [b, e]-condensed **[2, 2006.01]**
313/14 • • • • [b, f]-condensed **[2, 2006.01]**
313/16 • Eight-membered rings **[2, 2006.01]**
313/18 • • not condensed with other rings **[2, 2006.01]**
313/20 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

315/00 Heterocyclic compounds containing rings having one oxygen atom as the only ring hetero atom according to more than one of groups C07D 303/00-C07D 313/00 [2, 2006.01]

317/00 Heterocyclic compounds containing five-membered rings having two oxygen atoms as the only ring hetero atoms [2, 2006.01]
317/02 • having the hetero atoms in positions 1 and 2 **[2, 2006.01]**
317/04 • • not condensed with other rings **[2, 2006.01]**
317/06 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
317/08 • having the hetero atoms in positions 1 and 3 **[2, 2006.01]**
317/10 • • not condensed with other rings **[2, 2006.01]**
317/12 • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2, 2006.01]**
317/14 • • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**
317/16 • • • • Radicals substituted by halogen atoms or nitro radicals **[2, 2006.01]**
317/18 • • • • Radicals substituted by singly bound oxygen or sulfur atoms **[2, 2006.01]**
317/20 • • • • • Free hydroxyl or mercaptan **[2, 2006.01]**
317/22 • • • • • etherified **[2, 2006.01]**
317/24 • • • • • esterified **[2, 2006.01]**
317/26 • • • • Radicals substituted by doubly bound oxygen or sulfur atoms or by two such atoms singly bound to the same carbon atom **[2, 2006.01]**
317/28 • • • • Radicals substituted by nitrogen atoms (nitro radicals C07D 317/16) **[2, 2006.01]**
317/30 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
317/32 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
317/34 • • • • Oxygen atoms **[2, 2006.01]**
317/36 • • • • • Alkylene carbonates; Substituted alkylene carbonates **[2, 2006.01]**
317/38 • • • • • • Ethylene carbonate **[2, 2006.01]**
317/40 • • • • • Vinylene carbonate; Substituted vinylene carbonates **[2, 2006.01]**
317/42 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**
317/44 • • ortho- or peri-condensed with carbocyclic rings or ring systems **[2, 2006.01]**
317/46 • • • condensed with one six-membered ring **[2, 2006.01]**
317/48 • • • • Methylenedioxybenzenes or hydrogenated methylenedioxybenzenes, unsubstituted on the hetero ring **[2, 2006.01]**
317/50 • • • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to atoms of the carbocyclic ring **[2, 2006.01]**
317/52 • • • • • • Radicals substituted by halogen atoms or nitro radicals **[2, 2006.01]**
317/54 • • • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
317/56 • • • • • • Radicals substituted by sulfur atoms **[2, 2006.01]**
317/58 • • • • • • Radicals substituted by nitrogen atoms (nitro radicals C07D 317/52) **[2, 2006.01]**
317/60 • • • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
317/62 • • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to atoms of the carbocyclic ring **[2, 2006.01]**
317/64 • • • • • • Oxygen atoms **[2, 2006.01]**
317/66 • • • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
317/68 • • • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
317/70 • • • condensed with ring systems containing two or more relevant rings **[2, 2006.01]**
317/72 • • spiro-condensed with carbocyclic rings **[2, 2006.01]**

319/00 Heterocyclic compounds containing six-membered rings having two oxygen atoms as the only ring hetero atoms [2, 2006.01]
319/02 • 1,2-Dioxanes; Hydrogenated 1,2-dioxanes **[2, 2006.01]**
319/04 • 1,3-Dioxanes; Hydrogenated 1,3-dioxanes **[2, 2006.01]**
319/06 • • not condensed with other rings **[2, 2006.01]**
319/08 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
319/10 • 1,4-Dioxanes; Hydrogenated 1,4-dioxanes **[2, 2006.01]**
319/12 • • not condensed with other rings **[2, 2006.01]**
319/14 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
319/16 • • • condensed with one six-membered ring **[2, 2006.01]**
319/18 • • • • Ethylenedioxybenzenes, not substituted on the hetero ring **[2, 2006.01]**

319/20 • • • • with substituents attached to the hetero ring **[2, 2006.01]**
319/22 • • • condensed with one naphthalene or hydrogenated naphthalene ring system **[2, 2006.01]**
319/24 • • • [b, e]-condensed with two six-membered rings **[2, 2006.01]**

321/00 Heterocyclic compounds containing rings having two oxygen atoms as the only ring hetero atoms, not provided for by groups C07D 317/00-C07D 319/00 [2, 2006.01]
321/02 • Seven-membered rings **[2, 2006.01]**
321/04 • • not condensed with other rings **[2, 2006.01]**
321/06 • • • 1, 3-Dioxepines; Hydrogenated 1,3-dioxepines **[2, 2006.01]**
321/08 • • • 1, 4-Dioxepines; Hydrogenated 1,4-dioxepines **[2, 2006.01]**
321/10 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
321/12 • Eight-membered rings **[2, 2006.01]**

323/00 Heterocyclic compounds containing more than two oxygen atoms as the only ring hetero atoms [2, 2006.01]
323/02 • Five-membered rings **[2, 2006.01]**
323/04 • Six-membered rings **[2, 2006.01]**
323/06 • • Trioxane **[2, 2006.01]**

325/00 Heterocyclic compounds containing rings having oxygen as the only ring hetero atom according to more than one of groups C07D 303/00-C07D 323/00 [2, 2006.01]

327/00 Heterocyclic compounds containing rings having oxygen and sulfur atoms as the only ring hetero atoms [2, 2006.01]
327/02 • one oxygen atom and one sulfur atom **[2, 2006.01]**
327/04 • • Five-membered rings **[2, 2006.01]**
327/06 • • Six-membered rings **[2, 2006.01]**
327/08 • • • [b, e]-condensed with two six-membered carbocyclic rings **[2, 2006.01]**
327/10 • two oxygen atoms and one sulfur atom, e.g. cyclic sulfates **[2, 2006.01]**

329/00 Heterocyclic compounds containing rings having oxygen and selenium or oxygen and tellurium atoms as the only ring hetero atoms [2, 2006.01]

<u>Heterocyclic compounds having sulfur, selenium, or tellurium atoms as the only ring hetero atoms [2]</u>

331/00 Heterocyclic compounds containing rings of less than five members, having one sulfur atom as the only ring hetero atom [2, 2006.01]
331/02 • Three-membered rings **[2, 2006.01]**
331/04 • Four-membered rings **[2, 2006.01]**

333/00 Heterocyclic compounds containing five-membered rings having one sulfur atom as the only ring hetero atom [2, 2006.01]
333/02 • not condensed with other rings **[2, 2006.01]**
333/04 • • not substituted on the ring sulfur atom **[2, 2006.01]**
333/06 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring carbon atoms **[2, 2006.01]**
333/08 • • • • Hydrogen atoms or radicals containing only hydrogen and carbon atoms **[2, 2006.01]**
333/10 • • • • • Thiophene **[2, 2006.01]**
333/12 • • • • Radicals substituted by halogen atoms or nitro or nitroso radicals **[2, 2006.01]**
333/14 • • • • Radicals substituted by singly bound hetero atoms other than halogen **[2, 2006.01]**
333/16 • • • • • by oxygen atoms **[2, 2006.01]**
333/18 • • • • • by sulfur atoms **[2, 2006.01]**
333/20 • • • • • by nitrogen atoms (nitro, nitroso radicals C07D 333/12) **[2, 2006.01]**
333/22 • • • • Radicals substituted by doubly bound hetero atoms, or by two hetero atoms other than halogen singly bound to the same carbon atom **[2, 2006.01]**
333/24 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
333/26 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
333/28 • • • • Halogen atoms **[2, 2006.01]**
333/30 • • • • Hetero atoms other than halogen **[2, 2006.01]**
333/32 • • • • • Oxygen atoms **[2, 2006.01]**
333/34 • • • • • Sulfur atoms **[2, 2006.01]**
333/36 • • • • • Nitrogen atoms **[2, 2006.01]**
333/38 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
333/40 • • • • • Thiophene-2-carboxylic acid **[2, 2006.01]**
333/42 • • • • with nitro or nitroso radicals directly attached to ring carbon atoms **[2, 2006.01]**
333/44 • • • • • attached in position 5 **[2, 2006.01]**
333/46 • • substituted on the ring sulfur atom **[2, 2006.01]**
333/48 • • • by oxygen atoms **[2, 2006.01]**
333/50 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
333/52 • • Benzo [b] thiophenes; Hydrogenated benzo [b] thiophenes **[2, 2006.01]**
333/54 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
333/56 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
333/58 • • • • Radicals substituted by nitrogen atoms **[2, 2006.01]**
333/60 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
333/62 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
333/64 • • • • Oxygen atoms **[2, 2006.01]**
333/66 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
333/68 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
333/70 • • • • • attached in position 2 **[2, 2006.01]**

333/72 • • Benzo [c] thiophenes; Hydrogenated benzo [c] thiophenes **[2, 2006.01]**
333/74 • • Naphthothiophenes **[2, 2006.01]**
333/76 • • Dibenzothiophenes **[2, 2006.01]**
333/78 • • condensed with rings other than six-membered or with ring systems containing such rings **[2, 5, 2006.01]**
333/80 • • • Seven-membered rings **[2, 2006.01]**

335/00 Heterocyclic compounds containing six-membered rings having one sulfur atom as the only ring hetero atom [2, 2006.01]
335/02 • not condensed with other rings **[2, 2006.01]**
335/04 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
335/06 • • Benzothiopyrans; Hydrogenated benzothiopyrans **[2, 2006.01]**
335/08 • • Naphthothiopyrans; Hydrogenated naphthothiopyrans **[2, 2006.01]**
335/10 • • Dibenzothiopyrans; Hydrogenated dibenzothiopyrans **[2, 2006.01]**
335/12 • • • Thioxanthenes **[2, 2006.01]**
335/14 • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 9 **[2, 2006.01]**
335/16 • • • • • Oxygen atoms, e.g. thioxanthones **[2, 2006.01]**
335/18 • • • • • Nitrogen atoms **[2, 2006.01]**
335/20 • • • • with hydrocarbon radicals, substituted by amino radicals, directly attached in position 9 **[2, 2006.01]**

337/00 Heterocyclic compounds containing rings of more than six members having one sulfur atom as the only ring hetero atom [2, 2006.01]
337/02 • Seven-membered rings **[2, 2006.01]**
337/04 • • not condensed with other rings **[2, 2006.01]**
337/06 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
337/08 • • • condensed with one six-membered ring **[2, 2006.01]**
337/10 • • • condensed with two six-membered rings **[2, 2006.01]**
337/12 • • • • [b, e]-condensed **[2, 2006.01]**
337/14 • • • • [b, f]-condensed **[2, 2006.01]**
337/16 • Eight-membered rings **[2, 2006.01]**

339/00 Heterocyclic compounds containing rings having two sulfur atoms as the only ring hetero atoms [2, 2006.01]
339/02 • Five-membered rings **[2, 2006.01]**
339/04 • • having the hetero atoms in positions 1 and 2, e.g. lipoic acid **[2, 2006.01]**
339/06 • • having the hetero atoms in positions 1 and 3, e.g. cyclic dithiocarbonates **[2, 2006.01]**
339/08 • Six-membered rings **[2, 2006.01]**

341/00 Heterocyclic compounds containing rings having three or more sulfur atoms as the only ring hetero atoms [2, 2006.01]

343/00 Heterocyclic compounds containing rings having sulfur and selenium or sulfur and tellurium atoms as the only ring hetero atoms [2, 2006.01]

345/00 Heterocyclic compounds containing rings having selenium or tellurium atoms as the only ring hetero atoms [2, 2006.01]

347/00 Heterocyclic compounds containing rings having halogen atoms as ring hetero atoms [2, 2006.01]

Heterocyclic compounds containing two or more hetero rings [2]

Note(s) [2]

Groups C07D 401/00-C07D 421/00cover compounds containing two or more relevant hetero rings at least two of which are covered by different main groups of groups C07D 203/00-C07D 347/00, neither condensed among themselves nor condensed with a common carbocyclic ring or ring system.

401/00 Heterocyclic compounds containing two or more hetero rings, having nitrogen atoms as the only ring hetero atoms, at least one ring being a six-membered ring with only one nitrogen atom [2, 2006.01]
401/02 • containing two hetero rings **[2, 2006.01]**
401/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**
401/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**
401/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**
401/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**
401/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**
401/14 • containing three or more hetero rings **[2, 2006.01]**

403/00 Heterocyclic compounds containing two or more hetero rings, having nitrogen atoms as the only ring hetero atoms, not provided for by group C07D 401/00 [2, 2006.01]
403/02 • containing two hetero rings **[2, 2006.01]**
403/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**
403/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**
403/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**
403/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**
403/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**
403/14 • containing three or more hetero rings **[2, 2006.01]**

405/00 Heterocyclic compounds containing both one or more hetero rings having oxygen atoms as the only ring hetero atoms, and one or more rings having nitrogen as the only ring hetero atom [2, 2006.01]
405/02 • containing two hetero rings **[2, 2006.01]**
405/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**
405/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**
405/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**
405/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

405/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

405/14 • containing three or more hetero rings **[2, 2006.01]**

407/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having oxygen atoms as the only ring hetero atoms, not provided for by group C07D 405/00 [2, 2006.01]

407/02 • containing two hetero rings **[2, 2006.01]**

407/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

407/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

407/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

407/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

407/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

407/14 • containing three or more hetero rings **[2, 2006.01]**

409/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having sulfur atoms as the only ring hetero atoms [2, 2006.01]

409/02 • containing two hetero rings **[2, 2006.01]**

409/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

409/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

409/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

409/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

409/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

409/14 • containing three or more hetero rings **[2, 2006.01]**

411/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having oxygen and sulfur atoms as the only ring hetero atoms [2, 2006.01]

411/02 • containing two hetero rings **[2, 2006.01]**

411/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

411/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

411/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

411/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

411/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

411/14 • containing three or more hetero rings **[2, 2006.01]**

413/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen and oxygen atoms as the only ring hetero atoms [2, 2006.01]

413/02 • containing two hetero rings **[2, 2006.01]**

413/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

413/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

413/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

413/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

413/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

413/14 • containing three or more hetero rings **[2, 2006.01]**

415/00 Heterocyclic compounds containing the thiamine skeleton [2, 2006.01]

417/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by group C07D 415/00 [2, 2006.01]

417/02 • containing two hetero rings **[2, 2006.01]**

417/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

417/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

417/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

417/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

417/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

417/14 • containing three or more hetero rings **[2, 2006.01]**

419/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen, oxygen, and sulfur atoms as the only ring hetero atoms [2, 2006.01]

419/02 • containing two hetero rings **[2, 2006.01]**

419/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

419/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

419/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

419/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

419/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

419/14 • containing three or more hetero rings **[2, 2006.01]**

421/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having selenium, tellurium, or halogen atoms as ring hetero atoms [2, 2006.01]

421/02 • containing two hetero rings **[2, 2006.01]**

421/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

421/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

421/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

421/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

421/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

421/14 • containing three or more hetero rings **[2, 2006.01]**

Heterocyclic compounds containing condensed hetero ring systems [2]

Note(s) [2, 3, 5]

1. Groups C07D 451/00-C07D 517/00cover compounds containing one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system, with or without other non-condensed hetero rings.
2. For the purpose of classification in groups C07D 451/00-C07D 519/00, the degree of hydrogenation of the ring system is not taken into consideration.
3. For the purpose of classification in groups C07D 451/00-C07D 463/00, C07D 473/00-C07D 477/00, C07D 489/00, C07D 499/00-C07D 507/00, the wording of the groups has to be understood, in the absence of an indication to the contrary, as including ring systems further condensed with carbocyclic rings or ring systems, but excluding ring systems further condensed with other hetero rings, either directly or through a common carbocyclic ring system, e.g. sparteine is classified in group C07D 471/22, not in group C07D 455/02.
4. In groups C07D 471/00, C07D 487/00, C07D 491/00-C07D 498/00 or C07D 513/00-C07D 517/00, the subdivision is based on the number of relevant hetero rings.

451/00 Heterocyclic compounds containing 8-azabicyclo [3.2.1] octane, 9-azabicyclo [3.3.1] nonane, or 3-oxa-9-azatricyclo [3.3.1.02,4] nonane ring systems, e.g. tropane or granatane alkaloids, scopolamine; Cyclic acetals thereof [2, 2006.01]

451/02 • containing not further condensed 8-azabicyclo [3.2.1] octane or 3-oxa-9-azatricyclo [3.3.1.02,4] nonane ring systems, e.g. tropane; Cyclic acetals thereof **[2, 2006.01]**

451/04 • • with hetero atoms directly attached in position 3 of the 8-azabicyclo [3.2.1] octane or in position 7 of the 3-oxa-9-azatricyclo [3.3.1.02,4] nonane ring system **[2, 2006.01]**

451/06 • • • Oxygen atoms **[2, 2006.01]**

451/08 • • • • Diarylmethoxy radicals **[2, 2006.01]**

451/10 • • • • acylated by aliphatic or araliphatic carboxylic acids, e.g. atropine, scopolamine **[2, 2006.01]**

451/12 • • • • acylated by aromatic or heteroaromatic carboxylic acids, e.g. cocaine **[2, 2006.01]**

451/14 • containing 9-azabicyclo [3.3.1] nonane ring systems, e.g. granatane, 2-aza-adamantane; Cyclic acetals thereof **[2, 2006.01]**

453/00 Heterocyclic compounds containing quinuclidine or iso-quinuclidine ring systems, e.g. quinine alkaloids [2, 2006.01]

453/02 • containing not further condensed quinuclidine ring systems **[2, 2006.01]**

453/04 • • having a quinolyl-4, a substituted quinolyl-4 or a alkylenedioxy-quinolyl-4 radical linked through only one carbon atom, attached in position 2, e.g. quinine **[2, 2006.01]**

453/06 • containing iso-quinuclidine ring systems **[2, 2006.01]**

455/00 Heterocyclic compounds containing quinolizine ring systems, e.g. emetine alkaloids, protoberberine; Alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine [2, 2006.01]

455/02 • containing not further condensed quinolizine ring systems **[2, 2006.01]**

455/03 • containing quinolizine ring systems directly condensed with at least one six-membered carbocyclic ring, e.g. protoberberine; Alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine **[3, 2006.01]**

455/04 • • containing a quinolizine ring system condensed with only one six-membered carbocyclic ring, e.g. julolidine **[2, 3, 2006.01]**

455/06 • • • containing benzo [a] quinolizine ring systems **[2, 3, 2006.01]**

455/08 • • • • having an isoquinolyl-1, a substituted isoquinolyl-1 or an alkylenedioxyisoquinolyl-1 radical linked through only one carbon atom, attached in position 2, e.g. emetine **[2, 3, 2006.01]**

457/00 Heterocyclic compounds containing indolo [4, 3-f, g] quinoline ring systems, e.g. derivatives of ergoline, of the formula: **, e.g. lysergic acid** (compounds of the cyclic peptide type derived from ergotamane C07D 519/02) **[2, 2006.01]**

Note(s) [5]

The numbering may be different according to the RING INDEX and given by the formula: .

457/02 • with hydrocarbon or substituted hydrocarbon radicals, attached in position 8 **[2, 2006.01]**

457/04 • with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 8 **[2, 2006.01]**

457/06 • • Lysergic acid amides **[2, 2006.01]**

457/08 • • • in which the amide nitrogen is a member of a heterocyclic ring **[2, 2006.01]**

457/10 • with hetero atoms directly attached in position 8 **[2, 2006.01]**

457/12 • • Nitrogen atoms **[2, 2006.01]**

457/14 • containing indolo [4, 3-f, g] quinoline ring systems condensed with carbocyclic rings or ring systems **[3, 2006.01]**

459/00 Heterocyclic compounds containing benz [g] indolo [2, 3-a] quinolizine ring systems, e.g. yohimbine; 16, 18-lactones thereof, e.g. reserpic acid lactone [2, 2006.01]

461/00 Heterocyclic compounds containing indolo [3, 2, 1-d, e] pyrido [3, 2, 1-i, j] [1, 5]-naphthyridine ring systems, e.g. vincamine (dimeric indolo alkaloids C07D 519/04) **[3, 2006.01]**

463/00 Heterocyclic compounds containing 1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula: **, e.g. carbacephalosporins; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [5, 2006.01]**

463/02 • Preparation (by microbiological processes C12P 17/18) **[6, 2006.01]**

463/04 • • by forming the ring or condensed ring systems **[6, 2006.01]**

463/06 • • from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents **[6, 2006.01]**

463/08 • • • Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6, 2006.01]**

463/10 • with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**

463/12 • • with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached in position 7 **[6, 2006.01]**

463/14 • • with hetero atoms directly attached in position 7 **[6, 2006.01]**

463/16 • • • Nitrogen atoms **[6, 2006.01]**

463/18 • • • • further acylated by radicals derived from carboxylic acids or by nitrogen or sulfur analogues thereof **[6, 2006.01]**

463/20 • • • • • with the acylating radicals further substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[6, 2006.01]**

463/22 • • • • • • further substituted by nitrogen atoms **[6, 2006.01]**

471/00 Heterocyclic compounds containing nitrogen atoms as the only ring hetero atoms in the condensed system, at least one ring being a six-membered ring with one nitrogen atom, not provided for by groups C07D 451/00-C07D 463/00 [2, 5, 2006.01]

471/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

471/04 • • Ortho-condensed systems **[2, 5, 2006.01]**

471/06 • • Peri-condensed systems **[2, 2006.01]**

471/08 • • Bridged systems **[2, 2006.01]**

471/10 • • Spiro-condensed systems **[2, 2006.01]**

471/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

471/14 • • Ortho-condensed systems **[2, 2006.01]**

471/16 • • Peri-condensed systems **[2, 2006.01]**

471/18 • • Bridged systems **[2, 2006.01]**

471/20 • • Spiro-condensed systems **[2, 2006.01]**

471/22 • in which the condensed systems contains four or more hetero rings **[2, 2006.01]**

473/00 Heterocyclic compounds containing purine ring systems [2, 2006.01]

473/02 • with oxygen, sulfur, or nitrogen atoms directly attached in positions 2 and 6 **[2, 2006.01]**

473/04 • • two oxygen atoms **[2, 2006.01]**

473/06 • • • with radicals containing only hydrogen and carbon atoms, attached in position 1 or 3 **[2, 2006.01]**

473/08 • • • • with methyl radicals in positions 1 and 3, e.g. theophylline **[2, 2006.01]**

473/10 • • • • with methyl radicals in positions 3 and 7, e.g. theobromine **[2, 2006.01]**

473/12 • • • • with methyl radicals in positions 1, 3, and 7, e.g. caffeine **[2, 2006.01]**

473/14 • • • • with two methyl radicals in positions 1 and 3 and two methyl radicals in positions 7, 8, or 9 **[2, 2006.01]**

473/16 • • two nitrogen atoms **[2, 2006.01]**

473/18 • • one oxygen and one nitrogen atom, e.g. guanine **[2, 2006.01]**

473/20 • • two sulfur atoms **[2, 2006.01]**

473/22 • • one oxygen and one sulfur atom **[2, 2006.01]**

473/24 • • one nitrogen and one sulfur atom **[2, 2006.01]**

473/26 • with an oxygen, sulfur, or nitrogen atom directly attached in position 2 or 6, but not in both **[2, 2006.01]**

473/28 • • Oxygen atom **[2, 2006.01]**

473/30 • • • attached in position 6, e.g. hypoxanthine **[2, 2006.01]**

473/32 • • Nitrogen atom **[2, 2006.01]**

473/34 • • • attached in position 6, e.g. adenine **[2, 2006.01]**

473/36 • • Sulfur atom **[2, 2006.01]**

473/38 • • • attached in position 6 **[2, 2006.01]**

473/40 • with halogen atoms or perhalogeno-alkyl radicals directly attached in position 2 or 6 **[2, 2006.01]**

475/00 Heterocyclic compounds containing pteridine ring systems [2, 2006.01]

475/02 • with an oxygen atom directly attached in position 4 **[2, 2006.01]**

475/04 • • with a nitrogen atom directly attached in position 2 **[2, 2006.01]**

475/06 • with a nitrogen atom directly attached in position 4 **[2, 2006.01]**

475/08 • • with a nitrogen atom directly attached in position 2 **[2, 2006.01]**

475/10 • • with an aromatic or hetero-aromatic ring directly attached in position 2 **[2, 2006.01]**

475/12 • containing pteridine ring systems condensed with carbocyclic rings or ring systems **[3, 2006.01]**

475/14 • • Benz [g] pteridines, e.g. riboflavin **[3, 2006.01]**

477/00 Heterocyclic compounds containing 1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula: **, e.g. carbapenicillins, thienamycins; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [5, 2006.01]**

477/02 • Preparation (by microbiological processes C12P 17/18) **[6, 2006.01]**

477/04 • • by forming the ring or condensed ring systems **[6, 2006.01]**

477/06 • • from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents **[6, 2006.01]**

477/08 • • • Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6, 2006.01]**

477/10 • with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 4, and with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**

477/12 • • with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 6 **[6, 2006.01]**

477/14 • • • with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 3 **[6, 2006.01]**

477/16 • • • with hetero atoms or carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 3 **[6, 2006.01]**

477/18 • • • • Oxygen atoms **[6, 2006.01]**

477/20 • • • • Sulfur atoms **[6, 2006.01]**

477/22 • • • • Nitrogen atoms **[6, 2006.01]**

477/24 • • with hetero atoms or carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 6 **[6, 2006.01]**

477/26 • with hetero atoms or carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 4 **[6, 2006.01]**

487/00 Heterocyclic compounds containing nitrogen atoms as the only ring hetero atoms in the condensed system, not provided for by groups C07D 451/00-C07D 477/00 [2, 5, 2006.01]

487/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

487/04 • • Ortho-condensed systems **[2, 5, 2006.01]**

487/06 • • Peri-condensed systems **[2, 2006.01]**

487/08 • • Bridged systems **[2, 2006.01]**

487/10 • • Spiro-condensed systems **[2, 2006.01]**

487/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

487/14 • • Ortho-condensed systems **[2, 2006.01]**

487/16 • • Peri-condensed systems **[2, 2006.01]**

487/18 • • Bridged systems **[2, 2006.01]**

487/20 • • Spiro-condensed systems **[2, 2006.01]**

487/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

489/00 Heterocyclic compounds containing 4aH-8, 9 c-Iminoethano-phenanthro [4, 5-b, c, d] furan ring systems, e.g. derivatives of [4, 5-epoxy]-morphinan of the formula: **[2, 2006.01]**

Note(s) [5]

The numbering may be different according to the RING INDEX and given by the formula: .

489/02 • with oxygen atoms attached in positions 3 and 6, e.g. morphine, morphinone **[2, 2006.01]**

489/04 • • Salts; Organic complexes **[2, 2006.01]**

489/06 • with a hetero atom directly attached in position 14 **[2, 2006.01]**

489/08 • • Oxygen atom **[2, 2006.01]**

489/09 • containing 4aH-8, 9 c-Iminoethano- phenanthro [4, 5-b, c, d] furan ring systems condensed with carbocyclic rings or ring systems **[3, 2006.01]**

489/10 • • with a bridge between positions 6 and 14 **[2, 3, 2006.01]**

489/12 • • • the bridge containing only two carbon atoms **[2, 3, 2006.01]**

491/00 Heterocyclic compounds containing in the condensed ring system both one or more rings having oxygen atoms as the only ring hetero atoms and one or more rings having nitrogen atoms as the only ring hetero atoms, not provided for by groups C07D 451/00-C07D 459/00, C07D 463/00, C07D 477/00 or C07D 489/00 [2, 2006.01]

491/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

491/04 • • Ortho-condensed systems **[2, 2006.01]**

491/044 • • • with only one oxygen atom as ring hetero atom in the oxygen-containing ring **[3, 2006.01]**

491/048 • • • • the oxygen-containing ring being five-membered **[3, 2006.01]**

491/052 • • • • the oxygen-containing ring being six-membered **[3, 2006.01]**

491/056 • • • with two or more oxygen atoms as ring hetero atoms in the oxygen-containing ring **[3, 2006.01]**

491/06 • • Peri-condensed systems **[2, 2006.01]**

491/08 • • Bridged systems **[2, 2006.01]**

491/10 • • Spiro-condensed systems **[2, 2006.01]**

491/107 • • • with only one oxygen atom as ring hetero atom in the oxygen-containing ring **[3, 2006.01]**

491/113 • • • with two or more oxygen atoms as ring hetero atoms in the oxygen-containing ring **[3, 2006.01]**

491/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

491/14 • • Ortho-condensed systems **[2, 2006.01]**

491/147 • • • the condensed system containing one ring with oxygen as ring hetero atom and two rings with nitrogen as ring hetero atom **[3, 2006.01]**

491/153 • • • the condensed system containing two rings with oxygen as ring hetero atom and one ring with nitrogen as ring hetero atom **[3, 2006.01]**

491/16 • • Peri-condensed systems **[2, 2006.01]**

491/18 • • Bridged systems **[2, 2006.01]**

491/20 • • Spiro-condensed systems **[2, 2006.01]**

491/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

493/00 Heterocyclic compounds containing oxygen atoms as the only ring hetero atoms in the condensed system [2, 2006.01]

493/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

493/04 • • Ortho-condensed systems **[2, 2006.01]**

493/06 • • Peri-condensed systems **[2, 2006.01]**

493/08 • • Bridged systems **[2, 2006.01]**

493/10 • • Spiro-condensed systems **[2, 2006.01]**

493/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

493/14 • • Ortho-condensed systems **[2, 2006.01]**

493/16 • • Peri-condensed systems **[2, 2006.01]**

493/18 • • Bridged systems **[2, 2006.01]**

493/20 • • Spiro-condensed systems **[2, 2006.01]**
493/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

495/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having sulfur atoms as the only ring hetero atoms [2, 2006.01]
495/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**
495/04 • • Ortho-condensed systems **[2, 2006.01]**
495/06 • • Peri-condensed systems **[2, 2006.01]**
495/08 • • Bridged systems **[2, 2006.01]**
495/10 • • Spiro-condensed systems **[2, 2006.01]**
495/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**
495/14 • • Ortho-condensed systems **[2, 2006.01]**
495/16 • • Peri-condensed systems **[2, 2006.01]**
495/18 • • Bridged systems **[2, 2006.01]**
495/20 • • Spiro-condensed systems **[2, 2006.01]**
495/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

497/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having oxygen and sulfur atoms as the only ring hetero atoms [2, 2006.01]
497/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**
497/04 • • Ortho-condensed systems **[2, 2006.01]**
497/06 • • Peri-condensed systems **[2, 2006.01]**
497/08 • • Bridged systems **[2, 2006.01]**
497/10 • • Spiro-condensed systems **[2, 2006.01]**
497/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**
497/14 • • Ortho-condensed systems **[2, 2006.01]**
497/16 • • Peri-condensed systems **[2, 2006.01]**
497/18 • • Bridged systems **[2, 2006.01]**
497/20 • • Spiro-condensed systems **[2, 2006.01]**
497/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

498/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and oxygen atoms as the only ring hetero atoms (4-oxa-1-azabicyclo [3.2.0] heptanes, e.g. oxapenicillins C07D 503/00; 5-oxa-1-azabicyclo [4.2.0] octanes, e.g. oxacephalosporins C07D 505/00; analogues thereof having ring oxygen atoms in other position C07D 507/00) **[2, 6, 2006.01]**
498/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**
498/04 • • Ortho-condensed systems **[2, 2006.01]**
498/06 • • Peri-condensed systems **[2, 2006.01]**
498/08 • • Bridged systems **[2, 2006.01]**
498/10 • • Spiro-condensed systems **[2, 2006.01]**
498/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**
498/14 • • Ortho-condensed systems **[2, 2006.01]**
498/16 • • Peri-condensed systems **[2, 2006.01]**
498/18 • • Bridged systems **[2, 2006.01]**
498/20 • • Spiro-condensed systems **[2, 2006.01]**
498/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

499/00 Heterocyclic compounds containing 4-thia-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:

, e.g. penicillins, penems; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [2, 2006.01]
499/04 • Preparation **[2, 6, 2006.01]**
499/06 • • by forming the ring or condensed ring systems (by microbiological processes C12P 37/00) **[2, 6, 2006.01]**
499/08 • • Modification of a carboxyl radical directly attached in position 2, e.g. esterification **[2, 6, 2006.01]**
499/10 • • Modification of an amino radical directly attached in position 6 **[2, 6, 2006.01]**
499/12 • • • Acylation **[2, 6, 2006.01]**
499/14 • • Preparation of salts **[2, 6, 2006.01]**
499/16 • • • of alkali or alkaline earth metals **[2, 6, 2006.01]**
499/18 • • Separation; Purification **[2, 6, 2006.01]**
499/20 • • • via salts with organic bases **[2, 6, 2006.01]**
499/21 • with a nitrogen atom directly attached in position 6 and a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**
499/22 • • Salts with organic bases; Complexes with organic compounds **[2, 2006.01]**
499/24 • • • with acyclic or carbocyclic compounds containing amino radicals **[2, 2006.01]**
499/26 • • • with heterocyclic compounds **[2, 2006.01]**
499/28 • • with modified 2-carboxyl group **[2, 2006.01]**
499/30 • • • Acid anhydride **[2, 2006.01]**
499/32 • • • Esters **[2, 2006.01]**
499/34 • • • Thio-acid; Esters thereof **[2, 2006.01]**
499/36 • • • • O-esters **[2, 2006.01]**
499/38 • • • • S-esters **[2, 2006.01]**
499/40 • • • Amides; Hydrazides; Azides **[2, 2006.01]**
499/42 • • Compounds with a free primary amino radical attached in position 6 **[2, 2006.01]**
499/44 • • Compounds with an amino radical acylated by carboxylic acids, attached in position 6 **[2, 2006.01]**
499/46 • • • with acyclic hydrocarbon radicals or such radicals substituted by carbocyclic or heterocyclic rings, attached to the carboxamido radical **[2, 2006.01]**
499/48 • • • with a carbon chain, substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, attached to the carboxamido radical **[2, 2006.01]**
499/50 • • • • substituted in beta-position to the carboxamido radical **[2, 2006.01]**
499/52 • • • • • by oxygen or sulfur atoms **[2, 2006.01]**
499/54 • • • • • by nitrogen atoms **[2, 2006.01]**
499/56 • • • • • by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
499/58 • • • • substituted in alpha-position to the carboxamido radical **[2, 2006.01]**
499/60 • • • • • by oxygen atoms **[2, 2006.01]**
499/62 • • • • • by sulfur atoms **[2, 2006.01]**
499/64 • • • • • by nitrogen atoms **[2, 2006.01]**

499/66 • • • • • • with alicyclic rings as additional substituents on the carbon chain **[2, 2006.01]**

499/68 • • • • • • with aromatic rings as additional substituents on the carbon chain **[2, 2006.01]**

499/70 • • • • • • with hetero rings as additional substituents on the carbon chain **[2, 2006.01]**

499/72 • • • • • by carbon atoms having three bonds to hetero atoms **[2, 2006.01]**

499/74 • • • with carbocyclic rings directly attached to the carboxamido radical **[2, 2006.01]**

499/76 • • • with hetero rings directly attached to the carboxamido radical **[2, 2006.01]**

499/78 • • Compounds with an amino radical, acylated by carbonic acid, or by nitrogen or sulfur analogues thereof, attached in position 6 **[2, 2006.01]**

499/80 • • Compounds with a nitrogen-containing hetero ring, attached with the ring nitrogen atom in position 6 **[2, 2006.01]**

499/86 • with only atoms other than nitrogen atoms directly attached in position 6 and a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[5, 6, 2006.01]**

499/861 • • with a hydrocarbon radical or a substituted hydrocarbon radical, directly attached in position 6 **[6, 2006.01]**

499/865 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 6 **[6, 2006.01]**

499/87 • Compounds being unsubstituted in position 3 or with substituents other than only two methyl radicals attached in position 3, and with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**

499/88 • Compounds with a double bond between positions 2 and 3 and a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[5, 6, 2006.01]**

499/881 • • with a hydrogen atom or an unsubstituted hydrocarbon radical, attached in position 3 **[6, 2006.01]**

499/883 • • with a substituted hydrocarbon radical attached in position 3 **[6, 2006.01]**

499/887 • • with a hetero atom or a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 3 **[6, 2006.01]**

499/893 • • with a hetero ring or a condensed hetero ring system, directly attached in position 3 **[6, 2006.01]**

499/897 • Compounds with substituents other than a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, directly attached in position 2 **[6, 2006.01]**

499/90 • further condensed with carbocyclic rings or ring systems **[5, 2006.01]**

501/00 Heterocyclic compounds containing 5-thia-1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:

, e.g. cephalosporins; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [2, 2006.01]

501/02 • Preparation **[2, 2006.01]**

501/04 • • from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents **[2, 2006.01]**

501/06 • • • Acylation of 7-aminocephalosporanic acid **[2, 2006.01]**

501/08 • • by forming the ring or condensed ring systems (by microbiological processes C12P 35/00) **[2, 2006.01]**

501/10 • • • from compounds containing the penicillin ring system **[2, 2006.01]**

501/12 • • Separation; Purification **[2, 2006.01]**

501/14 • Compounds having a nitrogen atom directly attached in position 7 **[2, 2006.01]**

501/16 • • with a double bond between positions 2 and 3 **[2, 2006.01]**

501/18 • • • 7-Aminocephalosporanic or substituted 7-aminocephalosporanic acids **[2, 2006.01]**

501/20 • • • 7-Acylaminocephalosporanic or substituted 7-acylaminocephalosporanic acids in which the acyl radicals are derived from carboxylic acids **[2, 2006.01]**

501/22 • • • • with radicals containing only hydrogen and carbon atoms, attached in position 3 **[2, 2006.01]**

501/24 • • • • with hydrocarbon radicals, substituted by hetero atoms or hetero rings, attached in position 3 **[2, 2006.01]**

501/26 • • • • • Methylene radicals, substituted by oxygen atoms; Lactones thereof with the 2-carboxyl group **[2, 2006.01]**

501/28 • • • • • • with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms **[2, 2006.01]**

501/30 • • • • • • with the 7-amino-radical acylated by an araliphatic carboxylic acid **[2, 2006.01]**

501/32 • • • • • • with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms **[2, 2006.01]**

501/34 • • • • • • with the 7-amino radical acylated by carboxylic acids containing hetero rings **[2, 2006.01]**

501/36 • • • • • Methylene radicals, substituted by sulfur atoms **[2, 2006.01]**

501/38 • • • • • Methylene radicals, substituted by nitrogen atoms; Lactams thereof with the 2-carboxyl group; Methylene radicals substituted by nitrogen-containing hetero rings attached by the ring nitrogen atom; Quaternary compounds thereof **[2, 2006.01]**

501/40 • • • • • • with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms **[2, 2006.01]**

501/42 • • • • • • with the 7-amino radical acylated by an araliphatic carboxylic acid **[2, 2006.01]**

501/44 • • • • • • with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms **[2, 2006.01]**

501/46 • • • • • • with the 7-amino radical acylated by carboxylic acids containing hetero rings **[2, 2006.01]**

501/48 • • • • • Methylene radicals, substituted by hetero rings (C07D 501/38-C07D 501/46 take precedence) **[2, 2006.01]**

501/50 • • • • • • with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms **[2, 2006.01]**

501/52 • • • • • • with the 7-amino radical acylated by an araliphatic carboxylic acid **[2, 2006.01]**

501/54 • • • • • • with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms **[2, 2006.01]**

501/56 • • • • • • with the 7-amino radical acylated by carboxylic acids containing hetero rings **[2, 2006.01]**

501/57 • • • • with a further substituent in position 7, e.g. cephamycines **[3, 2006.01]**

501/58 • • • with a nitrogen atom, which is a member of a hetero ring, attached in position 7 **[2, 2006.01]**

501/59 • • • with hetero atoms directly attached in position 3 **[3, 2006.01]**

501/60 • • with a double bond between positions 3 and 4 **[2, 2006.01]**

501/62 • Compounds further condensed with a carbocyclic ring or ring system **[3, 2006.01]**

503/00 Heterocyclic compounds containing 4-oxa-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:

, e.g. oxapenicillins, clavulanic acid derivatives; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [6, 2006.01]

503/02 • Preparation (by microbiological processes C12P 17/18) **[6, 2006.01]**

503/04 • • by forming the ring or condensed ring systems **[6, 2006.01]**

503/06 • • from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents **[6, 2006.01]**

503/08 • • • Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6, 2006.01]**

503/10 • with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**

503/12 • • unsubstituted in position 6 **[6, 2006.01]**

503/14 • • • with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, other than a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, attached in position 3 **[6, 2006.01]**

503/16 • • • • Radicals substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical **[6, 2006.01]**

503/18 • • • • • by oxygen atoms **[6, 2006.01]**

503/20 • • • • • by sulfur atoms **[6, 2006.01]**

503/22 • • • • • by nitrogen atoms **[6, 2006.01]**

505/00 Heterocyclic compounds containing 5-oxa-1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:

, e.g. oxacephalosporins; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [6, 2006.01]

505/02 • Preparation (by microbiological processes C12P 17/18) **[6, 2006.01]**

505/04 • • by forming the ring or condensed ring systems **[6, 2006.01]**

505/06 • • from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents **[6, 2006.01]**

505/08 • • • Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6, 2006.01]**

505/10 • with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**

505/12 • • substituted in position 7 **[6, 2006.01]**

505/14 • • • with hetero atoms directly attached in position 7 **[6, 2006.01]**

505/16 • • • • Nitrogen atoms **[6, 2006.01]**

505/18 • • • • • further acylated by radicals derived from carboxylic acids or by nitrogen or sulfur analogues thereof **[6, 2006.01]**

505/20 • • • • • • with the acylating radicals further substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[6, 2006.01]**

505/22 • • • • • • • further substituted by singly-bound nitrogen atoms **[6, 2006.01]**

505/24 • • • • • • • further substituted by doubly-bound nitrogen atoms **[6, 2006.01]**

507/00 Heterocyclic compounds containing a condensed beta-lactam ring system, not provided for by groups C07D 463/00, C07D 477/00 or C07D 499/00-C07D 505/00; Such ring systems being further condensed [6, 2006.01]

507/02 • containing 3-oxa-1-azabicyclo [3.2.0] heptane ring systems **[6, 2006.01]**

507/04 • containing 2-oxa-1-azabicyclo [4.2.0] octane ring systems **[6, 2006.01]**

507/06 • containing 3-oxa-1-azabicyclo [4.2.0] octane ring systems **[6, 2006.01]**

507/08 • containing 4-oxa-1-azabicyclo [4.2.0] octane ring systems **[6, 2006.01]**

513/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for in groups C07D 463/00, C07D 477/00 or C07D 499/00-C07D 507/00 [2, 6, 2006.01]

513/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**
513/04 • • Ortho-condensed systems **[2, 2006.01]**
513/06 • • Peri-condensed systems **[2, 2006.01]**
513/08 • • Bridged systems **[2, 2006.01]**
513/10 • • Spiro-condensed systems **[2, 2006.01]**
513/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**
513/14 • • Ortho-condensed systems **[2, 2006.01]**
513/16 • • Peri-condensed systems **[2, 2006.01]**
513/18 • • Bridged systems **[2, 2006.01]**
513/20 • • Spiro-condensed systems **[2, 2006.01]**
513/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

515/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen, oxygen, and sulfur atoms as the only ring hetero atoms, not provided for in groups C07D 463/00, C07D 477/00 or C07D 499/00-C07D 507/00 [2, 2006.01]

515/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**
515/04 • • Ortho-condensed systems **[2, 2006.01]**
515/06 • • Peri-condensed systems **[2, 2006.01]**
515/08 • • Bridged systems **[2, 2006.01]**
515/10 • • Spiro-condensed systems **[2, 2006.01]**
515/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**
515/14 • • Ortho-condensed systems **[2, 2006.01]**
515/16 • • Peri-condensed systems **[2, 2006.01]**
515/18 • • Bridged systems **[2, 2006.01]**
515/20 • • Spiro-condensed systems **[2, 2006.01]**
515/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

517/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having selenium, tellurium, or halogen atoms as ring hetero atoms [2, 2006.01]

517/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**
517/04 • • Ortho-condensed systems **[2, 2006.01]**
517/06 • • Peri-condensed systems **[2, 2006.01]**
517/08 • • Bridged systems **[2, 2006.01]**
517/10 • • Spiro-condensed systems **[2, 2006.01]**
517/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**
517/14 • • Ortho-condensed systems **[2, 2006.01]**
517/16 • • Peri-condensed systems **[2, 2006.01]**
517/18 • • Bridged systems **[2, 2006.01]**
517/20 • • Spiro-condensed systems **[2, 2006.01]**
517/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

519/00 Heterocyclic compounds containing more than one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system not provided for in groups C07D 453/00 or C07D 455/00 [2, 2006.01]

519/02 • Ergot alkaloids of the cyclic peptide type **[2, 2006.01]**
519/04 • Dimeric indole alkaloids, e.g. vincaleucoblastine **[2, 2006.01]**
519/06 • containing at least one condensed beta-lactam ring system, provided for by groups C07D 463/00, C07D 477/00 or C07D 499/00-C07D 507/00, e.g. a penem or a cepham system **[6, 2006.01]**

521/00 Heterocyclic compounds containing unspecified hetero rings [2, 2006.01]

Note(s) [2009.01]

This group is only used for the classification of heterocyclic compounds the chemical structure of which are not specified, i.e. only in those cases where the heterocyclic compounds cannot be classified in any of groups C07D 201/00-C07D 519/00.

C07F ACYCLIC, CARBOCYCLIC, OR HETEROCYCLIC COMPOUNDS CONTAINING ELEMENTS OTHER THAN CARBON, HYDROGEN, HALOGEN, OXYGEN, NITROGEN, SULFUR, SELENIUM OR TELLURIUM (metal-containing porphyrins C07D 487/22; macromolecular compounds C08)

Note(s) [2, 7, 2006.01, 2010.01]

1. Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C-C07K and within these subclasses.
2. Attention is drawn to Note (6) following the title of class C07.
3. Attention is drawn to Note (3) after the title of section C, which Note indicates to which version of the periodic table of chemical elements the IPC refers.
4. Therapeutic activity of compounds is further classified in subclass A61P.
5. In this subclass, organic acid salts, alcoholates, phenates, chelates or mercaptides are classified as the parent compounds.

1/00 Compounds containing elements of Groups 1 or 11 of the Periodic System [1, 2006.01]
1/02 • Lithium compounds **[1, 2006.01]**
1/04 • Sodium compounds **[1, 2006.01]**
1/06 • Potassium compounds **[1, 2006.01]**
1/08 • Copper compounds **[1, 2006.01]**
1/10 • Silver compounds **[1, 2006.01]**
1/12 • Gold compounds **[1, 2006.01]**

3/00 Compounds containing elements of Groups 2 or 12 of the Periodic System [1, 2006.01]
3/02 • Magnesium compounds **[1, 2006.01]**
3/04 • Calcium compounds **[1, 2006.01]**
3/06 • Zinc compounds **[1, 2006.01]**
3/08 • Cadmium compounds **[1, 2006.01]**
3/10 • Mercury compounds **[1, 2006.01]**
3/12 • • Aromatic substances containing mercury **[1, 2006.01]**
3/14 • • Heterocyclic substances containing mercury **[1, 2006.01]**

5/00 Compounds containing elements of Groups 3 or 13 of the Periodic System [1, 2006.01]
5/02 • Boron compounds **[1, 2006.01]**
5/04 • • Esters of boric acids **[1, 2006.01]**
5/05 • • Cyclic compounds having at least one ring containing boron but no carbon in the ring **[2, 2006.01]**
5/06 • Aluminium compounds **[1, 2006.01]**

7/00 Compounds containing elements of Groups 4 or 14 of the Periodic System [1, 2006.01]
7/02 • Silicon compounds **[1, 2006.01]**
7/04 • • Esters of silicic acids **[1, 2006.01]**
7/06 • • • with hydroxyaryl compounds **[1, 2006.01]**
7/07 • • • Cyclic esters **[2, 2006.01]**
7/08 • • Compounds having one or more C—Si linkages **[1, 2006.01]**
7/10 • • • containing nitrogen **[1, 2006.01]**
7/12 • • • Organo silicon halides **[1, 2006.01]**
7/14 • • • • Preparation thereof from halogenated silanes and hydrocarbons **[1, 2006.01]**
7/16 • • • • Preparation thereof from silicon and halogenated hydrocarbons **[1, 2006.01]**
7/18 • • • Compounds having one or more C—Si linkages as well as one or more C—O—Si linkages **[1, 2006.01]**
7/20 • • • Purification; Separation **[1, 2006.01]**
7/21 • • Cyclic compounds having at least one ring containing silicon but no carbon in the ring **[2, 2006.01]**
7/22 • Tin compounds **[1, 2006.01]**
7/24 • Lead compounds **[1, 2006.01]**
7/26 • • Tetra-alkyl lead compounds **[1, 2006.01]**
7/28 • Titanium compounds **[1, 2006.01]**
7/30 • Germanium compounds **[2, 2006.01]**

9/00 Compounds containing elements of Groups 5 or 15 of the Periodic System [1, 2006.01]
9/02 • Phosphorus compounds **[1, 2, 2006.01]**
9/04 • • Reaction products of phosphorus sulfur compounds with hydrocarbons **[1, 2006.01]**
9/06 • • without P—C bonds **[1, 2006.01]**
9/08 • • • Esters of oxyacids of phosphorus **[1, 2006.01]**
9/09 • • • • Esters of phosphoric acids **[2, 2006.01]**
9/10 • • • • • Phosphatides, e.g. lecithin **[1, 2006.01]**
9/11 • • • • • with hydroxyalkyl compounds without further substituents on alkyl **[2, 2006.01]**
9/113 • • • • • with unsaturated acyclic alcohols **[2, 2006.01]**
9/117 • • • • • with cycloaliphatic alcohols **[2, 2006.01]**
9/12 • • • • • with hydroxyaryl compounds **[1, 2, 2006.01]**
9/14 • • • • • containing P-halide groups **[1, 2, 2006.01]**
9/141 • • • • Esters of phosphorous acids **[2, 2006.01]**
9/142 • • • • • with hydroxyalkyl compounds without further substituents on alkyl **[2, 2006.01]**
9/143 • • • • • with unsaturated acyclic alcohols **[2, 2006.01]**
9/144 • • • • • with cycloaliphatic alcohols **[2, 2006.01]**
9/145 • • • • • with hydroxyaryl compounds **[2, 2006.01]**
9/146 • • • • • containing P-halide groups **[2, 2006.01]**
9/16 • • • Esters of thiophosphoric acids or thiophosphorous acids **[1, 2006.01]**
9/165 • • • • Esters of thiophosphoric acids **[2, 2006.01]**
9/17 • • • • • with hydroxyalkyl compounds without further substituents on alkyl **[2, 2006.01]**
9/173 • • • • • with unsaturated acyclic alcohols **[2, 2006.01]**
9/177 • • • • • with cycloaliphatic alcohols **[2, 2006.01]**
9/18 • • • • • with hydroxyaryl compounds **[1, 2, 2006.01]**
9/20 • • • • • containing P-halide groups **[1, 2, 2006.01]**
9/201 • • • • Esters of thiophosphorous acids **[2, 2006.01]**
9/202 • • • • • with hydroxyalkyl compounds without further substituents on alkyl **[2, 2006.01]**
9/203 • • • • • with unsaturated acyclic alcohols **[2, 2006.01]**
9/204 • • • • • with cycloaliphatic alcohols **[2, 2006.01]**

9/205 • • • • • with hydroxyaryl compounds **[2, 2006.01]**
9/206 • • • • • containing P-halide groups **[2, 2006.01]**
9/22 • • • Amides of acids of phosphorus **[1, 2006.01]**
9/24 • • • • Esteramides **[1, 2006.01]**
9/26 • • • • containing P-halide groups **[1, 2006.01]**
9/28 • • with one or more P—C bonds **[1, 2006.01]**
9/30 • • • Phosphinic acids (R_2=P(:O)OH); Thiophosphinic acids **[1, 2006.01]**
9/32 • • • • Esters thereof **[1, 2006.01]**
9/34 • • • • Halides thereof **[1, 2006.01]**
9/36 • • • • Amides thereof **[1, 2006.01]**
9/38 • • • Phosphonic acids (R—P(:O)$(OH)_2$); Thiophosphonic acids **[1, 2006.01]**
9/40 • • • • Esters thereof **[1, 2006.01]**
9/42 • • • • Halides thereof **[1, 2006.01]**
9/44 • • • • Amides thereof **[1, 2006.01]**
9/46 • • • Phosphinous acids (R_2=P—OH); Thiophosphinous acids **[1, 2006.01]**
9/48 • • • Phosphonous acids (R—P $(OH)_2$); Thiophosphonous acids **[1, 2006.01]**
9/50 • • • Organo-phosphines **[1, 2006.01]**
9/52 • • • • Halophosphines **[1, 2006.01]**
9/53 • • • • Organo-phosphine oxides; Organo-phosphine sulfides **[2, 2006.01]**
9/535 • • • Organo-phosphoranes **[3, 2006.01]**
9/54 • • • Quaternary phosphonium compounds **[1, 2006.01]**
9/547 • • Heterocyclic compounds, e.g. containing phosphorus as a ring hetero atom **[5, 2006.01]**
9/553 • • • having one nitrogen atom as the only ring hetero atom **[5, 2006.01]**
9/564 • • • • Three-membered rings **[5, 2006.01]**
9/568 • • • • Four-membered rings **[5, 2006.01]**
9/572 • • • • Five-membered rings **[5, 2006.01]**
9/576 • • • • Six-membered rings **[5, 2006.01]**
9/58 • • • • • Pyridine rings **[1, 5, 2006.01]**
9/59 • • • • • Hydrogenated pyridine rings **[5, 2006.01]**
9/60 • • • • • Quinoline or hydrogenated quinoline ring systems **[1, 5, 2006.01]**
9/62 • • • • • Isoquinoline or hydrogenated isoquinoline ring systems **[1, 5, 2006.01]**
9/64 • • • • • Acridine or hydrogenated acridine ring systems **[1, 5, 2006.01]**
9/645 • • • having two nitrogen atoms as the only ring hetero atoms **[5, 2006.01]**
9/6503 • • • • Five-membered rings **[5, 2006.01]**
9/6506 • • • • • having the nitrogen atoms in positions 1 and 3 **[5, 2006.01]**
9/6509 • • • • Six-membered rings **[5, 2006.01]**
9/6512 • • • • • having the nitrogen atoms in positions 1 and 3 **[5, 2006.01]**
9/6515 • • • having three nitrogen atoms as the only ring hetero atoms **[5, 2006.01]**
9/6518 • • • • Five-membered rings **[5, 2006.01]**
9/6521 • • • • Six-membered rings **[5, 2006.01]**
9/6524 • • • having four or more nitrogen atoms as the only ring hetero atoms **[5, 2006.01]**
9/6527 • • • having nitrogen and oxygen atoms as the only ring hetero atoms **[5, 2006.01]**
9/653 • • • • Five-membered rings **[5, 2006.01]**
9/6533 • • • • Six-membered rings **[5, 2006.01]**
9/6536 • • • having nitrogen and sulfur atoms with or without oxygen atoms, as the only ring hetero atoms **[5, 2006.01]**
9/6539 • • • • Five-membered rings **[5, 2006.01]**
9/6541 • • • • • condensed with carbocyclic rings or ring systems **[5, 2006.01]**
9/6544 • • • • Six-membered rings **[5, 2006.01]**
9/6547 • • • • • condensed with carbocyclic rings or ring systems **[5, 2006.01]**
9/655 • • • having oxygen atoms, with or without sulfur, selenium, or tellurium atoms, as the only ring hetero atoms **[5, 2006.01]**
9/6553 • • • having sulfur atoms, with or without selenium or tellurium atoms, as the only ring hetero atoms **[5, 2006.01]**
9/6558 • • • containing at least two different or differently substituted hetero rings neither condensed among themselves nor condensed with a common carbocyclic ring or ring system **[5, 2006.01]**
9/6561 • • • containing systems of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring or ring system, with or without other non-condensed hetero rings **[5, 2006.01]**
9/6564 • • • having phosphorus atoms, with or without nitrogen, oxygen, sulfur, selenium or tellurium atoms, as ring hetero atoms **[5, 2006.01]**
9/6568 • • • • having phosphorus atoms as the only ring hetero atoms **[5, 2006.01]**
9/6571 • • • • having phosphorus and oxygen atoms as the only ring hetero atoms **[5, 2006.01]**
9/6574 • • • • • Esters of oxyacids of phosphorus **[5, 2006.01]**
9/6578 • • • • having phosphorus and sulfur atoms with or without oxygen atoms, as ring hetero atoms **[5, 2006.01]**
9/6581 • • • • having phosphorus and nitrogen atoms with or without oxygen or sulfur atoms, as ring hetero atoms **[5, 2006.01]**
9/6584 • • • • • having one phosphorus atom as ring hetero atom **[5, 2006.01]**
9/6587 • • • • • having two phosphorus atoms as ring hetero atoms **[5, 2006.01]**
9/659 • • • • • having three phosphorus atoms as ring hetero atoms **[5, 2006.01]**
9/6593 • • • • • • 1,3,5-Triaza-2,4,6-triphosphorines **[5, 2006.01]**
9/6596 • • • having atoms other than oxygen, sulfur, selenium, tellurium, nitrogen or phosphorus as ring hetero atoms **[5, 2006.01]**
9/66 • Arsenic compounds **[1, 2006.01]**
9/68 • • without As—C bonds **[1, 2006.01]**
9/70 • • Organo-arsenic compounds **[1, 2006.01]**
9/72 • • • Aliphatic compounds **[1, 2006.01]**
9/74 • • • Aromatic compounds **[1, 2006.01]**
9/76 • • • • containing hydroxyl groups **[1, 2006.01]**
9/78 • • • • containing amino groups **[1, 2006.01]**
9/80 • • • Heterocyclic compounds **[1, 2006.01]**
9/82 • • • • Arsenic compounds containing one or more pyridine rings **[1, 2006.01]**
9/84 • • • • Arsenic compounds containing one or more quinoline ring systems **[1, 2006.01]**
9/86 • • • • Arsenic compounds containing one or more isoquinoline ring systems **[1, 2006.01]**
9/88 • • • • Arsenic compounds containing one or more acridine ring systems **[1, 2006.01]**
9/90 • Antimony compounds **[1, 2006.01]**
9/92 • • Aromatic compounds **[1, 2006.01]**
9/94 • Bismuth compounds **[1, 2006.01]**

11/00 Compounds containing elements of Groups 6 or 16 of the Periodic System [1, 2006.01]

13/00 Compounds containing elements of Groups 7 or 17 of the Periodic System [1, 2006.01]

15/00 Compounds containing elements of Groups 8, 9, 10 or 18 of the Periodic System [1, 2006.01]

15/02 • Iron compounds **[1, 2006.01]**

15/03 • • Sideramines; The corresponding desferri compounds **[1, 2006.01]**

15/04 • Nickel compounds **[1, 2006.01]**

15/06 • Cobalt compounds **[1, 2006.01]**

17/00 Metallocenes [2, 2006.01]

17/02 • of metals of Groups 8, 9 or 10 of the Periodic System **[2, 2006.01]**

19/00 Metal compounds according to more than one of main groups C07F 1/00-C07F 17/00 [5, 2006.01]

C07G COMPOUNDS OF UNKNOWN CONSTITUTION (sulfonated fats, oils or waxes of undetermined constution C07C 309/62)

Note(s) [4, 7, 2006.01]

1. This subclass does not cover peptides or proteins, of unknown constitution, which are covered by subclass C07K.
2. Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C-C07K and within these subclasses.
3. Therapeutic activity of compounds is further classified in subclass A61P.

1/00 Low-molecular-weight derivatives of lignin (high-molecular-weight derivatives of lignin C08H 7/00) **[1, 2006.01, 2011.01]**

3/00 Glycosides [1, 2006.01]

5/00 Alkaloids [1, 2006.01]

9/00 Ammonium bituminosulfonate, e.g. Ichthyol [1, 2006.01]

11/00 Antibiotics [1, 2006.01]

13/00 Vitamins of unknown constitution [1, 2006.01]

15/00 Hormones [1, 2006.01]

99/00 Subject matter not provided for in other groups of this subclass [2009.01]

C07H SUGARS; DERIVATIVES THEREOF; NUCLEOSIDES; NUCLEOTIDES; NUCLEIC ACIDS (derivatives of aldonic or saccharic acids C07C, C07D; aldonic acids, saccharic acids C07C 59/105, C07C 59/285; cyanohydrins C07C 255/16; glycals C07D; compounds of unknown constitution C07G; polysaccharides, derivatives thereof C08B; DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification C12N 15/00; sugar industry C13) **[2]**

Note(s) [4, 7, 2006.01]

1. This subclass covers compounds containing saccharide radicals (see the definitions in Note (3) below).
2. This subclass does not cover polysaccharides which for the purpose of this subclass are defined as having more than five saccharide radicals attached to each other by glycosidic linkages.
3. In this subclass, the following expressions are used with the meanings indicated:
   - "saccharide radical" which is derived from acyclic polyhydroxy-aldehydes or acyclic polyhydroxy-ketones, or from their cyclic tautomers, by removing hydrogen atoms or by replacing hetero bonds to oxygen by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium, in accordance with either of the following definitions:
     a. It
        i. consists of an uninterrupted carbon skeleton and oxygen atoms directly attached thereto, and
        ii. is considered to be terminated by every bond to a carbon atom of a cyclic structure and by every bond to a carbon atom having three bonds to hetero atoms, e.g. ester or nitrile radicals, and
        iii. contains within the carbon skeleton an unbranched sequence of at the most six carbon atoms in which at least three carbon atoms — at least two in the case of a skeleton having only four carbon atoms — have one single bond to an oxygen atom as the only hetero bond, and
           A. in a cyclic or acyclic sequence, at least one other carbon atom has two single bonds to oxygen atoms as the only hetero bonds, or
           B. in an acyclic sequence, at least one other carbon atom has one double bond to an oxygen atom as the only hetero bond,

     the said sequence containing at the most one double bond, i.e. C=C or possibly ketalised C(=O), in addition to the hetero bonds mentioned above under (A) or (B), e.g. the compounds

an unbranched sequence of at the most six carbon atoms, having bonds to oxygen as defined in this Note

n being an integer, are classified in group C07H 3/02 ;

b. It is also a radical derived from a radical as defined in (a) above by replacing at the most four of the specified hetero bonds to oxygen by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium;

- "heterocyclic radical" or "hetero ring" is considered to exclude saccharide radicals as defined above.

4. Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C-C07K and within these subclasses.
5. Therapeutic activity of compounds is further classified in subclass A61P .

Subclass index

GENERAL PROCESSES.....1/00
COMPOUNDS
saccharides, deoxysugars, anhydrosugars, osones.....3/00
aminosugars, aza-, thio-, seleno-, telluro-analogues.....5/00
sugar esters.....11/00, 13/00
sugar ethers, glycosides.....15/00, 17/00
cyclic acetals.....9/00
nucleosides.....19/00
nucleotides.....19/00, 21/00
nucleic acids.....21/00
derivatives containing acyclic radicals.....7/00, 13/00, 15/00
derivatives containing carbocyclic radicals.....7/00, 13/00, 15/00
derivatives containing heterocyclic radicals.....9/00, 13/10, 15/26, 17/00, 19/00, 21/00
derivatives containing boron, silicon or a metal.....23/00
SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS.....99/00

1/00 Processes for the preparation of sugar derivatives [2, 2006.01]

1/02 • Phosphorylation **[2, 2006.01]**

1/04 • • Introducing polyphosphoric acid radicals **[2, 2006.01]**

1/06 • Separation; Purification **[2, 2006.01]**

1/08 • • from natural products **[2, 2006.01]**

3/00 Compounds containing only hydrogen atoms and saccharide radicals having only carbon, hydrogen, and oxygen atoms (preparation by hydrolysis of di-or polysaccharides C13; separation or purification of sucrose, glucose, fructose, lactose or maltose C13) **[2, 2006.01]**

3/02 • Monosaccharides **[2, 2006.01]**

3/04 • Disaccharides **[2, 2006.01]**

3/06 • Oligosaccharides, i.e. having three to five saccharide radicals attached to each other by glycosidic linkages **[2, 2006.01]**

3/08 • Deoxysugars; Unsaturated sugars (1,2-dideoxy-1-enoses C07D); Osones **[2, 2006.01]**

3/10 • Anhydrosugars, e.g. epoxides **[2, 2006.01]**

5/00 Compounds containing saccharide radicals in which the hetero bonds to oxygen have been replaced by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium [2, 2006.01]

5/02 • to halogen **[2, 2006.01]**

5/04 • to nitrogen **[2, 2006.01]**

5/06 • • Aminosugars **[2, 2006.01]**

5/08 • to sulfur, selenium, or tellurium **[2, 2006.01]**

5/10 • • to sulfur **[2, 2006.01]**

7/00 Compounds containing non-saccharide radicals linked to saccharide radicals by a carbon-to-carbon bond [2, 2006.01]

7/02 • Acyclic radicals **[2, 2006.01]**

7/027 • • Keto-aldonic acids **[4, 2006.01]**

7/033 • • Uronic acids **[4, 2006.01]**

7/04 • Carbocyclic radicals **[2, 2006.01]**

7/06 • Heterocyclic radicals **[2, 2006.01]**

9/00 Compounds containing a hetero ring sharing at least two hetero atoms with a saccharide radical [2, 2006.01]

9/02 • the hetero ring containing only oxygen as ring hetero atoms **[2, 2006.01]**

9/04 • • Cyclic acetals **[2, 2006.01]**

9/06 • the hetero ring containing nitrogen as ring hetero atoms **[2, 2006.01]**

11/00 Compounds containing saccharide radicals esterified by inorganic acids; Metal salts thereof (halo-sugars C07H 5/02; thio-, seleno-, or telluro-sugars C07H 5/08) **[2, 2006.01]**

11/02 • Nitrates; Nitrites **[2, 2006.01]**

11/04 • Phosphates; Phosphites; Polyphosphates **[2, 2006.01]**

13/00 Compounds containing saccharide radicals esterified by carbonic acid or derivatives thereof, or by organic acids, e.g. phosphonic acids [2, 2006.01]

13/02 • by carboxylic acids **[2, 2006.01]**

13/04 • • having the esterifying carboxyl radicals attached to acyclic carbon atoms **[2, 2006.01]**

13/06 • • • Fatty acids **[2, 2006.01]**

13/08 • • having the esterifying carboxyl radicals directly attached to carbocyclic rings **[2, 2006.01]**

13/10 • • having the esterifying carboxyl radicals directly attached to heterocyclic rings **[2, 2006.01]**

13/12 • by acids having the group —X—C (=X)—X—, or halides thereof, in which X means nitrogen, oxygen, sulfur, selenium, or tellurium, e.g. carbonic acid, carbamic acid **[2, 2006.01]**

15/00 Compounds containing hydrocarbon or substituted hydrocarbon radicals directly attached to hetero atoms of saccharide radicals [2, 2006.01]

Note(s) [4]

In this group, acyl radicals directly attached to hetero atoms of the saccharide radicals are not considered as substituted hydrocarbon radicals.

15/02 • Acyclic radicals, not substituted by cyclic structures **[2, 2006.01]**

15/04 • • attached to an oxygen atom of a saccharide radical **[2, 2006.01]**

15/06 • • • being a hydroxyalkyl group esterified by a fatty acid **[4, 2006.01]**

15/08 • • • Polyoxyalkylene derivatives **[2, 2006.01]**

15/10 • • • containing unsaturated carbon-to-carbon bonds **[2, 2006.01]**

15/12 • • attached to a nitrogen atom of a saccharide radical **[2, 2006.01]**

15/14 • • attached to a sulfur, selenium or tellurium atom of a saccharide radical **[2, 2006.01]**

15/16 • • • Lincomycin; Derivatives thereof **[2, 2006.01]**

15/18 • Acyclic radicals, substituted by carbocyclic rings **[2, 2006.01]**

15/20 • Carbocyclic rings **[2, 2006.01]**

15/203 • • Monocyclic carbocyclic rings other than cyclohexane rings; Bicyclic carbocyclic ring systems **[4, 2006.01]**

15/207 • • Cyclohexane rings not substituted by nitrogen atoms, e.g. kasugamycins **[4, 2006.01]**

15/22 • • Cyclohexane rings, substituted by nitrogen atoms **[4, 2006.01]**

15/222 • • • Cyclohexane rings, substituted by at least two nitrogen atoms **[4, 2006.01]**

15/224 • • • • with only one saccharide radical directly attached to the cyclohexane rings, e.g. destomycin, fortimicin, neamine **[4, 2006.01]**

15/226 • • • • with at least two saccharide radicals directly attached to the cyclohexane rings **[4, 2006.01]**

15/228 • • • • • attached to adjacent ring-carbon atoms of the cyclohexane rings **[4, 2006.01]**

15/23 • • • • • • with only two saccharide radicals in the molecule, e.g. ambutyrosin, butyrosin, xylostatin, ribostamycin **[4, 2006.01]**

15/232 • • • • • • with at least three saccharide radicals in the molecule, e.g. lividomycin, neomycin, paromomycin **[4, 2006.01]**

15/234 • • • • • attached to non-adjacent ring carbon atoms of the cyclohexane rings, e.g. kanamycins, tobramycin, nebramycin, gentamicin A_2 **[4, 2006.01]**

15/236 • • • • • • a saccharide radical being substituted by an alkylamino radical in position 3 and by two substituents different from hydrogen in position 4, e.g. gentamicin complex, sisomicin, verdamicin **[4, 2006.01]**

15/238 • • • Cyclohexane rings substituted by two guanidine radicals, e.g. streptomycins **[4, 2006.01]**

15/24 • • Condensed ring systems having three or more rings **[2, 2006.01]**

15/244 • • • Anthraquinone radicals, e.g. sennosides **[4, 2006.01]**

15/248 • • • Colchicine radicals, e.g. colchicosides **[4, 2006.01]**

15/252 • • • Naphthacene radicals, e.g. daunomycins, adriamycins **[4, 2006.01]**

15/256 • • • Polyterpene radicals **[4, 2006.01]**

15/26 • Acyclic or carbocyclic radicals, substituted by hetero rings **[2, 2006.01]**

17/00 Compounds containing heterocyclic radicals directly attached to hetero atoms of saccharide radicals [2, 2006.01]

17/02 • Heterocyclic radicals containing only nitrogen as ring hetero atoms **[2, 2006.01]**

17/04 • Heterocyclic radicals containing only oxygen as ring hetero atoms **[2, 2006.01]**

17/06 • • Benzopyran radicals **[4, 2006.01]**

17/065 • • • Benzo[b]pyrans **[4, 2006.01]**

17/07 • • • • Benzo[b]pyran-4-ones **[4, 2006.01]**

17/075 • • • • Benzo[b]pyran-2-ones **[4, 2006.01]**

17/08 • • Hetero rings containing eight or more ring members, e.g. erythromycins **[2, 2006.01]**

19/00 Compounds containing a hetero ring sharing one ring hetero atom with a saccharide radical; Nucleosides; Mononucleotides; Anhydro derivatives thereof [2, 4, 2006.01]

19/01 • sharing oxygen **[4, 2006.01]**

19/02 • sharing nitrogen **[2, 2006.01]**

19/04 • • Heterocyclic radicals containing only nitrogen as ring hetero atom **[2, 2006.01]**

19/044 • • • Pyrrole radicals **[4, 2006.01]**

19/048 • • • Pyridine radicals **[4, 2006.01]**

19/052 • • • Imidazole radicals **[4, 2006.01]**

19/056 • • • Triazole or tetrazole radicals **[4, 2006.01]**

19/06 • • • Pyrimidine radicals **[2, 2006.01]**

19/067 • • • • with ribosyl as the saccharide radical **[4, 2006.01]**

19/073 • • • • with 2-deoxyribosyl as the saccharide radical **[4, 2006.01]**

19/09 • • • • with arabinosyl as the saccharide radical **[4, 2006.01]**

19/10 • • • • with the saccharide radical being esterified by phosphoric or polyphosphoric acids **[2, 2006.01]**

19/11 • • • • • containing cyclic phosphate **[4, 2006.01]**

19/12 • • • Triazine radicals **[2, 2006.01]**

19/14 • • • Pyrrolo-pyrimidine radicals **[2, 2006.01]**

19/16 • • • Purine radicals **[2, 2006.01]**

19/167 • • • • with ribosyl as the saccharide radical **[4, 2006.01]**

19/173 • • • • with 2-deoxyribosyl as the saccharide radical **[4, 2006.01]**
19/19 • • • • with arabinosyl as the saccharide radical **[4, 2006.01]**
19/20 • • • • with the saccharide radical being esterified by phosphoric or polyphosphoric acids **[2, 2006.01]**
19/207 • • • • • the phosphoric or polyphosphoric acids being esterified by a further hydroxylic compound, e.g. flavine-adenine dinucleotide or nicotinamide-adenine dinucleotide **[4, 2006.01]**
19/213 • • • • • containing cyclic phosphate **[4, 2006.01]**
19/22 • • • Pteridine radicals **[2, 2006.01]**
19/23 • • • Heterocyclic radicals containing two or more heterocyclic rings condensed among themselves or condensed with a common carbocyclic ring system, not provided for in groups C07H 19/14-C07H 19/22 **[4, 2006.01]**
19/24 • • Heterocyclic radicals containing oxygen or sulfur as ring hetero atom **[2, 2006.01]**

21/00 Compounds containing two or more mononucleotide units having separate phosphate or polyphosphate groups linked by saccharide radicals of nucleoside groups, e.g. nucleic acids [2, 2006.01]
21/02 • with ribosyl as saccharide radical **[2, 2006.01]**
21/04 • with deoxyribosyl as saccharide radical **[2, 2006.01]**

23/00 Compounds containing boron, silicon, or a metal, e.g. chelates, vitamin B_{12} (esters with inorganic acids C07H 11/00; metal salts, see parent compounds) **[2, 2006.01]**

99/00 Subject matter not provided for in other groups of this subclass [2006.01]

C07J STEROIDS (seco-steroids C07C) **[2]**

Note(s) [4, 7, 2006.01]

1. This subclass covers compounds containing a cyclopenta[a]hydrophenanthrene skeleton or a ring structure derived therefrom:
   - by contraction or expansion of one ring by one or two atoms,
   - by contraction or expansion of two rings each by one atom,
   - by contraction of one ring by one atom and expansion of one ring by one atom,
   - by substitution of one or two carbon atoms of the cyclopenta[a]hydrophenanthrene skeleton, which are not shared by rings, by hetero atoms, in combination with the above defined contraction or expansion or not, or
   - by condensation with carbocyclic or heterocyclic rings in combination with one or more of the foregoing alterations or not.
2. Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C-C07Kand within these subclasses.
3. Therapeutic activity of compounds is further classified in subclass A61P.

Subclass index

NORMAL STEROIDS
containing halogen or oxygen
oxygen other than as ring hetero atom.....1/00, 3/00, 5/00, 7/00, 9/00, 11/00, 13/00, 15/00
oxygen as ring hetero atom.....17/00, 19/00, 21/00
containing sulfur.....31/00, 33/00
containing nitrogen.....41/00, 43/00
other steroids.....51/00
STEROIDS WITH MODIFIED SKELETON
retrosteroids.....15/00
nor-, homosteroids.....61/00, 63/00, 65/00, 67/00, 69/00
condensed with carbocyclic rings.....53/00
heterosteroids.....71/00, 73/00
PREPARATION OF STEROIDS IN GENERAL.....75/00

Normal steroids, i.e. cyclopenta[a]hydrophenanthrenes, containing carbon, hydrogen, halogen, or oxygen [2]

1/00 Normal steroids containing carbon, hydrogen, halogen, or oxygen, not substituted in position 17 beta by a carbon atom, e.g. oestrane, androstane [2, 2006.01]

3/00 Normal steroids containing carbon, hydrogen, halogen, or oxygen, substituted in position 17 beta by one carbon atom [2, 2006.01]

5/00 Normal steroids containing carbon, hydrogen, halogen, or oxygen, substituted in position 17 beta by a chain of two carbon atoms, e.g. pregnane, and substituted in position 21 by only one singly bound oxygen atom [2, 2006.01]

7/00 Normal steroids containing carbon, hydrogen, halogen, or oxygen, substituted in position 17 beta by a chain of two carbon atoms (C07J 5/00 takes precedence) **[2, 2006.01]**

9/00 **Normal steroids containing carbon, hydrogen, halogen, or oxygen, substituted in position 17 beta by a chain of more than two carbon atoms, e.g. cholane, cholestane, coprostane [2, 2006.01]**

11/00 **Normal steroids containing carbon, hydrogen, halogen, or oxygen, not substituted in position 3 [2, 2006.01]**

13/00 **Normal steroids containing carbon, hydrogen, halogen, or oxygen, having a carbon-to-carbon double bond from or to position 17 [2, 2006.01]**

15/00 **Stereochemically pure steroids containing carbon, hydrogen, halogen, or oxygen, having a partially or totally inverted skeleton, e.g. retrosteroids, L-isomers [2, 2006.01]**

17/00 **Normal steroids containing carbon, hydrogen, halogen, or oxygen, having an oxygen-containing hetero ring not condensed with the cyclopenta[a]hydrophenanthrene skeleton [2, 2006.01]**

19/00 **Normal steroids containing carbon, hydrogen, halogen, or oxygen, substituted in position 17 by a lactone ring [2, 2006.01]**

21/00 **Normal steroids containing carbon, hydrogen, halogen, or oxygen, having an oxygen-containing hetero ring spiro-condensed with the cyclopenta[a]hydrophenanthrene skeleton [2, 2006.01]**

Normal steroids, i.e. cyclopenta[a]hydrophenanthrenes, containing sulfur [2]

31/00 **Normal steroids containing one or more sulfur atoms not belonging to a hetero ring [2, 2006.01]**

33/00 **Normal steroids having a sulfur-containing hetero ring spiro-condensed or not condensed with the cyclopenta[a]hydrophenanthrene skeleton [2, 2006.01]**

Normal steroids, i.e. cyclopenta[a]hydrophenanthrenes, containing nitrogen [2]

41/00 **Normal steroids containing one or more nitrogen atoms not belonging to a hetero ring [2, 2006.01]**

43/00 **Normal steroids having a nitrogen-containing hetero ring spiro-condensed or not condensed with the cyclopenta[a]hydrophenanthrene skeleton [2, 2006.01]**

51/00 **Normal steroids with unmodified cyclopenta[a]hydrophenanthrene skeleton not provided for in groups C07J 1/00-C07J 43/00 [2, 2006.01]**

53/00 **Steroids in which the cyclopenta[a]hydrophenanthrene skeleton has been modified by condensation with carbocyclic rings or by formation of an additional ring by means of a direct link between two ring carbon atoms [2, 2006.01]**

Nor- or homosteroids [2]

61/00 **Steroids in which the cyclopenta[a]hydrophenanthrene skeleton has been modified by contraction of only one ring by one or two atoms [2, 2006.01]**

63/00 **Steroids in which the cyclopenta[a]hydrophenanthrene skeleton has been modified by expansion of only one ring by one or two atoms [2, 2006.01]**

65/00 **Steroids in which the cyclopenta[a]hydrophenanthrene skeleton has been modified by contraction of two rings, each by one atom [2, 2006.01]**

67/00 **Steroids in which the cyclopenta[a]hydrophenanthrene skeleton has been modified by expansion of two rings, each by one atom [2, 2006.01]**

69/00 **Steroids in which the cyclopenta[a]hydrophenanthrene skeleton has been modified by contraction of only one ring by one atom and expansion of only one ring by one atom [2, 2006.01]**

71/00 **Steroids in which the cyclopenta[a]hydrophenanthrene skeleton is condensed with a heterocyclic ring** (spiro-condensed heterocyclic rings C07J 21/00, C07J 33/00, C07J 43/00) **[2, 2006.01]**

73/00 **Steroids in which the cyclopenta[a]hydrophenanthrene skeleton has been modified by substitution of one or two carbon atoms by hetero atoms [2, 2006.01]**

75/00 **Processes for the preparation of steroids, in general [4, 2006.01]**

C07K **PEPTIDES** (peptides containing β-lactam rings C07D; cyclic dipeptides not having in their molecule any other peptide link than those which form their ring, e.g. piperazine-2,5-diones, C07D; ergot alkaloids of the cyclic peptide type C07D 519/02; single cell proteins, enzymes C12N; genetic engineering processes for obtaining peptides C12N 15/00) **[4]**

Note(s) [4, 6, 7, 2006.01]

1. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "amino acids" are compounds in which at least one amino group and at least one carboxyl group are bound to the same carbon skeleton and the nitrogen atom of the amino group may form part of a ring;
   - "normal peptide link" is one between an alpha-amino group of an amino acid and the carboxyl group — in position 1 — of another alpha-amino acid;

- "abnormal peptide link" is a link where at least one of the linked amino acids is not an alpha-amino acid or a link formed by at least one carboxyl or amino group being part of the side chain of an alpha-amino acid;
- "peptides" are compounds containing at least two amino acid units, which are bound through at least one normal peptide link, including oligopeptides, polypeptides and proteins, where
  - i. "linear peptides" may comprise rings formed through S—S bridges, or through an hydroxy or a mercapto group of an hydroxy- or a mercapto-amino acid and the carboxyl group of another amino acid (e.g. peptide lactones) but do not comprise rings which are formed only through peptide links;
  - ii. "cyclic peptides" are peptides comprising at least one ring formed only through peptide links; the cyclisation may occur only through normal peptide links or through abnormal peptide links, e.g. through the 4-amino group of 2,4-diamino-butanoic acid. Thus, cyclic compounds in which at least one link in the ring is a non-peptide link are considered as "linear peptides";
  - iii. "depsipeptides" are compounds containing a sequence of at least two alpha-amino acids and at least one alpha-hydroxy carboxylic acid, which are bound through at least one normal peptide link and ester links, derived from the hydroxy carboxylic acids, where
    - a. "linear depsipeptides" may comprise rings formed through S—S bridges, or through an hydroxy or a mercapto group of an hydroxy-, or mercapto-amino acid and the carboxyl group of another amino- or hydroxy-acid but do not comprise rings formed only through peptide or ester links derived from hydroxy carboxylic acids, e.g. Gly-Ala-Gly—OCH_2CO_2H and Gly—OCH_2CO-Ala-Gly are considered as "linear depsipeptides", but $HOCH_2CO$-Gly-Ala-Gly does not contain an ester link, and is thus a derivative of Gly-Ala-Gly which is covered by C07K 5/08;
    - b. "cyclic depsipeptides" are peptides containing at least one ring formed only through peptide or ester links — derived from hydroxy carboxylic acids —, e.g.

;
  - iv. "hybrid peptides" are peptides produced through fusion or covalent binding of two or more heterologous peptides.

2. Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C-C07K and within these subclasses.
3. Therapeutic activity of compounds is further classified in subclass A61P.
4. When classifying in this subclass, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.
5. Fragments of peptides or peptides modified by removal or addition of amino acids, by substitution of amino acids by others, or by combination of these modifications are classified as the parent peptides. However, fragments of peptides having only four or less amino acids are also classified in group C07K 5/00.
6. Peptides prepared by chemical processes and having an amino acid sequence derived from naturally occurring peptides are classified with the natural one.
7. Peptides prepared by recombinant DNA technology are not classified according to the host, but according to the original peptide expressed, e.g. HIV peptide expressed in E. coli is classified with HIV peptides.

Subclass index

PEPTIDES
Preparation.....1/00
of undefined number of amino acids.....2/00
Having up to 20 amino acids in an undefined or only partially defined sequence.....4/00
Having up to 20 amino acids in a fully defined sequence.....5/00-9/00
Depsipeptides having up to 20 amino acids in a fully defined sequence.....11/00
Having more than 20 amino acids.....14/00
Immunoglobulins.....16/00
Carrier-bound or immobilised peptides.....17/00
Hybrid peptides.....19/00

1/00 General processes for the preparation of peptides [4, 2006.01]
1/02 • in solution **[4, 2006.01]**
1/04 • on carriers **[4, 2006.01]**
1/06 • using protecting groups or activating agents **[4, 2006.01]**
1/08 • • using activating agents **[4, 2006.01]**
1/10 • using coupling agents **[4, 2006.01]**
1/107 • by chemical modification of precursor peptides **[6, 2006.01]**
1/113 • • without change of the primary structure **[6, 2006.01]**
1/12 • by hydrolysis **[4, 2006.01]**
1/13 • Labelling of peptides **[6, 2006.01]**
1/14 • Extraction; Separation; Purification **[4, 6, 2006.01]**
1/16 • • by chromatography **[6, 2006.01]**
1/18 • • • Ion-exchange chromatography **[6, 2006.01]**
1/20 • • • Partition-, reverse-phase or hydrophobic interaction chromatography **[6, 2006.01]**
1/22 • • • Affinity chromatography or related techniques based upon selective absorption processes **[6, 2006.01]**
1/24 • • by electrochemical means **[6, 2006.01]**
1/26 • • • Electrophoresis **[6, 2006.01]**
1/28 • • • • Isoelectric focusing **[6, 2006.01]**
1/30 • • by precipitation **[6, 2006.01]**
1/32 • • • as complexes **[6, 2006.01]**
1/34 • • by filtration, ultrafiltration or reverse osmosis **[6, 2006.01]**
1/36 • • by a combination of two or more processes of different types **[6, 2006.01]**

2/00 Peptides of undefined number of amino acids; Derivatives thereof [6, 2006.01]

4/00 Peptides having up to 20 amino acids in an undefined or only partially defined sequence; Derivatives thereof [6, 2006.01]
4/02 • from viruses **[6, 2006.01]**
4/04 • from bacteria **[6, 2006.01]**

4/06 • from fungi **[6, 2006.01]**
4/08 • from algae; from lichens **[6, 2006.01]**
4/10 • from plants **[6, 2006.01]**
4/12 • from animals; from humans **[6, 2006.01]**

5/00 Peptides having up to four amino acids in a fully defined sequence; Derivatives thereof [4, 2006.01]

Note(s) [6]

In this group, the following expression is used with the meaning indicated:

- "first amino acid" means the first amino acid from the left side, i.e. the N-terminal amino acid, of the peptide sequence.

5/02 • containing at least one abnormal peptide link **[4, 2006.01]**
5/023 • • in which at least a beta-amino acid is involved **[6, 2006.01]**
5/027 • • in which at least a gamma-amino acid is involved, e.g. statine **[6, 2006.01]**
5/03 • • in which at least a delta-amino acid is involved, e.g. isosteres **[6, 2006.01]**
5/033 • • in which at least an epsilon- or zeta-amino acid is involved **[6, 2006.01]**
5/037 • • the abnormal link being formed by the side chain of an alpha-amino acid, e.g. gamma-Glu, epsilon-Lys, glutathione **[6, 2006.01]**
5/04 • containing only normal peptide links **[4, 2006.01]**
5/06 • • Dipeptides **[4, 2006.01]**
5/062 • • • the side chain of the first amino acid being acyclic, e.g. Gly, Ala **[6, 2006.01]**
5/065 • • • the side chain of the first amino acid containing carbocyclic rings, e.g. Phe, Tyr **[6, 2006.01]**
5/068 • • • the side chain of the first amino acid containing more amino groups than carboxyl groups, or derivatives thereof, e.g. Lys, Arg **[6, 2006.01]**
5/072 • • • the side chain of the first amino acid containing more carboxyl groups than amino groups, or derivatives thereof, e.g. Asp, Glu, Asn **[6, 2006.01]**
5/075 • • • • Asp-Phe; Derivatives thereof, e.g. aspartame **[6, 2006.01]**
5/078 • • • the first amino acid being heterocyclic, e.g. Pro, His, Trp **[6, 2006.01]**
5/08 • • Tripeptides **[4, 2006.01]**
5/083 • • • the side chain of the first amino acid being acyclic, e.g. Gly, Ala **[6, 2006.01]**
5/087 • • • the side chain of the first amino acid containing carbocyclic rings, e.g. Phe, Tyr **[6, 2006.01]**
5/09 • • • the side chain of the first amino acid containing more amino groups than carboxyl groups, or derivatives thereof, e.g. Lys, Arg **[6, 2006.01]**
5/093 • • • the side chain of the first amino acid containing more carboxyl groups than amino groups, or derivatives thereof, e.g. Asp, Glu, Asn **[6, 2006.01]**
5/097 • • • the first amino acid being heterocyclic, e.g. Pro, His, Trp, e.g. thyroliberin, melanostatin **[6, 2006.01]**
5/10 • • Tetrapeptides **[4, 2006.01]**
5/103 • • • the side chain of the first amino acid being acyclic, e.g. Gly, Ala **[6, 2006.01]**
5/107 • • • the side chain of the first amino acid containing carbocyclic rings, e.g. Phe, Tyr **[6, 2006.01]**
5/11 • • • the side chain of the first amino acid containing more amino groups than carboxyl groups, or derivatives thereof, e.g. Lys, Arg **[6, 2006.01]**
5/113 • • • the side chain of the first amino acid containing more carboxyl groups than amino groups, or derivatives thereof, e.g. Asp, Glu, Asn **[6, 2006.01]**
5/117 • • • the first amino acid being heterocyclic, e.g. Pro, His, Trp **[6, 2006.01]**
5/12 • • Cyclic peptides **[4, 2006.01]**

7/00 Peptides having 5 to 20 amino acids in a fully defined sequence; Derivatives thereof [4, 6, 2006.01]
7/02 • Linear peptides containing at least one abnormal peptide link **[4, 2006.01]**
7/04 • Linear peptides containing only normal peptide links **[4, 2006.01]**
7/06 • • having 5 to 11 amino acids **[4, 2006.01]**
7/08 • • having 12 to 20 amino acids **[4, 6, 2006.01]**
7/14 • • Angiotensins; Related peptides **[4, 2006.01]**
7/16 • • Oxytocins; Vasopressins; Related peptides **[4, 2006.01]**
7/18 • • Kallidins; Bradykinins; Related peptides **[4, 2006.01]**
7/22 • • Eledoisins; Related peptides **[4, 2006.01]**
7/23 • • Luteinising hormone-releasing hormone (LHRH); Related peptides **[6, 2006.01]**
7/28 • • Gramicidins A, B, D; Related peptides **[4, 2006.01]**
7/50 • Cyclic peptides containing at least one abnormal peptide link **[4, 2006.01]**
7/52 • • with only normal peptide links in the ring **[4, 2006.01]**
7/54 • • with at least one abnormal peptide link in the ring **[4, 2006.01]**
7/56 • • • the cyclisation not occurring through 2,4-diamino-butanoic acid **[4, 2006.01]**
7/58 • • • • Bacitracins; Related peptides **[4, 2006.01]**
7/60 • • • the cyclisation occurring through the 4-amino group of 2,4-diamino-butanoic acid **[4, 2006.01]**
7/62 • • • • Polymyxins; Related peptides **[4, 2006.01]**
7/64 • Cyclic peptides containing only normal peptide links **[4, 2006.01]**
7/66 • • Gramicidins S, C; Tyrocidins A, B, C; Related peptides **[4, 2006.01]**

9/00 Peptides having up to 20 amino acids, containing saccharide radicals and having a fully defined sequence; Derivatives thereof [4, 6, 2006.01]

11/00 Depsipeptides having up to 20 amino acids in a fully defined sequence; Derivatives thereof [4, 6, 2006.01]
11/02 • cyclic, e.g. valinomycins **[4, 2006.01]**

14/00 Peptides having more than 20 amino acids; Gastrins; Somatostatins; Melanotropins; Derivatives thereof [6, 2006.01]
14/005 • from viruses **[6, 2006.01]**
14/01 • • DNA viruses **[6, 2006.01]**
14/015 • • • Parvoviridae, e.g. feline panleukopenia virus, human parvovirus **[6, 2006.01]**
14/02 • • • Hepadnaviridae, e.g. hepatitis B virus **[6, 2006.01]**
14/025 • • • Papovaviridae, e.g. papillomavirus, polyomavirus, SV40, BK virus, JC virus **[6, 2006.01]**
14/03 • • • Herpetoviridae, e.g. pseudorabies virus **[6, 2006.01]**
14/035 • • • • Herpes simplex virus I or II **[6, 2006.01]**

14/04 • • • • Varicella-zoster virus **[6, 2006.01]**
14/045 • • • • Cytomegalovirus **[6, 2006.01]**
14/05 • • • • Epstein-Barr virus **[6, 2006.01]**
14/055 • • • • Marek's disease virus **[6, 2006.01]**
14/06 • • • • Infectious bovine rhinotracheitis virus **[6, 2006.01]**
14/065 • • • Poxviridae, e.g. avipoxvirus **[6, 2006.01]**
14/07 • • • • Vaccinia virus; Variola virus **[6, 2006.01]**
14/075 • • • Adenoviridae **[6, 2006.01]**
14/08 • • RNA viruses **[6, 2006.01]**
14/085 • • • Picornaviridae, e.g. coxsackie virus, echovirus, enterovirus **[6, 2006.01]**
14/09 • • • • Foot-and-mouth disease virus **[6, 2006.01]**
14/095 • • • • Rhinovirus **[6, 2006.01]**
14/10 • • • • Hepatitis A virus **[6, 2006.01]**
14/105 • • • • Poliovirus **[6, 2006.01]**
14/11 • • • Orthomyxoviridae, e.g. influenza virus **[6, 2006.01]**
14/115 • • • Paramyxoviridae, e.g. parainfluenza virus **[6, 2006.01]**
14/12 • • • • Mumps virus; Measles virus **[6, 2006.01]**
14/125 • • • • Newcastle disease virus **[6, 2006.01]**
14/13 • • • • Canine distemper virus **[6, 2006.01]**
14/135 • • • • Respiratory syncytial virus **[6, 2006.01]**
14/14 • • • Reoviridae, e.g. rotavirus, bluetongue virus, Colorado tick fever virus **[6, 2006.01]**
14/145 • • • Rhabdoviridae, e.g. rabies virus, Duvenhage virus, Mokda virus, vesicular stomatitis virus **[6, 2006.01]**
14/15 • • • Retroviridae, e.g. bovine leukaemia virus, feline leukaemia virus, human T-cell leukaemia-lymphoma virus **[6, 2006.01]**
14/155 • • • • Lentiviridae, e.g. human immunodeficiency virus (HIV), visna-maedi virus, equine infectious anaemia virus **[6, 2006.01]**
14/16 • • • • • HIV-1 **[6, 2006.01]**
14/165 • • • Coronaviridae, e.g. avian infectious bronchitis virus **[6, 2006.01]**
14/17 • • • • Porcine transmissible gastroenteritis virus **[6, 2006.01]**
14/175 • • • Bunyaviridae, e.g. California encephalitis virus, Rift valley fever virus, Hantaan virus **[6, 2006.01]**
14/18 • • • Togaviridae, e.g. flavivirus, pestivirus, yellow fever virus, hepatitis C virus, japanese encephalitis virus **[6, 2006.01]**
14/185 • • • • Hog cholera virus **[6, 2006.01]**
14/19 • • • • Rubella virus **[6, 2006.01]**
14/195 • from bacteria **[6, 2006.01]**

Note(s) [6]

In groups C07K 14/20-C07K 14/365, where appropriate, after the bacteria terminology, the indication of the order (O), family (F) or genus (G) of the bacteria is given in brackets.

14/20 • • from Spirochaetales (O), e.g. Treponema, Leptospira **[6, 2006.01]**
14/205 • • from Campylobacter (G) **[6, 2006.01]**
14/21 • • from Pseudomonadaceae (F) **[6, 2006.01]**
14/215 • • from Halobacteriaceae (F) **[6, 2006.01]**
14/22 • • from Neisseriaceae (F), e.g. Acinetobacter **[6, 2006.01]**
14/225 • • from Alcaligenes (G) **[6, 2006.01]**
14/23 • • from Brucella (G) **[6, 2006.01]**
14/235 • • from Bordetella (G) **[6, 2006.01]**
14/24 • • from Enterobacteriaceae (F), e.g. Citrobacter, Serratia, Proteus, Providencia, Morganella, Yersinia **[6, 2006.01]**
14/245 • • • Escherichia (G) **[6, 2006.01]**
14/25 • • • Shigella (G) **[6, 2006.01]**
14/255 • • • Salmonella (G) **[6, 2006.01]**
14/26 • • • Klebsiella (G) **[6, 2006.01]**
14/265 • • • Enterobacter (G) **[6, 2006.01]**
14/27 • • • Erwinia (G) **[6, 2006.01]**
14/275 • • • Hafnia (G) **[6, 2006.01]**
14/28 • • from Vibrionaceae (F) **[6, 2006.01]**
14/285 • • from Pasteurellaceae (F), e.g. Haemophilus influenza **[6, 2006.01]**
14/29 • • from Richettsiales (O) **[6, 2006.01]**
14/295 • • from Chlamydiales (O) **[6, 2006.01]**
14/30 • • from Mycoplasmatales, e.g. Pleuropneumonia-like organisms (PPLO) **[6, 2006.01]**
14/305 • • from Micrococcaceae (F) **[6, 2006.01]**
14/31 • • • from Staphylococcus (G) **[6, 2006.01]**
14/315 • • from Streptococcus (G), e.g. Enterococci **[6, 2006.01]**
14/32 • • from Bacillus (G) **[6, 2006.01]**
14/325 • • • Bacillus thuringiensis crystal peptide (delta-endotoxin) **[6, 2006.01]**
14/33 • • from Clostridium (G) **[6, 2006.01]**
14/335 • • from Lactobacillus (G) **[6, 2006.01]**
14/34 • • from Corynebacterium (G) **[6, 2006.01]**
14/345 • • from Brevibacterium (G) **[6, 2006.01]**
14/35 • • from Mycobacteriaceae (F) **[6, 2006.01]**
14/355 • • from Nocardia (G) **[6, 2006.01]**
14/36 • • from Actinomyces; from Streptomyces (G) **[6, 2006.01]**
14/365 • • from Actinoplanes (G) **[6, 2006.01]**
14/37 • from fungi **[6, 2006.01]**
14/375 • • from Basidiomycetes **[6, 2006.01]**
14/38 • • from Aspergillus **[6, 2006.01]**
14/385 • • from Penicillium **[6, 2006.01]**
14/39 • • from yeasts **[6, 2006.01]**
14/395 • • • from Saccharomyces **[6, 2006.01]**
14/40 • • • from Candida **[6, 2006.01]**
14/405 • from algae **[6, 2006.01]**
14/41 • from lichens **[6, 2006.01]**
14/415 • from plants **[6, 2006.01]**
14/42 • • Lectins, e.g. concanavalin, phytohaemagglutinin **[6, 2006.01]**
14/425 • • Zeins **[6, 2006.01]**
14/43 • • Thaumatin **[6, 2006.01]**
14/435 • from animals; from humans **[6, 2006.01]**
14/44 • • from protozoa **[6, 2006.01]**
14/445 • • • Plasmodium **[6, 2006.01]**
14/45 • • • Toxoplasma **[6, 2006.01]**
14/455 • • • Eimeria **[6, 2006.01]**
14/46 • • from vertebrates **[6, 2006.01]**
14/465 • • • from birds **[6, 2006.01]**
14/47 • • • from mammals **[6, 2006.01]**
14/475 • • Growth factors; Growth regulators **[6, 2006.01]**
14/48 • • • Nerve growth factor (NGF) **[6, 2006.01]**
14/485 • • • Epidermal growth factor (EGF) (urogastrone) **[6, 2006.01]**
14/49 • • • Platelet-derived growth factor (PDGF) **[6, 2006.01]**
14/495 • • • Transforming growth factor (TGF) **[6, 2006.01]**
14/50 • • • Fibroblast growth factor (FGF) **[6, 2006.01]**
14/505 • • • Erythropoietin (EPO) **[6, 2006.01]**

14/51 • • • Bone morphogenic factor; Osteogenin; Osteogenic factor; Bone-inducing factor **[6, 2006.01]**
14/515 • • • Angiogenic factor; Angiogenin **[6, 2006.01]**
14/52 • • Cytokines; Lymphokines; Interferons **[6, 2006.01]**
14/525 • • • Tumour necrosis factor (TNF) **[6, 2006.01]**
14/53 • • • Colony-stimulating factor (CSF) **[6, 2006.01]**
14/535 • • • • Granulocyte CSF; Granulocyte-macrophage CSF **[6, 2006.01]**
14/54 • • • Interleukins (IL) **[6, 2006.01]**
14/545 • • • • IL-1 **[6, 2006.01]**
14/55 • • • • IL-2 **[6, 2006.01]**
14/555 • • • Interferons (IFN) **[6, 2006.01]**
14/56 • • • • IFN-alpha **[6, 2006.01]**
14/565 • • • • IFN-beta **[6, 2006.01]**
14/57 • • • • IFN-gamma **[6, 2006.01]**
14/575 • • Hormones **[6, 2006.01]**
14/58 • • • Atrial natriuretic factor complex; Atriopeptin; Atrial natriuretic peptide (ANP); Cardionatrin; Cardiodilatin **[6, 2006.01]**
14/585 • • • Calcitonins **[6, 2006.01]**
14/59 • • • Follicle-stimulating hormone (FSH); Chorionic gonadotropins, e.g. HCG; Luteinising hormone (LH); Thyroid-stimulating hormone (TSH) **[6, 2006.01]**
14/595 • • • Gastrins; Cholecystokinins (CCK) **[6, 2006.01]**
14/60 • • • Growth hormone-releasing factor (GH-RF) (Somatoliberin) **[6, 2006.01]**
14/605 • • • Glucagons **[6, 2006.01]**
14/61 • • • Growth hormone (GH) (Somatotropin) **[6, 2006.01]**
14/615 • • • • Extraction from natural sources **[6, 2006.01]**
14/62 • • • Insulins **[6, 2006.01]**
14/625 • • • • Extraction from natural sources **[6, 2006.01]**
14/63 • • • Motilins **[6, 2006.01]**
14/635 • • • Parathyroid hormone (parathormone); Parathyroid hormone-related peptides **[6, 2006.01]**
14/64 • • • Relaxins **[6, 2006.01]**
14/645 • • • Secretins **[6, 2006.01]**
14/65 • • • Insulin-like growth factors (Somatomedins), e.g. IGF-1, IGF-2 **[6, 2006.01]**
14/655 • • • Somatostatins **[6, 2006.01]**
14/66 • • • Thymopoietins **[6, 2006.01]**
14/665 • • derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin **[6, 2006.01]**
14/67 • • • Lipotropins, e.g. beta- or gamma-lipotropin **[6, 2006.01]**
14/675 • • • Beta-endorphins **[6, 2006.01]**
14/68 • • • Melanocyte-stimulating hormone (MSH) **[6, 2006.01]**
14/685 • • • • Alpha-melanotropin **[6, 2006.01]**
14/69 • • • • Beta-melanotropin **[6, 2006.01]**
14/695 • • • Corticotropin (ACTH) **[6, 2006.01]**
14/70 • • • Enkephalins **[6, 2006.01]**
14/705 • • Receptors; Cell surface antigens; Cell surface determinants **[6, 2006.01]**
14/71 • • • for growth factors; for growth regulators **[6, 2006.01]**
14/715 • • • for cytokines; for lymphokines; for interferons **[6, 2006.01]**
14/72 • • • for hormones **[6, 2006.01]**
14/725 • • • T-cell receptors **[6, 2006.01]**
14/73 • • • • CD4 **[6, 2006.01]**
14/735 • • • Fc receptors **[6, 2006.01]**
14/74 • • • Major histocompatibility complex (MHC) **[6, 2006.01]**
14/745 • • Blood coagulation or fibrinolysis factors **[6, 2006.01]**
14/75 • • • Fibrinogen **[6, 2006.01]**
14/755 • • • Factors VIII **[6, 2006.01]**
14/76 • • Albumins **[6, 2006.01]**
14/765 • • • Serum albumin, e.g. HSA **[6, 2006.01]**
14/77 • • • Ovalbumin **[6, 2006.01]**
14/775 • • Apolipopeptides **[6, 2006.01]**
14/78 • • Connective tissue peptides, e.g. collagen, elastin, laminin, fibronectin, vitronectin, cold insoluble globulin (CIG) **[6, 2006.01]**
14/785 • • Alveolar surfactant peptides; Pulmonary surfactant peptides **[6, 2006.01]**
14/79 • • Transferrins, e.g. lactoferrins, ovotransferrins **[6, 2006.01]**
14/795 • Porphyrin- or corrin-ring-containing peptides **[6, 2006.01]**
14/80 • • Cytochromes **[6, 2006.01]**
14/805 • • Haemoglobins; Myoglobins **[6, 2006.01]**
14/81 • Protease inhibitors **[6, 2006.01]**
14/815 • • from leeches, e.g. hirudin, eglin **[6, 2006.01]**
14/82 • Translation products from oncogenes **[6, 2006.01]**
14/825 • Metallothioneins **[6, 2006.01]**

16/00 Immunoglobulins, e.g. monoclonal or polyclonal antibodies [6, 2006.01]
16/02 • from eggs **[6, 2006.01]**
16/04 • from milk **[6, 2006.01]**
16/06 • from serum **[6, 2006.01]**
16/08 • against material from viruses **[6, 2006.01]**
16/10 • • from RNA viruses **[6, 2006.01]**
16/12 • against material from bacteria **[6, 2006.01]**
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16/26 • • against hormones **[6, 2006.01]**
16/28 • • against receptors, cell surface antigens or cell surface determinants **[6, 2006.01]**
16/30 • • • from tumour cells **[6, 2006.01]**
16/32 • • against translation products from oncogenes **[6, 2006.01]**
16/34 • • against blood group antigens **[6, 2006.01]**
16/36 • • against blood coagulation factors **[6, 2006.01]**
16/38 • against protease inhibitors of peptide structure **[6, 2006.01]**
16/40 • against enzymes **[6, 2006.01]**
16/42 • against immunoglobulins (anti-idiotypic antibodies) **[6, 2006.01]**
16/44 • against material not provided for elsewhere **[6, 2006.01]**
16/46 • Hybrid immunoglobulins (hybrids of an immunoglobulin with a peptide not being an immunoglobulin C07K 19/00) **[6, 2006.01]**

17/00 Carrier-bound or immobilised peptides; Preparation thereof [4, 2006.01]
17/02 • Peptides being immobilised on, or in, an organic carrier **[4, 2006.01]**

17/04 • • entrapped within the carrier, e.g. gel, hollow fibre **[4, 2006.01]**
17/06 • • attached to the carrier via a bridging agent **[4, 2006.01]**
17/08 • • the carrier being a synthetic polymer **[4, 2006.01]**
17/10 • • the carrier being a carbohydrate **[4, 2006.01]**
17/12 • • • Cellulose or derivatives thereof **[4, 2006.01]**
17/14 • Peptides being immobilised on, or in, an inorganic carrier **[4, 2006.01]**

19/00 **Hybrid peptides** (hybrid immunoglobulins composed solely of immunoglobulins C07K 16/46) **[6, 2006.01]**

C08 ORGANIC MACROMOLECULAR COMPOUNDS; THEIR PREPARATION OR CHEMICAL WORKING-UP; COMPOSITIONS BASED THEREON

Note(s) [2006.01, 2012.01]

1. This class does not cover the following macromolecular compounds per se:
   - peptides, e.g. proteins, which are covered by subclass C07K;
   - compounds containing two or more mononucleotide units having separate phosphate or polyphosphate groups linked by saccharide radicals of nucleoside groups, e.g. nucleic acids, which are covered by group C07H 21/00;
   - DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification, which are covered by group C12N 15/00.
2. Biocidal, pest repellant, pest attractant or plant growth regulatory activity of compounds or preparations is further classified in subclass A01P.

C08B **POLYSACCHARIDES; DERIVATIVES THEREOF** (polysaccharides containing less than six saccharide radicals attached to each other by glycosidic linkages C07H; fermentation or enzyme-using processes C12P 19/00; production of cellulose D21) **[4]**

Note(s) [7]

Therapeutic activity of compounds is further classified in subclass A61P.

Subclass index

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Xanthates....9/00
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CHEMICAL DERIVATIVES OF STARCH, OF AMYLOSE OR OF AMYLOPECTIN
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1/06 • Rendering cellulose suitable for etherification **[1, 2006.01]**
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1/10 • • Apparatus for the preparation of alkali cellulose **[1, 2006.01]**
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1/14 • • • Ripening devices **[1, 2006.01]**

3/00 **Preparation of cellulose esters of organic acids [1, 2006.01]**
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3/04 • Cellulose formate **[1, 2006.01]**
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3/10 • • with five or more carbon atoms **[1, 2006.01]**
3/12 • of polybasic organic acids **[1, 2006.01]**
3/14 • in which the organic acid residue contains substituents, e.g. NH_2, Cl **[1, 2006.01]**
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3/22 • Post-esterification treatments, including purification **[1, 2006.01]**

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3/26 • • Isolation of the cellulose ester **[1, 2006.01]**
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5/12 • • • Replacing the water by organic liquids **[1, 2006.01]**
5/14 • Cellulose sulfate **[1, 2006.01]**

7/00 Preparation of cellulose esters of both organic and inorganic acids [1, 2006.01]

9/00 Preparation of cellulose xanthate or viscose [1, 2006.01]
9/02 • Sulfidisers; Dissolvers **[1, 2006.01]**
9/04 • Continuous processes **[1, 2006.01]**
9/06 • Single-stage processes **[1, 2006.01]**

11/00 Preparation of cellulose ethers [1, 2006.01]
11/02 • Alkyl or cycloalkyl ethers **[1, 2006.01]**
11/04 • • with substituted hydrocarbon radicals **[1, 2006.01]**
11/06 • • • with halogen-substituted hydrocarbon radicals **[1, 2006.01]**
11/08 • • • with hydroxylated hydrocarbon radicals; Esters, ethers, or acetals thereof **[1, 2006.01]**
11/10 • • • substituted with acid radicals **[1, 2006.01]**
11/12 • • • • substituted with carboxylic radicals **[1, 2006.01]**
11/14 • • • with nitrogen-containing groups **[1, 2006.01]**
11/145 • • • • with basic nitrogen, e.g. aminoalkyl ethers **[2, 2006.01]**
11/15 • • • • with carbamoyl groups **[2, 2006.01]**
11/155 • • • • with cyano groups, e.g. cyanoalkyl ethers **[2, 2006.01]**
11/16 • Aryl or aralkyl ethers **[1, 2006.01]**
11/18 • • with substituted hydrocarbon radicals **[1, 2006.01]**
11/187 • with olefinic unsaturated groups **[2, 2006.01]**
11/193 • Mixed ethers, i.e. ethers with two or more different etherifying groups **[2, 2006.01]**
11/20 • Post-etherification treatments, including purification **[1, 2006.01]**
11/22 • • Isolation **[1, 2006.01]**

13/00 Preparation of cellulose ether-esters [1, 2006.01]
13/02 • Cellulose ether xanthates **[1, 2006.01]**

15/00 Preparation of other cellulose derivatives or modified cellulose [1, 2006.01]
15/02 • Oxycellulose; Hydrocellulose; Cellulose hydrate **[1, 2006.01]**
15/04 • • Carboxycellulose, e.g. prepared by oxidation with nitrogen dioxide **[1, 2006.01]**
15/05 • Derivatives containing elements other than carbon, hydrogen, oxygen, halogen, or sulfur (esters of phosphorus acids C08B 5/00) **[2, 2006.01]**
15/06 • • containing nitrogen **[1, 2, 2006.01]**
15/08 • Fractionation of cellulose, e.g. separation of cellulose crystallites **[2, 2006.01]**
15/10 • Crosslinking of cellulose **[2, 2006.01]**

16/00 Regeneration of cellulose [2, 2006.01]

17/00 Apparatus for esterification or etherification of cellulose [1, 2006.01]
17/02 • for making organic esters of cellulose **[1, 2006.01]**
17/04 • for making cellulose nitrate **[1, 2006.01]**
17/06 • for making cellulose ethers **[1, 2006.01]**

30/00 Preparation of starch, degraded or non-chemically modified starch, amylose, or amylopectin [4, 2006.01]
30/02 • Preparatory treatment, e.g. crushing of raw materials **[4, 2006.01]**
30/04 • Extraction or purification **[4, 2006.01]**
30/06 • Drying; Forming **[4, 2006.01]**
30/08 • Concentration of starch suspensions **[4, 2006.01]**
30/10 • Working-up residues from the starch extraction, including pressing water from the starch-extracted material **[4, 2006.01]**
30/12 • Degraded or non-chemically modified starch; Bleaching of starch (preparation of chemical derivatives of starch C08B 31/00) **[4, 2006.01]**
30/14 • • Cold water dispersible or pregelatinised starch **[4, 2006.01]**
30/16 • • Apparatus therefor **[4, 2006.01]**
30/18 • • Dextrin **[4, 2006.01]**
30/20 • Amylose or amylopectin (chemical derivatives thereof C08B 33/00, C08B 35/00) **[4, 2006.01]**

31/00 Preparation of chemical derivatives of starch (chemical derivatives of amylose C08B 33/00; chemical derivatives of amylopectin C08B 35/00) **[2, 2006.01]**
31/02 • Esters **[2, 2006.01]**
31/04 • • of organic acids **[2, 2006.01]**
31/06 • • of inorganic acids **[2, 2006.01]**
31/08 • Ethers **[2, 2006.01]**
31/10 • • Alkyl or cycloalkyl ethers **[2, 2006.01]**
31/12 • • having alkyl or cycloalkyl radicals substituted by hetero atoms **[2, 2006.01]**
31/14 • • Aryl or aralkyl ethers **[2, 2006.01]**
31/16 • Ether-esters **[2, 2006.01]**
31/18 • Oxidised starch **[2, 2006.01]**

33/00 Preparation of chemical derivatives of amylose [2, 2006.01]
33/02 • Esters **[2, 2006.01]**
33/04 • Ethers **[2, 2006.01]**
33/06 • Ether-esters **[2, 2006.01]**
33/08 • Oxidised amylose **[2, 2006.01]**

35/00 Preparation of chemical derivatives of amylopectin [2, 2006.01]
35/02 • Esters **[2, 2006.01]**
35/04 • Ethers **[2, 2006.01]**
35/06 • Ether-esters **[2, 2006.01]**
35/08 • Oxidised amylopectin **[2, 2006.01]**

37/00 Preparation of polysaccharides not provided for in groups C08B 1/00-C08B 35/00; Derivatives thereof (cellulose D21) **[4, 2006.01]**
37/02 • Dextran; Derivatives thereof **[2, 2006.01]**
37/04 • Alginic acid; Derivatives thereof **[2, 2006.01]**
37/06 • Pectin; Derivatives thereof **[2, 2006.01]**
37/08 • Chitin; Chondroitin sulfate; Hyaluronic acid; Derivatives thereof **[2, 2006.01]**
37/10 • Heparin; Derivatives thereof **[2, 2006.01]**
37/12 • Agar-agar; Derivatives thereof **[2, 2006.01]**
37/14 • Hemicellulose; Derivatives thereof **[2, 2006.01]**

37/16 • Cyclodextrin; Derivatives thereof **[2, 2006.01]**

37/18 • Reserve carbohydrates, e.g. glycogen, inulin, laminarin; Derivatives thereof **[4, 2006.01]**

C08C TREATMENT OR CHEMICAL MODIFICATION OF RUBBERS

Note(s) [2]

This subclass covers:
- processes directed to natural rubber or to conjugated diene rubbers (synthesis thereof C08F);
- processes directed to rubbers in general (to a specific rubber, other than provided for above, C08F-C08H).

Preparation

1/00 Treatment of rubber latex [1, 2006.01]
1/02 • Chemical or physical treatment of rubber latex before or during concentration **[1, 2006.01]**
1/04 • • Purifying; Deproteinising **[1, 2006.01]**
1/06 • • Preservation of rubber latex **[1, 2006.01]**
1/065 • • Increasing the size of dispersed rubber particles **[2, 2006.01]**
1/07 • • • characterised by the agglomerating agents used **[2, 2006.01]**
1/075 • • Concentrating **[2, 2006.01]**
1/08 • • • with the aid of creaming agents **[1, 2, 2006.01]**
1/10 • • • by centrifugation **[1, 2, 2006.01]**
1/12 • • • by evaporation **[1, 2, 2006.01]**
1/14 • Coagulation **[1, 2006.01]**
1/15 • • characterised by the coagulants used **[2, 2006.01]**
1/16 • • in floc form **[1, 2006.01]**

2/00 Treatment of rubber solutions [2, 2006.01]
2/02 • Purification **[2, 2006.01]**
2/04 • • Removal of catalyst residues **[2, 2006.01]**
2/06 • Winning of rubber from solutions **[2, 2006.01]**

3/00 Treatment of coagulated rubber [1, 2006.01]
3/02 • Purification **[2, 2006.01]**

4/00 Treatment of rubber before vulcanisation, not provided for in groups C08C 1/00-C08C 3/02 [2, 2006.01]

19/00 Chemical modification of rubber [2, 2006.01]

Note(s) [2]

In groups C08C 19/02-C08C 19/30, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a process is classified in the last appropriate place.

19/02 • Hydrogenation **[2, 2006.01]**
19/04 • Oxidation **[2, 2006.01]**
19/06 • • Epoxidation **[2, 2006.01]**
19/08 • Depolymerisation **[2, 2006.01]**
19/10 • Isomerisation; Cyclisation **[2, 2006.01]**
19/12 • Incorporating halogen atoms into the molecule **[2, 2006.01]**
19/14 • • by reaction with halogens **[2, 2006.01]**
19/16 • • by reaction with hydrogen halides **[2, 2006.01]**
19/18 • • by reaction with hydrocarbons substituted by halogen **[2, 2006.01]**
19/20 • Incorporating sulfur atoms into the molecule **[2, 2006.01]**
19/22 • Incorporating nitrogen atoms into the molecule **[2, 2006.01]**
19/24 • Incorporating phosphorus atoms into the molecule **[2, 2006.01]**
19/25 • Incorporating silicon atoms into the molecule **[5, 2006.01]**
19/26 • Incorporating metal atoms into the molecule **[2, 2006.01]**
19/28 • Reaction with compounds containing carbon-to-carbon unsaturated bonds (graft polymers C08F 279/00) **[2, 2006.01]**
19/30 • Addition of a reagent which reacts with a hetero atom or a group containing hetero atoms of the macromolecule **[2, 2006.01]**
19/32 • • reacting with halogens or halogen-containing groups **[2, 2006.01]**
19/34 • • reacting with oxygen or oxygen-containing groups **[2, 2006.01]**
19/36 • • • with carboxy radicals **[2, 2006.01]**
19/38 • • • with hydroxy radicals **[2, 2006.01]**
19/40 • • • with epoxy radicals **[2, 2006.01]**
19/42 • • reacting with metals or metal-containing groups **[2, 2006.01]**
19/44 • • • of polymers containing metal atoms exclusively at one or both ends of the skeleton **[2, 2006.01]**

C08F MACROMOLECULAR COMPOUNDS OBTAINED BY REACTIONS ONLY INVOLVING CARBON-TO-CARBON UNSATURATED BONDS

(production of liquid hydrocarbon mixtures from lower carbon number hydrocarbons, e.g. by oligomerisation, C10G 50/00; fermentation or enzyme-using processes to synthesise a desired chemical compound or composition or to separate optical isomers from a racemic mixture C12P; graft polymerisation of monomers containing carbon-to-carbon unsaturated bonds on to fibres, threads, yarns, fabrics or fibrous goods made from such materials D06M 14/00) **[2]**

Note(s) [2, 7]

1. In this subclass, boron or silicon are considered as metals.
2. In this subclass, the following expression is used with the meaning indicated:
   - "aliphatic radical" means an acyclic or a non-aromatic carbocyclic carbon skeleton which is considered to be terminated by every bond to:

a. an element other than carbon;
b. a carbon atom having a double bond to one atom other than carbon;
c. an aromatic carbocyclic ring or a heterocyclic ring.

Examples: Polymers of

a. CH_2 =CH—O—CH_2-CH_2 —NH—COO—CH_2-CH_2 —OH are classified in group C08F 16/28;
b. are classified in group C08F 16/36;
c. are classified in group C08F 12/18.

3. Therapeutic activity of compounds is further classified in subclass A61P.
4. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a catalyst or a polymer is classified in the last appropriate place.
5. In this subclass:
   a. macromolecular compounds and their preparation are classified in the groups for the type of compound prepared. General processes for the preparation of macromolecular compounds according to more than one main group are classified in the groups for the processes employed (C08F 2/00-C08F 8/00). Processes for the preparation of macromolecular compounds are also classified in the groups for the types of reactions employed, if of interest;
   b. subject matter relating to both homopolymers and copolymers is classified in groups C08F 10/00-C08F 38/00;
   c. subject matter limited to homopolymers is classified only in groups C08F 110/00-C08F 138/00;
   d. subject matter limited to copolymers is classified only in groups C08F 210/00-C08F 246/00;
   e. in groups C08F 210/00-C08F 238/00, in the absence of an indication to the contrary, a copolymer is classified according to the major monomeric component.
6. This subclass covers also compositions based on monomers which form macromolecular compounds classifiable in this subclass (paints C09D 4/00; adhesives C09J 4/00).
   In this subclass:
   a. if the monomers are defined, classification is made according to the polymer to be formed:
      - in groups C08F 10/00-C08F 246/00 if no preformed polymer is present;
      - in groups C08F 251/00-C08F 291/00 if a preformed polymer is present, considering the reaction to take place as a graft or cross-linking reaction;
   b. if the presence of compounding ingredients is of interest, classification is made in group C08F 2/44 (sensitising agents C08F 2/50; catalysts C08F 4/00);
   c. if the compounding ingredients are of interest per se, classification is also made in subclass C08K.

Subclass index

Processes of polymerisation; Catalysts.....2/00, 4/00
Post-polymerisation treatments; Chemical modification.....6/00, 8/00
Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond.....10/00-30/00
Homopolymers.....110/00-130/00
Copolymers.....210/00-230/00
Homopolymers and copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a ring.....32/00, 34/00
Homopolymers.....132/00, 134/00
Copolymers.....232/00, 234/00
Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds.....36/00
Homopolymers.....136/00
Copolymers.....236/00
Homopolymers and copolymers of compounds having one or more carbon-to-carbon triple bonds.....38/00
Homopolymers.....138/00
Copolymers.....238/00
Copolymers of hydrocarbons and mineral oils.....240/00
Copolymers of drying oils with other monomers.....242/00
Coumarone-indene copolymers.....244/00
Copolymers in which the nature of only the monomers in minority is defined.....246/00
Graft polymers; Polymers cross-linked with unsaturated monomers.....251/00-292/00
Block polymers.....293/00-297/00
Macromolecular compounds obtained by interreacting polymers involving only carbon-to-carbon unsaturated bond reactions, in the absence of non-macromolecular monomers.....299/00
Subject matter not provided for in other groups of this subclass.....301/00

Processes; Catalysts

2/00 Processes of polymerisation [2, 2006.01]

2/01 • characterised by special features of the polymerisation apparatus used **[7, 2006.01]**

2/02 • Polymerisation in bulk **[2, 2006.01]**

2/04 • Polymerisation in solution (C08F 2/32 takes precedence) **[2, 2006.01]**

2/06 • • Organic solvent **[2, 2006.01]**

2/08 • • • with the aid of dispersing agents for the polymer **[2, 2006.01]**

2/10 • • Aqueous solvent **[2, 2006.01]**
2/12 • Polymerisation in non-solvents (C08F 2/32 takes precedence) **[2, 2006.01]**
2/14 • • Organic medium **[2, 2006.01]**
2/16 • • Aqueous medium **[2, 2006.01]**
2/18 • • • Suspension polymerisation **[2, 2006.01]**
2/20 • • • • with the aid of macromolecular dispersing agents **[2, 2006.01]**
2/22 • • • Emulsion polymerisation **[2, 2006.01]**
2/24 • • • • with the aid of emulsifying agents **[2, 2006.01]**
2/26 • • • • • anionic **[2, 2006.01]**
2/28 • • • • • cationic **[2, 2006.01]**
2/30 • • • • • non-ionic **[2, 2006.01]**
2/32 • Polymerisation in water-in-oil emulsions **[2, 2006.01]**
2/34 • Polymerisation in gaseous state **[2, 2006.01]**
2/36 • Polymerisation in solid state **[2, 2006.01]**
2/38 • Polymerisation using regulators, e.g. chain terminating agents **[2, 2006.01]**
2/40 • • using retarding agents **[2, 2006.01]**
2/42 • • using short-stopping agents **[2, 2006.01]**
2/44 • Polymerisation in the presence of compounding ingredients, e.g. plasticisers, dyestuffs, fillers **[2, 2006.01]**
2/46 • Polymerisation initiated by wave energy or particle radiation **[2, 2006.01]**
2/48 • • by ultra-violet or visible light **[2, 2006.01]**
2/50 • • • with sensitising agents **[2, 2006.01]**
2/52 • • by electric discharge, e.g. voltolisation **[2, 2006.01]**
2/54 • • by X-rays or electrons **[2, 2006.01]**
2/56 • • by ultrasonic vibrations **[2, 2006.01]**
2/58 • Polymerisation initiated by direct application of electric current (electrolytic processes, e.g. electrophoresis, C25) **[2, 2006.01]**
2/60 • Polymerisation by the diene synthesis **[2, 2006.01]**

4/00 Polymerisation catalysts [2, 2006.01]
4/02 • Carriers therefor **[2, 2006.01]**

Note(s) [2]

When classifying in groups C08F 4/04-C08F 4/42, classification may also be made in group C08F 4/02, if a carrier is of particular interest.

4/04 • Azo-compounds **[2, 2006.01]**
4/06 • Metallic compounds other than hydrides and other than metallo-organic compounds; Boron halide or aluminium halide complexes with organic compounds containing oxygen **[2, 2006.01]**
4/08 • • of alkali metals **[2, 2006.01]**
4/10 • • of alkaline earth metals, zinc, cadmium, mercury, copper, or silver **[2, 2006.01]**
4/12 • • of boron, aluminium, gallium, indium, thallium, or rare earths **[2, 2006.01]**
4/14 • • • Boron halides or aluminium halides; Complexes thereof with organic compounds containing oxygen **[2, 2006.01]**
4/16 • • of silicon, germanium, tin, lead, titanium, zirconium or hafnium **[2, 2006.01]**
4/18 • • • Oxides **[2, 2006.01]**
4/20 • • of antimony, bismuth, vanadium, niobium, or tantalum **[2, 2006.01]**
4/22 • • of chromium, molybdenum, or tungsten **[2, 2006.01]**
4/24 • • • Oxides **[2, 2006.01]**
4/26 • • of manganese, iron group metals, or platinum group metals **[2, 2006.01]**
4/28 • Oxygen or compounds releasing free oxygen (redox systems C08F 4/40) **[2, 2006.01]**
4/30 • • Inorganic compounds **[2, 2006.01]**
4/32 • • Organic compounds **[2, 2006.01]**
4/34 • • • Per-compounds with one peroxy-radical **[2, 2006.01]**
4/36 • • • Per-compounds with more than one peroxy-radical **[2, 2006.01]**
4/38 • • • Mixtures of peroxy-compounds **[2, 2006.01]**
4/40 • Redox systems **[2, 2006.01]**
4/42 • Metals; Metal hydrides; Metallo-organic compounds; Use thereof as catalyst precursors **[2, 2006.01]**
4/44 • • selected from light metals, zinc, cadmium, mercury, copper, silver, gold, boron, gallium, indium, thallium, rare earths, or actinides **[2, 2006.01]**
4/46 • • • selected from alkali metals **[2, 2006.01]**
4/48 • • • • selected from lithium, rubidium, caesium, or francium **[2, 2006.01]**
4/50 • • • selected from alkaline earth metals, zinc, cadmium, mercury, copper, or silver **[2, 2006.01]**
4/52 • • • selected from boron, aluminium, gallium, indium, thallium, or rare earths (C08F 4/14 takes precedence) **[2, 2006.01]**
4/54 • • • together with other compounds thereof **[2, 2006.01]**
4/56 • • • • Alkali metals being the only metals present, e.g. Alfin catalysts **[2, 2006.01]**
4/58 • • • together with silicon, germanium, tin, lead, antimony, bismuth, or compounds thereof **[2, 2006.01]**
4/60 • • • together with refractory metals, iron group metals, platinum group metals, manganese, technetium, rhenium, or compounds thereof **[2, 5, 2006.01]**

Note(s) [5]

In groups C08F 4/602-C08F 4/62, the following term is used with the meaning indicated:

- "component" comprises a transition metal or a compound thereof, pretreated or not (pretreatment C08F 4/61, C08F 4/63, C08F 4/65).

4/602 • • • • Component covered by group C08F 4/60 with an organo-aluminium compound **[5, 2006.01]**
4/603 • • • • Component covered by group C08F 4/60 with a metal or compound covered by group C08F 4/44 other than an organo-aluminium compound **[5, 2006.01]**
4/605 • • • • Component covered by group C08F 4/60 with a metal or compound covered by group C08F 4/44, not provided for in a single group of groups C08F 4/602 or C08F 4/603 **[5, 2006.01]**
4/606 • • • • Catalysts comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by group C08F 4/60 **[5, 2006.01]**
4/607 • • • • Catalysts containing a specific non-metal or metal-free compound **[5, 2006.01]**
4/608 • • • • • inorganic **[5, 2006.01]**
4/609 • • • • • organic **[5, 2006.01]**

4/61 • • • • Pretreating the metal or compound covered by group C08F 4/60 before the final contacting with the metal or compound covered by group C08F 4/44 **[5, 2006.01]**
4/611 • • • • • Pretreating with non-metals or metal-free compounds **[5, 2006.01]**
4/612 • • • • • Pretreating with metals or metal-containing compounds **[5, 2006.01]**
4/613 • • • • • • with metals covered by group C08F 4/60 or compounds thereof **[5, 2006.01]**
4/614 • • • • • • with magnesium or compounds thereof **[5, 2006.01]**
4/615 • • • • • • with aluminium or compounds thereof **[5, 2006.01]**
4/616 • • • • • • with silicon or compounds thereof **[5, 2006.01]**
4/617 • • • • • • with metals or metal-containing compounds, not provided for in groups C08F 4/613-C08F 4/616 **[5, 2006.01]**
4/618 • • • • • • with metals or metal-containing compounds, provided for in at least two of the groups C08F 4/613-C08F 4/617 **[5, 2006.01]**
4/619 • • • • Component covered by group C08F 4/60 containing a transition metal-carbon bond **[2006.01]**
4/6192 • • • • • containing at least one cyclopentadienyl ring, condensed or not, e.g. an indenyl or a fluorenyl ring **[2006.01]**
4/62 • • • • Refractory metals or compounds thereof **[2, 2006.01]**
4/622 • • • • • Component covered by group C08F 4/62 with an organo-aluminium compound **[5, 2006.01]**
4/623 • • • • • Component covered by group C08F 4/62 with a metal or compound covered by group C08F 4/44 other than an organo-aluminium compound **[5, 2006.01]**
4/625 • • • • • Component covered by group C08F 4/62 with a metal or compound covered by group C08F 4/44, not provided for in a single group of groups C08F 4/622 or C08F 4/623 **[5, 2006.01]**
4/626 • • • • • Catalysts comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by group C08F 4/62 **[5, 2006.01]**
4/627 • • • • • Catalysts containing a specific non-metal or metal-free compound **[5, 2006.01]**
4/628 • • • • • • inorganic **[5, 2006.01]**
4/629 • • • • • • organic **[5, 2006.01]**
4/63 • • • • • Pretreating the metal or compound covered by group C08F 4/62 before the final contacting with the metal or compound covered by group C08F 4/44 **[5, 2006.01]**
4/631 • • • • • • Pretreating with non-metals or metal-free compounds **[5, 2006.01]**
4/632 • • • • • • Pretreating with metals or metal-containing compounds **[5, 2006.01]**
4/633 • • • • • • • with metals covered by group C08F 4/62 or compounds thereof **[5, 2006.01]**
4/634 • • • • • • • with magnesium or compounds thereof **[5, 2006.01]**
4/635 • • • • • • • with aluminium or compounds thereof **[5, 2006.01]**
4/636 • • • • • • • with silicon or compounds thereof **[5, 2006.01]**
4/637 • • • • • • • with metals or metal-containing compounds, not provided for in groups C08F 4/633-C08F 4/636 **[5, 2006.01]**
4/638 • • • • • • • with metals or metal-containing compounds, not provided for in a single group of groups C08F 4/633-C08F 4/637 **[5, 2006.01]**
4/639 • • • • • Component covered by group C08F 4/62 containing a transition metal-carbon bond **[2006.01]**
4/6392 • • • • • • containing at least one cyclopentadienyl ring, condensed or not, e.g. an indenyl or a fluorenyl ring **[2006.01]**
4/64 • • • • • Titanium, zirconium, hafnium, or compounds thereof **[2, 2006.01]**
4/642 • • • • • • Component covered by group C08F 4/64 with an organo-aluminium compound **[5, 2006.01]**
4/643 • • • • • • Component covered by group C08F 4/64 with a metal or compound covered by group C08F 4/44 other than an organo-aluminium compound **[5, 2006.01]**
4/645 • • • • • • Component covered by group C08F 4/64 with a metal or compound covered by group C08F 4/44, not provided for in a single group of groups C08F 4/642-C08F 4/643 **[5, 2006.01]**
4/646 • • • • • • Catalysts comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by group C08F 4/64 **[5, 2006.01]**
4/647 • • • • • • Catalysts containing a specific non-metal or metal-free compound **[5, 2006.01]**
4/648 • • • • • • • inorganic **[5, 2006.01]**
4/649 • • • • • • • organic **[5, 2006.01]**
4/65 • • • • • • Pretreating the metal or compound covered by group C08F 4/64 before the final contacting with the metal or compound covered by group C08F 4/44 **[5, 2006.01]**
4/651 • • • • • • • Pretreating with non-metals or metal-free compounds **[5, 2006.01]**
4/652 • • • • • • • Pretreating with metals or metal-containing compounds **[5, 2006.01]**
4/653 • • • • • • • • with metals covered by group C08F 4/64 or compounds thereof **[5, 2006.01]**
4/654 • • • • • • • • with magnesium or compounds thereof **[5, 2006.01]**
4/655 • • • • • • • • with aluminium or compounds thereof **[5, 2006.01]**
4/656 • • • • • • • • with silicon or compounds thereof **[5, 2006.01]**
4/657 • • • • • • • • with metals or metal-containing compounds, not provided for in groups C08F 4/653-C08F 4/656 **[5, 2006.01]**

4/658 • • • • • • • • with metals or metal-containing compounds, not provided for in a single group of groups C08F 4/653-C08F 4/657 **[5, 2006.01]**
4/659 • • • • • • Component covered by group C08F 4/64 containing a transition metal-carbon bond **[2006.01]**
4/6592 • • • • • • • containing at least one cyclopentadienyl ring, condensed or not, e.g. an indenyl or a fluorenyl ring **[2006.01]**
4/68 • • • • • Vanadium, niobium, tantalum, or compounds thereof **[2, 2006.01]**
4/685 • • • • • • Vanadium or compounds thereof in combination with titanium or compounds thereof **[5, 2006.01]**
4/69 • • • • • Chromium, molybdenum, tungsten or compounds thereof **[5, 2006.01]**
4/695 • • • • Manganese, technetium, rhenium or compounds thereof **[5, 2006.01]**
4/70 • • • • Iron group metals, platinum group metals, or compounds thereof **[2, 2006.01]**
4/72 • • selected from metals not provided for in group C08F 4/44 (C08F 4/54-C08F 4/70 take precedence) **[2, 2006.01]**
4/74 • • • selected from refractory metals **[2, 2006.01]**
4/76 • • • • selected from titanium, zirconium, hafnium, vanadium, niobium, or tantalum **[2, 2006.01]**
4/78 • • • • selected from chromium, molybdenum, or tungsten **[2, 2006.01]**
4/80 • • • selected from iron group metals or platinum group metals **[2, 2006.01]**
4/82 • • • • pi-Allyl complexes **[2, 2006.01]**

6/00 **Post-polymerisation treatments** (C08F 8/00 takes precedence; of conjugated diene rubbers C08C) **[2, 2006.01]**
6/02 • Neutralisation of the polymerisation mass, e.g. killing the catalyst (short-stopping C08F 2/42) **[2, 2006.01]**
6/04 • Fractionation **[2, 2006.01]**
6/06 • Treatment of polymer solutions **[2, 2006.01]**
6/08 • • Removal of catalyst residues **[2, 2006.01]**
6/10 • • Removal of volatile materials, e.g. monomers, solvents **[2, 2006.01]**
6/12 • • Separation of polymers from solutions **[2, 2006.01]**
6/14 • Treatment of polymer emulsions **[2, 2006.01]**
6/16 • • Purification **[2, 2006.01]**
6/18 • • Increasing the size of the dispersed particles **[2, 2006.01]**
6/20 • • Concentration **[2, 2006.01]**
6/22 • • Coagulation **[2, 2006.01]**
6/24 • Treatment of polymer suspensions **[2, 2006.01]**
6/26 • Treatment of polymers prepared in bulk **[2, 2006.01]**
6/28 • • Purification **[2, 2006.01]**

8/00 **Chemical modification by after-treatment** (graft polymers, block polymers, crosslinking with unsaturated monomers or with polymers C08F 251/00-C08F 299/00; of conjugated diene rubbers C08C) **[2, 2006.01]**

Note(s) [2]

In groups C08F 8/02-C08F 8/50, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a process is classified in the last appropriate place.

8/02 • Alkylation **[2, 2006.01]**
8/04 • Reduction, e.g. hydrogenation **[2, 2006.01]**
8/06 • Oxidation **[2, 2006.01]**
8/08 • Epoxidation **[2, 2006.01]**
8/10 • Acylation **[2, 2006.01]**
8/12 • Hydrolysis **[2, 2006.01]**
8/14 • Esterification **[2, 2006.01]**
8/16 • • Lactonisation **[2, 2006.01]**
8/18 • Introducing halogen atoms or halogen-containing groups **[2, 2006.01]**
8/20 • • Halogenation **[2, 2006.01]**
8/22 • • • by reaction with free halogens **[2, 2006.01]**
8/24 • • Haloalkylation **[2, 2006.01]**
8/26 • Removing halogen atoms or halogen-containing groups from the molecule **[2, 2006.01]**
8/28 • Condensation with aldehydes or ketones **[2, 2006.01]**
8/30 • Introducing nitrogen atoms or nitrogen-containing groups **[2, 2006.01]**
8/32 • • by reaction with amines **[2, 2006.01]**
8/34 • Introducing sulfur atoms or sulfur-containing groups **[2, 2006.01]**
8/36 • • Sulfonation; Sulfation **[2, 2006.01]**
8/38 • • Sulfohalogenation **[2, 2006.01]**
8/40 • Introducing phosphorus atoms or phosphorus-containing groups **[2, 2006.01]**
8/42 • Introducing metal atoms or metal-containing groups **[2, 2006.01]**
8/44 • Preparation of metal salts or ammonium salts **[2, 2006.01]**
8/46 • Reaction with unsaturated dicarboxylic acids or anhydrides thereof, e.g. maleinisation **[2, 2006.01]**
8/48 • Isomerisation; Cyclisation **[2, 2006.01]**
8/50 • Partial depolymerisation **[2, 2006.01]**

Homopolymers or copolymers [2]

10/00 **Homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond [2, 2006.01]**
10/02 • Ethene **[2, 2006.01]**
10/04 • Monomers containing three or four carbon atoms **[2, 2006.01]**
10/06 • • Propene **[2, 2006.01]**
10/08 • • Butenes **[2, 2006.01]**
10/10 • • • Isobutene **[2, 2006.01]**
10/14 • Monomers containing five or more carbon atoms **[2, 2006.01]**

12/00 **Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring [2, 2006.01]**
12/02 • Monomers containing only one unsaturated aliphatic radical **[2, 2006.01]**
12/04 • • containing one ring **[2, 2006.01]**
12/06 • • • Hydrocarbons **[2, 2006.01]**
12/08 • • • • Styrene **[2, 2006.01]**
12/12 • • • • containing a branched unsaturated aliphatic radical or an alkyl radical attached to the ring **[2, 2006.01]**
12/14 • • • substituted by hetero atoms or groups containing hetero atoms **[2, 2006.01]**
12/16 • • • • Halogens **[2, 2006.01]**
12/18 • • • • • Chlorine **[2, 2006.01]**

12/20 • • • • • Fluorine **[2, 2006.01]**
12/22 • • • • Oxygen **[2, 2006.01]**
12/24 • • • • • Phenols or alcohols **[2, 2006.01]**
12/26 • • • • Nitrogen **[2, 2006.01]**
12/28 • • • • • Amines **[2, 2006.01]**
12/30 • • • • Sulfur **[2, 2006.01]**
12/32 • • containing two or more rings **[2, 2006.01]**
12/34 • Monomers containing two or more unsaturated aliphatic radicals **[2, 2006.01]**
12/36 • • Divinylbenzene **[2, 2006.01]**

14/00 Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen [2, 2006.01]
14/02 • Monomers containing chlorine **[2, 2006.01]**
14/04 • • Monomers containing two carbon atoms **[2, 2006.01]**
14/06 • • • Vinyl chloride **[2, 2006.01]**
14/08 • • • Vinylidene chloride **[2, 2006.01]**
14/12 • • • 1, 2-Dichloroethene **[2, 2006.01]**
14/14 • • Monomers containing three or more carbon atoms **[2, 2006.01]**
14/16 • Monomers containing bromine or iodine **[2, 2006.01]**
14/18 • Monomers containing fluorine **[2, 2006.01]**
14/20 • • Vinyl fluoride **[2, 2006.01]**
14/22 • • Vinylidene fluoride **[2, 2006.01]**
14/24 • • Trifluorochloroethene **[2, 2006.01]**
14/26 • • Tetrafluoroethene **[2, 2006.01]**
14/28 • • Hexafluoropropene **[2, 2006.01]**

16/00 Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal, or ketal radical [2, 2006.01]
16/02 • by an alcohol radical **[2, 2006.01]**
16/04 • • Acyclic compounds **[2, 2006.01]**
16/06 • • • Polyvinyl alcohol **[2, 2006.01]**
16/08 • • • Allyl alcohol **[2, 2006.01]**
16/10 • • Carbocyclic compounds **[2, 2006.01]**
16/12 • by an ether radical **[2, 2006.01]**
16/14 • • Monomers containing only one unsaturated aliphatic radical **[2, 2006.01]**
16/16 • • • Monomers containing no hetero atoms other than the ether oxygen **[2, 2006.01]**
16/18 • • • • Acyclic compounds **[2, 2006.01]**
16/20 • • • • • Monomers containing three or more carbon atoms in the unsaturated aliphatic radical **[2, 2006.01]**
16/22 • • • • Carbocyclic compounds **[2, 2006.01]**
16/24 • • • Monomers containing halogen **[2, 2006.01]**
16/26 • • • Monomers containing oxygen atoms in addition to the ether oxygen **[2, 2006.01]**
16/28 • • • Monomers containing nitrogen **[2, 2006.01]**
16/30 • • • Monomers containing sulfur **[2, 2006.01]**
16/32 • • Monomers containing two or more unsaturated aliphatic radicals **[2, 2006.01]**
16/34 • by an aldehydo radical **[2, 2006.01]**
16/36 • by a ketonic radical **[2, 2006.01]**
16/38 • by an acetal or ketal radical **[2, 2006.01]**

18/00 Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid, or of a haloformic acid [2, 2006.01]
18/02 • Esters of monocarboxylic acids **[2, 2006.01]**
18/04 • • Vinyl esters **[2, 2006.01]**
18/06 • • • Vinyl formate **[2, 2006.01]**
18/08 • • • Vinyl acetate **[2, 2006.01]**
18/10 • • • of monocarboxylic acids containing three or more carbon atoms **[2, 2006.01]**
18/12 • • with unsaturated alcohols containing three or more carbon atoms **[2, 2006.01]**
18/14 • Esters of polycarboxylic acids **[2, 2006.01]**
18/16 • • with alcohols containing three or more carbon atoms **[2, 2006.01]**
18/18 • • • Diallyl phthalate **[2, 2006.01]**
18/20 • Esters containing halogen **[2, 2006.01]**
18/22 • Esters containing nitrogen **[2, 2006.01]**
18/24 • Esters of carbonic or haloformic acids **[2, 2006.01]**

20/00 Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and only one being terminated by only one carboxyl radical or a salt, anhydride, ester, amide, imide, or nitrile thereof [2, 2006.01]
20/02 • Monocarboxylic acids having less than ten carbon atoms; Derivatives thereof **[2, 2006.01]**
20/04 • • Acids; Metal salts or ammonium salts thereof **[2, 2006.01]**
20/06 • • • Acrylic acid; Methacrylic acid; Metal salts or ammonium salts thereof **[2, 2006.01]**
20/08 • • Anhydrides **[2, 2006.01]**
20/10 • • Esters **[2, 2006.01]**
20/12 • • • of monohydric alcohols or phenols **[2, 2006.01]**
20/14 • • • • Methyl esters **[2, 2006.01]**
20/16 • • • • of phenols or of alcohols containing two or more carbon atoms **[2, 2006.01]**
20/18 • • • • • with acrylic or methacrylic acids **[2, 2006.01]**
20/20 • • • of polyhydric alcohols or phenols **[2, 2006.01]**
20/22 • • • Esters containing halogen **[2, 2006.01]**
20/24 • • • • containing perhaloalkyl radicals **[2, 2006.01]**
20/26 • • • Esters containing oxygen in addition to the carboxy oxygen **[2, 2006.01]**
20/28 • • • • containing no aromatic rings in the alcohol moiety **[2, 2006.01]**
20/30 • • • • containing aromatic rings in the alcohol moiety **[2, 2006.01]**
20/32 • • • • containing epoxy radicals **[2, 2006.01]**
20/34 • • • Esters containing nitrogen **[2, 2006.01]**
20/36 • • • • containing oxygen in addition to the carboxy oxygen **[2, 2006.01]**
20/38 • • • Esters containing sulfur **[2, 2006.01]**
20/40 • • • Esters of unsaturated alcohols **[2, 2006.01]**
20/42 • • Nitriles **[2, 2006.01]**
20/44 • • • Acrylonitrile **[2, 2006.01]**
20/50 • • • containing four or more carbon atoms **[2, 2006.01]**
20/52 • • Amides or imides **[2, 2006.01]**
20/54 • • • Amides **[2, 2006.01]**
20/56 • • • • Acrylamide; Methacrylamide **[2, 2006.01]**
20/58 • • • • containing oxygen in addition to the carbonamido oxygen **[2, 2006.01]**

20/60 • • • • containing nitrogen in addition to the carbonamido nitrogen **[2, 2006.01]**
20/62 • Monocarboxylic acids having ten or more carbon atoms; Derivatives thereof **[2, 2006.01]**
20/64 • • Acids; Metal salts or ammonium salts thereof **[2, 2006.01]**
20/66 • • Anhydrides **[2, 2006.01]**
20/68 • • Esters **[2, 2006.01]**
20/70 • • Nitriles; Amides; Imides **[2, 2006.01]**

22/00 Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical and containing at least one other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides, or nitriles thereof [2, 2006.01]
22/02 • Acids; Metal salts or ammonium salts thereof **[2, 2006.01]**
22/04 • Anhydrides, e.g. cyclic anhydrides **[2, 2006.01]**
22/06 • • Maleic anhydride **[2, 2006.01]**
22/10 • Esters **[2, 2006.01]**
22/12 • • of phenols or saturated alcohols **[2, 2006.01]**
22/14 • • • Esters having no free carboxylic acid groups **[2, 2006.01]**
22/16 • • • Esters having free carboxylic acid groups **[2, 2006.01]**
22/18 • • • Esters containing halogen **[2, 2006.01]**
22/20 • • • Esters containing oxygen in addition to the carboxy oxygen **[2, 2006.01]**
22/22 • • • Esters containing nitrogen **[2, 2006.01]**
22/24 • • • Esters containing sulfur **[2, 2006.01]**
22/26 • • of unsaturated alcohols **[2, 2006.01]**
22/28 • • • Diallyl maleate **[2, 2006.01]**
22/30 • Nitriles **[2, 2006.01]**
22/32 • • Alpha-cyano-acrylic acid; Esters thereof **[2, 2006.01]**
22/34 • • Vinylidene cyanide **[2, 2006.01]**
22/36 • Amides or imides **[2, 2006.01]**
22/38 • • Amides **[2, 2006.01]**
22/40 • • Imides, e.g. cyclic imides **[2, 2006.01]**

24/00 Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids C08F 18/00; cyclic anhydrides of unsaturated acids C08F 20/00, C08F 22/00) **[2, 2006.01]**

26/00 Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a single or double bond to nitrogen or by a heterocyclic ring containing nitrogen [2, 2006.01]
26/02 • by a single or double bond to nitrogen **[2, 2006.01]**
26/04 • • Diallylamine **[2, 2006.01]**
26/06 • by a heterocyclic ring containing nitrogen **[2, 2006.01]**
26/08 • • N-Vinyl-pyrrolidine **[2, 2006.01]**
26/10 • • N-Vinyl-pyrrolidone **[2, 2006.01]**
26/12 • • N-Vinyl-carbazole **[2, 2006.01]**

28/00 Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a bond to sulfur or by a heterocyclic ring containing sulfur [2, 2006.01]
28/02 • by a bond to sulfur **[2, 2006.01]**
28/04 • • Thioethers **[2, 2006.01]**
28/06 • by a heterocyclic ring containing sulfur **[2, 2006.01]**

30/00 Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium or a metal (metal salts, e.g. phenolates or alcoholates, see the parent compounds) **[2, 2006.01]**
30/02 • containing phosphorus **[2, 2006.01]**
30/04 • containing a metal **[2, 2006.01]**
30/06 • • containing boron **[2, 2006.01]**
30/08 • • containing silicon **[2, 2006.01]**
30/10 • • containing germanium **[2, 2006.01]**

32/00 Homopolymers or copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system [2, 2006.01]
32/02 • having no condensed rings **[2, 2006.01]**
32/04 • • having one carbon-to-carbon double bond **[2, 2006.01]**
32/06 • • having two or more carbon-to-carbon double bonds **[2, 2006.01]**
32/08 • having condensed rings **[2, 2006.01]**

34/00 Homopolymers or copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (cyclic esters of polyfunctional acids C08F 18/00; cyclic anhydrides or imides C08F 22/00) **[2, 2006.01]**
34/02 • in a ring containing oxygen **[2, 2006.01]**
34/04 • in a ring containing sulfur **[2, 2006.01]**

36/00 Homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds (C08F 32/00 takes precedence) **[2, 2006.01]**
36/02 • the radical having only two carbon-to-carbon double bonds **[2, 2006.01]**
36/04 • • conjugated **[2, 2006.01]**
36/06 • • • Butadiene **[2, 2006.01]**
36/08 • • • Isoprene **[2, 2006.01]**
36/14 • • • containing elements other than carbon and hydrogen **[2, 2006.01]**
36/16 • • • • containing halogen **[2, 2006.01]**
36/18 • • • • • containing chlorine **[2, 2006.01]**
36/20 • • unconjugated **[2, 2006.01]**
36/22 • the radical having three or more carbon-to-carbon double bonds **[2, 2006.01]**

38/00 Homopolymers or copolymers of compounds having one or more carbon-to-carbon triple bonds [2, 2006.01]
38/02 • Acetylene **[2, 2006.01]**
38/04 • Vinylacetylene **[2, 2006.01]**

Homopolymers [2]

110/00 Homopolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond [2, 2006.01]
110/02 • Ethene **[2, 2006.01]**
110/04 • Monomers containing three or four carbon atoms **[2, 2006.01]**
110/06 • • Propene **[2, 2006.01]**
110/08 • • Butenes **[2, 2006.01]**
110/10 • • • Isobutene **[2, 2006.01]**
110/14 • Monomers containing five or more carbon atoms **[2, 2006.01]**

112/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring [2, 2006.01]
112/02 • Monomers containing only one unsaturated aliphatic radical **[2, 2006.01]**
112/04 • • containing one ring **[2, 2006.01]**
112/06 • • • Hydrocarbons **[2, 2006.01]**
112/08 • • • • Styrene **[2, 2006.01]**
112/12 • • • • containing a branched unsaturated aliphatic radical or an alkyl radical attached to the ring **[2, 2006.01]**
112/14 • • • substituted by hetero atoms or groups containing hetero atoms **[2, 2006.01]**
112/32 • • containing two or more rings **[2, 2006.01]**
112/34 • Monomers containing two or more unsaturated aliphatic radicals **[2, 2006.01]**
112/36 • • Divinylbenzene **[2, 2006.01]**

114/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen [2, 2006.01]
114/02 • Monomers containing chlorine **[2, 2006.01]**
114/04 • • Monomers containing two carbon atoms **[2, 2006.01]**
114/06 • • • Vinyl chloride **[2, 2006.01]**
114/08 • • • Vinylidene chloride **[2, 2006.01]**
114/12 • • • 1,2-Dichloroethene **[2, 2006.01]**
114/14 • • Monomers containing three or more carbon atoms **[2, 2006.01]**
114/16 • Monomers containing bromine or iodine **[2, 2006.01]**
114/18 • Monomers containing fluorine **[2, 2006.01]**
114/20 • • Vinyl fluoride **[2, 2006.01]**
114/22 • • Vinylidene fluoride **[2, 2006.01]**
114/24 • • Trifluorochloroethene **[2, 2006.01]**
114/26 • • Tetrafluoroethene **[2, 2006.01]**
114/28 • • Hexafluoropropene **[2, 2006.01]**

116/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal, or ketal radical [2, 2006.01]
116/02 • by an alcohol radical **[2, 2006.01]**
116/04 • • Acyclic compounds **[2, 2006.01]**
116/06 • • • Polyvinyl alcohol **[2, 2006.01]**
116/08 • • • Allyl alcohol **[2, 2006.01]**
116/10 • • Carbocyclic compounds **[2, 2006.01]**
116/12 • by an ether radical **[2, 2006.01]**
116/14 • • Monomers containing only one unsaturated aliphatic radical **[2, 2006.01]**
116/16 • • • Monomers containing no hetero atoms other than the ether oxygen **[2, 2006.01]**
116/18 • • • • Acyclic compounds **[2, 2006.01]**
116/20 • • • • • Monomers containing three or more carbon atoms in the unsaturated aliphatic radical **[2, 2006.01]**
116/34 • by an aldehydo radical **[2, 2006.01]**
116/36 • by a ketonic radical **[2, 2006.01]**
116/38 • by an acetal or ketal radical **[2, 2006.01]**

118/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid, or of a haloformic acid [2, 2006.01]
118/02 • Esters of monocarboxylic acids **[2, 2006.01]**
118/04 • • Vinyl esters **[2, 2006.01]**
118/06 • • • Vinyl formate **[2, 2006.01]**
118/08 • • • Vinyl acetate **[2, 2006.01]**
118/10 • • • of monocarboxylic acids containing three or more carbon atoms **[2, 2006.01]**
118/12 • • with unsaturated alcohols containing three or more carbon atoms **[2, 2006.01]**
118/14 • Esters of polycarboxylic acids **[2, 2006.01]**
118/16 • • with alcohols containing three or more carbon atoms **[2, 2006.01]**
118/18 • • • Diallyl phthalate **[2, 2006.01]**

120/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and only one being terminated by only one carboxyl radical or a salt, anhydride, ester, amide, imide, or nitrile thereof [2, 2006.01]
120/02 • Monocarboxylic acids having less than ten carbon atoms; Derivatives thereof **[2, 2006.01]**
120/04 • • Acids; Metal salts or ammonium salts thereof **[2, 2006.01]**
120/06 • • • Acrylic acid; Methacrylic acid; Metal salts or ammonium salts thereof **[2, 2006.01]**
120/08 • • Anhydrides **[2, 2006.01]**
120/10 • • Esters **[2, 2006.01]**
120/12 • • • of monohydric alcohols or phenols **[2, 2006.01]**
120/14 • • • • Methyl esters **[2, 2006.01]**
120/16 • • • • of phenols or of alcohols containing two or more carbon atoms **[2, 2006.01]**
120/18 • • • • • with acrylic or methacrylic acids **[2, 2006.01]**
120/20 • • • of polyhydric alcohols or phenols **[2, 2006.01]**
120/22 • • • Esters containing halogen **[2, 2006.01]**
120/24 • • • • containing perhaloalkyl radicals **[2, 2006.01]**
120/26 • • • Esters containing oxygen in addition to the carboxy oxygen **[2, 2006.01]**
120/28 • • • • containing no aromatic rings in the alcohol moiety **[2, 2006.01]**
120/30 • • • • containing aromatic rings in the alcohol moiety **[2, 2006.01]**
120/32 • • • • containing epoxy radicals **[2, 2006.01]**
120/34 • • • Esters containing nitrogen **[2, 2006.01]**
120/36 • • • • containing oxygen in addition to the carboxy oxygen **[2, 2006.01]**
120/38 • • • Esters containing sulfur **[2, 2006.01]**
120/40 • • • Esters of unsaturated alcohols **[2, 2006.01]**
120/42 • • Nitriles **[2, 2006.01]**
120/44 • • • Acrylonitrile **[2, 2006.01]**

120/50 • • • containing four or more carbon atoms **[2, 2006.01]**
120/52 • • Amides or imides **[2, 2006.01]**
120/54 • • • Amides **[2, 2006.01]**
120/56 • • • • Acrylamide; Methacrylamide **[2, 2006.01]**
120/58 • • • • containing oxygen in addition to the carbonamido oxygen **[2, 2006.01]**
120/60 • • • • containing nitrogen in addition to the carbonamido nitrogen **[2, 2006.01]**
120/62 • Monocarboxylic acids having ten or more carbon atoms; Derivatives thereof **[2, 2006.01]**
120/64 • • Acids; Metal salts or ammonium salts thereof **[2, 2006.01]**
120/66 • • Anhydrides **[2, 2006.01]**
120/68 • • Esters **[2, 2006.01]**
120/70 • • Nitriles; Amides; Imides **[2, 2006.01]**

122/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical and containing at least one other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides, or nitriles thereof [2, 2006.01]
122/02 • Acids; Metal salts or ammonium salts thereof **[2, 2006.01]**
122/04 • Anhydrides, e.g. cyclic anhydrides **[2, 2006.01]**
122/06 • • Maleic anhydride **[2, 2006.01]**
122/10 • Esters **[2, 2006.01]**
122/12 • • of phenols or saturated alcohols **[2, 2006.01]**
122/14 • • • Esters having no free carboxylic acid groups **[2, 2006.01]**
122/16 • • • Esters having free carboxylic acid groups **[2, 2006.01]**
122/18 • • • Esters containing halogen **[2, 2006.01]**
122/20 • • • Esters containing oxygen in addition to the carboxy oxygen **[2, 2006.01]**
122/22 • • • Esters containing nitrogen **[2, 2006.01]**
122/24 • • • Esters containing sulfur **[2, 2006.01]**
122/26 • • of unsaturated alcohols **[2, 2006.01]**
122/28 • • • Diallyl maleate **[2, 2006.01]**
122/30 • Nitriles **[2, 2006.01]**
122/32 • • Alpha-cyano-acrylic acid; Esters thereof **[2, 2006.01]**
122/34 • • Vinylidene cyanide **[2, 2006.01]**
122/36 • Amides or imides **[2, 2006.01]**
122/38 • • Amides **[2, 2006.01]**
122/40 • • Imides, e.g. cyclic imides **[2, 2006.01]**

124/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids C08F 118/00; cyclic anhydrides of unsaturated acids C08F 120/00, C08F 122/00) **[2, 2006.01]**

126/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a single or double bond to nitrogen or by a heterocyclic ring containing nitrogen [2, 2006.01]
126/02 • by a single or double bond to nitrogen **[2, 2006.01]**
126/04 • • Diallylamine **[2, 2006.01]**
126/06 • by a heterocyclic ring containing nitrogen **[2, 2006.01]**
126/08 • • N-Vinyl-pyrrolidine **[2, 2006.01]**
126/10 • • N-Vinyl-pyrrolidone **[2, 2006.01]**
126/12 • • N-Vinyl-carbazole **[2, 2006.01]**

128/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon bond, and at least one being terminated by a bond to sulfur or by a heterocyclic ring containing sulfur [2, 2006.01]
128/02 • by a bond to sulfur **[2, 2006.01]**
128/04 • • Thioethers **[2, 2006.01]**
128/06 • by a heterocyclic ring containing sulfur **[2, 2006.01]**

130/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium, or a metal (metal salts, e.g. phenolates or alcoholates, see the parent compounds) **[2, 2006.01]**
130/02 • containing phosphorus **[2, 2006.01]**
130/04 • containing a metal **[2, 2006.01]**
130/06 • • containing boron **[2, 2006.01]**
130/08 • • containing silicon **[2, 2006.01]**
130/10 • • containing germanium **[2, 2006.01]**

132/00 Homopolymers of cyclic compounds containing no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system [2, 2006.01]
132/02 • having no condensed rings **[2, 2006.01]**
132/04 • • having one carbon-to-carbon double bond **[2, 2006.01]**
132/06 • • having two or more carbon-to-carbon double bonds **[2, 2006.01]**
132/08 • having condensed rings **[2, 2006.01]**

134/00 Homopolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (cyclic esters of polyfunctional acids C08F 118/00; cyclic anhydrides or imides C08F 122/00) **[2, 2006.01]**
134/02 • in a ring containing oxygen **[2, 2006.01]**
134/04 • in a ring containing sulfur **[2, 2006.01]**

136/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds (C08F 132/00 takes precedence) **[2, 2006.01]**
136/02 • the radical having only two carbon-to-carbon double bonds **[2, 2006.01]**
136/04 • • conjugated **[2, 2006.01]**
136/06 • • • Butadiene **[2, 2006.01]**
136/08 • • • Isoprene **[2, 2006.01]**
136/14 • • • containing elements other than carbon and hydrogen **[2, 2006.01]**
136/16 • • • • containing halogen **[2, 2006.01]**
136/18 • • • • • containing chlorine **[2, 2006.01]**
136/20 • • unconjugated **[2, 2006.01]**
136/22 • the radical having three or more carbon-to-carbon double bonds **[2, 2006.01]**

138/00 Homopolymers of compounds having one or more carbon-to-carbon triple bonds [2, 2006.01]
138/02 • Acetylene **[2, 2006.01]**
138/04 • Vinylacetylene **[2, 2006.01]**

Copolymers [2]

Note(s) [2006.01]

1. When classifying in groups C08F 210/00-C08F 297/00, any monomeric components not identified by the classification according to Note (4) after the title of subclass C08F within this classification range, and where the use of such monomeric components is determined to be novel and non-obvious, must also be classified in the last appropriate place in groups C08F 210/00-C08F 238/00.
2. Any monomeric components not identified by the classification according to Note (4) after the title of subclass C08F or Note (1) above, and where the use of such monomeric components is considered to represent information of interest for search, may also be classified in the last appropriate place in groups C08F 210/00-C08F 238/00. This can for example be the case when it is considered of interest to enable searching of copolymers using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

210/00 Copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond [2, 2006.01]

210/02 • Ethene **[2, 2006.01]**
210/04 • Monomers containing three or four carbon atoms **[2, 2006.01]**
210/06 • • Propene **[2, 2006.01]**
210/08 • • Butenes **[2, 2006.01]**
210/10 • • • Isobutene **[2, 2006.01]**
210/12 • • • • with conjugated diolefins, e.g. butyl rubber **[2, 2006.01]**
210/14 • Monomers containing five or more carbon atoms **[2, 2006.01]**
210/16 • Copolymers of ethene with alpha-alkenes, e.g. EP rubbers **[2, 2006.01]**
210/18 • • with non-conjugated dienes, e.g. EPT rubbers **[2, 2006.01]**

212/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring [2, 2006.01]

212/02 • Monomers containing only one unsaturated aliphatic radical **[2, 2006.01]**
212/04 • • containing one ring **[2, 2006.01]**
212/06 • • • Hydrocarbons **[2, 2006.01]**
212/08 • • • • Styrene **[2, 2006.01]**
212/10 • • • • • with nitriles **[2, 2006.01]**
212/12 • • • • containing a branched unsaturated aliphatic radical or an alkyl radical attached to the ring **[2, 2006.01]**
212/14 • • • substituted by hetero atoms or groups containing hetero atoms **[2, 2006.01]**
212/32 • • containing two or more rings **[2, 2006.01]**
212/34 • Monomers containing two or more unsaturated aliphatic radicals **[2, 2006.01]**
212/36 • • Divinylbenzene **[2, 2006.01]**

214/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen [2, 2006.01]

214/02 • Monomers containing chlorine **[2, 2006.01]**
214/04 • • Monomers containing two carbon atoms **[2, 2006.01]**
214/06 • • • Vinyl chloride **[2, 2006.01]**
214/08 • • • Vinylidene chloride **[2, 2006.01]**
214/10 • • • • with nitriles **[2, 2006.01]**
214/12 • • • 1,2-Dichloroethene **[2, 2006.01]**
214/14 • • Monomers containing three or more carbon atoms **[2, 2006.01]**
214/16 • Monomers containing bromine or iodine **[2, 2006.01]**
214/18 • Monomers containing fluorine **[2, 2006.01]**
214/20 • • Vinyl fluoride **[2, 2006.01]**
214/22 • • Vinylidene fluoride **[2, 2006.01]**
214/24 • • Trifluorochloroethene **[2, 2006.01]**
214/26 • • Tetrafluoroethene **[2, 2006.01]**
214/28 • • Hexafluoropropene **[2, 2006.01]**

216/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal, or ketal radical [2, 2006.01]

216/02 • by an alcohol radical **[2, 2006.01]**
216/04 • • Acyclic compounds **[2, 2006.01]**
216/06 • • • Polyvinyl alcohol **[2, 2006.01]**
216/08 • • • Allyl alcohol **[2, 2006.01]**
216/10 • • Carbocyclic compounds **[2, 2006.01]**
216/12 • by an ether radical **[2, 2006.01]**
216/14 • • Monomers containing only one unsaturated aliphatic radical **[2, 2006.01]**
216/16 • • • Monomers containing no hetero atoms other than the ether oxygen **[2, 2006.01]**
216/18 • • • • Acyclic compounds **[2, 2006.01]**
216/20 • • • • • Monomers containing three or more carbon atoms in the unsaturated aliphatic radical **[2, 2006.01]**
216/34 • by an aldehydo radical **[2, 2006.01]**
216/36 • by a ketonic radical **[2, 2006.01]**
216/38 • by an acetal or ketal radical **[2, 2006.01]**

218/00 Copolymers having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid, or of a haloformic acid [2, 2006.01]

218/02 • Esters of monocarboxylic acids **[2, 2006.01]**
218/04 • • Vinyl esters **[2, 2006.01]**
218/06 • • • Vinyl formate **[2, 2006.01]**
218/08 • • • Vinyl acetate **[2, 2006.01]**
218/10 • • • of monocarboxylic acids containing three or more carbon atoms **[2, 2006.01]**
218/12 • • with unsaturated alcohols containing three or more carbon atoms **[2, 2006.01]**
218/14 • Esters of polycarboxylic acids **[2, 2006.01]**
218/16 • • with alcohols containing three or more carbon atoms **[2, 2006.01]**
218/18 • • • Diallyl phthalate **[2, 2006.01]**

220/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and only one being terminated by only one carboxyl radical or a salt, anhydride, ester, amide, imide, or nitrile thereof [2, 2006.01]

220/02 • Monocarboxylic acids having less than ten carbon atoms; Derivatives thereof **[2, 2006.01]**
220/04 • • Acids; Metals salts or ammonium salts thereof **[2, 2006.01]**
220/06 • • • Acrylic acid; Methacrylic acid; Metal salts or ammonium salts thereof **[2, 2006.01]**
220/08 • • Anhydrides **[2, 2006.01]**
220/10 • • Esters **[2, 2006.01]**
220/12 • • • of monohydric alcohols or phenols **[2, 2006.01]**
220/14 • • • • Methyl esters **[2, 2006.01]**
220/16 • • • • of phenols or of alcohols containing two or more carbon atoms **[2, 2006.01]**
220/18 • • • • • with acrylic or methacrylic acids **[2, 2006.01]**
220/20 • • • of polyhydric alcohols or phenols **[2, 2006.01]**
220/22 • • • Esters containing halogen **[2, 2006.01]**
220/24 • • • • containing perhaloalkyl radicals **[2, 2006.01]**
220/26 • • • Esters containing oxygen in addition to the carboxy oxygen **[2, 2006.01]**
220/28 • • • • containing no aromatic rings in the alcohol moiety **[2, 2006.01]**
220/30 • • • • containing aromatic rings in the alcohol moiety **[2, 2006.01]**
220/32 • • • • containing epoxy radicals **[2, 2006.01]**
220/34 • • • Esters containing nitrogen **[2, 2006.01]**
220/36 • • • • containing oxygen in addition to the carboxy oxygen **[2, 2006.01]**
220/38 • • • Esters containing sulfur **[2, 2006.01]**
220/40 • • • Esters of unsaturated alcohols **[2, 2006.01]**
220/42 • • Nitriles **[2, 2006.01]**
220/44 • • • Acrylonitrile **[2, 2006.01]**
220/46 • • • • with carboxylic acids, sulfonic acids or salts thereof **[2, 2006.01]**
220/48 • • • • with nitrogen-containing monomers **[2, 2006.01]**
220/50 • • • containing four or more carbon atoms **[2, 2006.01]**
220/52 • • Amides or imides **[2, 2006.01]**
220/54 • • • Amides **[2, 2006.01]**
220/56 • • • • Acrylamide; Methacrylamide **[2, 2006.01]**
220/58 • • • • containing oxygen in addition to the carbonamido oxygen **[2, 2006.01]**
220/60 • • • • containing nitrogen in addition to the carbonamido nitrogen **[2, 2006.01]**
220/62 • Monocarboxylic acids having ten or more carbon atoms; Derivatives thereof **[2, 2006.01]**
220/64 • • Acids; Metal salts or ammonium salts thereof **[2, 2006.01]**
220/66 • • Anhydrides **[2, 2006.01]**
220/68 • • Esters **[2, 2006.01]**
220/70 • • Nitriles; Amides; Imides **[2, 2006.01]**

222/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical and containing at least one other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides, or nitriles thereof [2, 2006.01]
222/02 • Acids; Metal salts or ammonium salts thereof **[2, 2006.01]**
222/04 • Anhydrides, e.g. cyclic anhydrides **[2, 2006.01]**
222/06 • • Maleic anhydride **[2, 2006.01]**
222/08 • • • with vinyl aromatic monomers **[2, 2006.01]**
222/10 • Esters **[2, 2006.01]**
222/12 • • of phenols or saturated alcohols **[2, 2006.01]**
222/14 • • • Esters having no free carboxylic acid groups **[2, 2006.01]**
222/16 • • • Esters having free carboxylic acid groups **[2, 2006.01]**
222/18 • • • Esters containing halogen **[2, 2006.01]**
222/20 • • • Esters containing oxygen in addition to the carboxy oxygen **[2, 2006.01]**
222/22 • • • Esters containing nitrogen **[2, 2006.01]**
222/24 • • • Esters containing sulfur **[2, 2006.01]**
222/26 • • of unsaturated alcohols **[2, 2006.01]**
222/28 • • • Diallyl maleate **[2, 2006.01]**
222/30 • Nitriles **[2, 2006.01]**
222/32 • • Alpha-cyano-acrylic acid; Esters thereof **[2, 2006.01]**
222/34 • • Vinylidene cyanide **[2, 2006.01]**
222/36 • Amides or imides **[2, 2006.01]**
222/38 • • Amides **[2, 2006.01]**
222/40 • • Imides, e.g. cyclic imides **[2, 2006.01]**

224/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids C08F 218/00; cyclic anhydrides of unsaturated acids C08F 220/00, C08F 222/00) **[2, 2006.01]**

226/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a single or double bond to nitrogen or by a heterocyclic ring containing nitrogen [2, 2006.01]
226/02 • by a single or double bond to nitrogen **[2, 2006.01]**
226/04 • • Diallylamine **[2, 2006.01]**
226/06 • by a heterocyclic ring containing nitrogen **[2, 2006.01]**
226/08 • • N-Vinyl-pyrrolidine **[2, 2006.01]**
226/10 • • N-Vinyl-pyrrolidone **[2, 2006.01]**
226/12 • • N-Vinyl-carbazole **[2, 2006.01]**

228/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a bond to sulfur or by a heterocyclic ring containing sulfur [2, 2006.01]
228/02 • by a bond to sulfur **[2, 2006.01]**
228/04 • • Thioethers **[2, 2006.01]**
228/06 • by a heterocyclic ring containing sulfur **[2, 2006.01]**

230/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium, or a metal (metal salts, e.g. phenolates or alcoholates, see the parent compounds) **[2, 2006.01]**
230/02 • containing phosphorus **[2, 2006.01]**
230/04 • containing a metal **[2, 2006.01]**
230/06 • • containing boron **[2, 2006.01]**
230/08 • • containing silicon **[2, 2006.01]**
230/10 • • containing germanium **[2, 2006.01]**

232/00 Copolymers of cyclic compounds containing no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system [2, 2006.01]
232/02 • having no condensed rings **[2, 2006.01]**

232/04 • • having one carbon-to-carbon double bond **[2, 2006.01]**
232/06 • • having two or more carbon-to-carbon double bonds **[2, 2006.01]**
232/08 • having condensed rings **[2, 2006.01]**

234/00 Copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (cyclic esters of polyfunctional acids C08F 218/00; cyclic anhydrides or imides C08F 222/00) **[2, 2006.01]**
234/02 • in a ring containing oxygen **[2, 2006.01]**
234/04 • in a ring containing sulfur **[2, 2006.01]**

236/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds (C08F 232/00 takes precedence) **[2, 2006.01]**
236/02 • the radical having only two carbon-to-carbon double bonds **[2, 2006.01]**
236/04 • • conjugated **[2, 2006.01]**
236/06 • • • Butadiene **[2, 2006.01]**
236/08 • • • Isoprene **[2, 2006.01]**
236/10 • • • with vinyl aromatic monomers **[2, 2006.01]**
236/12 • • • with nitriles **[2, 2006.01]**
236/14 • • • containing elements other than carbon and hydrogen **[2, 2006.01]**
236/16 • • • • containing halogen **[2, 2006.01]**
236/18 • • • • • containing chlorine **[2, 2006.01]**
236/20 • • unconjugated **[2, 2006.01]**
236/22 • the radical having three or more carbon-to-carbon double bonds **[2, 2006.01]**

238/00 Copolymers of compounds having one or more carbon-to-carbon triple bonds [2, 2006.01]
238/02 • Acetylene **[2, 2006.01]**
238/04 • Vinylacetylene **[2, 2006.01]**

240/00 Copolymers of hydrocarbons and mineral oils, e.g. petroleum resins [2, 2006.01]

242/00 Copolymers of drying-oils with other monomers [2, 2006.01]

244/00 Coumarone-indene copolymers [2, 2006.01]

246/00 Copolymers in which the nature of only the monomers in minority is defined [2, 2006.01]

Graft polymers; Polymers crosslinked with unsaturated monomers [2]

251/00 Macromolecular compounds obtained by polymerising monomers on to polysaccharides or derivatives thereof [2, 2006.01]
251/02 • on to cellulose or derivatives thereof **[2, 2006.01]**

253/00 Macromolecular compounds obtained by polymerising monomers on to natural rubbers or derivatives thereof [2, 2006.01]

255/00 Macromolecular compounds obtained by polymerising monomers on to polymers of hydrocarbons as defined in group C08F 10/00 [2, 2006.01]
255/02 • on to polymers of olefins having two or three carbon atoms **[2, 2006.01]**
255/04 • • on to ethene-propene copolymers **[2, 2006.01]**
255/06 • • on to ethene-propene-diene terpolymers **[2, 2006.01]**
255/08 • on to polymers of olefins having four or more carbon atoms **[2, 2006.01]**
255/10 • • on to butene polymers **[2, 2006.01]**

257/00 Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group C08F 12/00 [2, 2006.01]
257/02 • on to polymers of styrene or alkyl-substituted styrenes **[2, 2006.01]**

259/00 Macromolecular compounds obtained by polymerising monomers on to polymers of halogen containing monomers as defined in group C08F 14/00 [2, 2006.01]
259/02 • on to polymers containing chlorine **[2, 2006.01]**
259/04 • • on to polymers of vinyl chloride **[2, 2006.01]**
259/06 • • on to polymers of vinylidene chloride **[2, 2006.01]**
259/08 • on to polymers containing fluorine **[2, 2006.01]**

261/00 Macromolecular compounds obtained by polymerising monomers on to polymers of oxygen-containing monomers as defined in group C08F 16/00 [2, 2006.01]
261/02 • on to polymers of unsaturated alcohols **[2, 2006.01]**
261/04 • • on to polymers of vinyl alcohol **[2, 2006.01]**
261/06 • on to polymers of unsaturated ethers **[2, 2006.01]**
261/08 • on to polymers of unsaturated aldehydes **[2, 2006.01]**
261/10 • on to polymers of unsaturated ketones **[2, 2006.01]**
261/12 • on to polymers of unsaturated acetals or ketals **[2, 2006.01]**

263/00 Macromolecular compounds obtained by polymerising monomers on to polymers of esters of unsaturated alcohols with saturated acids as defined in group C08F 18/00 [2, 2006.01]
263/02 • on to polymers of vinyl esters with monocarboxylic acids **[2, 2006.01]**
263/04 • • on to polymers of vinyl acetate **[2, 2006.01]**
263/06 • on to polymers of esters with polycarboxylic acids **[2, 2006.01]**
263/08 • • Polymerisation of diallyl phthalate prepolymers **[2, 2006.01]**

265/00 Macromolecular compounds obtained by polymerising monomers on to polymers of unsaturated monocarboxylic acids or derivatives thereof as defined in group C08F 20/00 [2, 2006.01]
265/02 • on to polymers of acids, salts or anhydrides **[2, 2006.01]**
265/04 • on to polymers of esters **[2, 2006.01]**
265/06 • • Polymerisation of acrylate or methacrylate esters on to polymers thereof **[2, 2006.01]**
265/08 • on to polymers of nitriles **[2, 2006.01]**
265/10 • on to polymers of amides or imides **[2, 2006.01]**

267/00 Macromolecular compounds obtained by polymerising monomers on to polymers of unsaturated polycarboxylic acids or derivatives thereof as defined in group C08F 22/00 [2, 2006.01]
267/02 • on to polymers of acids or salts **[2, 2006.01]**
267/04 • on to polymers of anhydrides **[2, 2006.01]**
267/06 • on to polymers of esters **[2, 2006.01]**
267/08 • on to polymers of nitriles **[2, 2006.01]**
267/10 • on to polymers of amides or imides **[2, 2006.01]**

269/00 Macromolecular compounds obtained by polymerising monomers on to polymers of heterocyclic oxygen-containing monomers as defined in group C08F 24/00 [2, 2006.01]

271/00 Macromolecular compounds obtained by polymerising monomers on to polymers of nitrogen-containing monomers as defined in group C08F 26/00 [2, 2006.01]

271/02 • on to polymers of monomers containing heterocyclic nitrogen **[2, 2006.01]**

273/00 Macromolecular compounds obtained by polymerising monomers on to polymers of sulfur-containing monomers as defined in group C08F 28/00 [2, 2006.01]

275/00 Macromolecular compounds obtained by polymerising monomers on to polymers of monomers containing phosphorus, selenium, tellurium, or a metal as defined in group C08F 30/00 [2, 2006.01]

277/00 Macromolecular compounds obtained by polymerising monomers on to polymers of carbocyclic or heterocyclic monomers as defined respectively in group C08F 32/00 or in group C08F 34/00 [2, 2006.01]

279/00 Macromolecular compounds obtained by polymerising monomers on to polymers of monomers having two or more carbon-to-carbon double bonds as defined in group C08F 36/00 [2, 2006.01]

279/02 • on to polymers of conjugated dienes **[2, 2006.01]**

279/04 • • Vinyl aromatic monomers and nitriles as the only monomers **[2, 2006.01]**

279/06 • • Vinyl aromatic monomers and methacrylates as the only monomers **[2, 2006.01]**

281/00 Macromolecular compounds obtained by polymerising monomers on to polymers of monomers having carbon-to-carbon triple bonds as defined in group C08F 38/00 [2, 2006.01]

283/00 Macromolecular compounds obtained by polymerising monomers on to polymers provided for in subclass C08G [4, 2006.01]

283/01 • on to unsaturated polyesters **[4, 2006.01]**

283/02 • on to polycarbonates or saturated polyesters **[2, 2006.01]**

283/04 • on to polycarbonamides, polyesteramides or polyimides **[2, 2006.01]**

283/06 • on to polyethers, polyoxymethylenes or polyacetals **[2, 2006.01]**

283/08 • • on to polyphenylene oxides **[2, 2006.01]**

283/10 • on to polymers containing more than one epoxy radical per molecule **[2, 2006.01]**

283/12 • on to polysiloxanes **[2, 2006.01]**

283/14 • on to polymers obtained by ring-opening polymerisation of carbocyclic compounds having one or more carbon-to-carbon double bonds in the carbocyclic ring, i.e. polyalkeneamers **[2, 2006.01]**

285/00 Macromolecular compounds obtained by polymerising monomers on to preformed graft polymers [2, 2006.01]

287/00 Macromolecular compounds obtained by polymerising monomers on to block polymers [2, 2006.01]

289/00 Macromolecular compounds obtained by polymerising monomers on to macromolecular compounds not provided for in groups C08F 251/00-C08F 287/00 [2, 2006.01]

290/00 Macromolecular compounds obtained by polymerising monomers on to polymers modified by introduction of aliphatic unsaturated end or side groups [6, 2006.01]

290/02 • on to polymers modified by introduction of unsaturated end groups **[6, 2006.01]**

290/04 • • Polymers provided for in subclasses C08C or C08F **[6, 2006.01]**

290/06 • • Polymers provided for in subclass C08G **[6, 2006.01]**

290/08 • on to polymers modified by introduction of unsaturated side groups **[6, 2006.01]**

290/10 • • Polymers provided for in subclass C08B **[6, 2006.01]**

290/12 • • Polymers provided for in subclasses C08C or C08F **[6, 2006.01]**

290/14 • • Polymers provided for in subclass C08G **[6, 2006.01]**

291/00 Macromolecular compounds obtained by polymerising monomers on to macromolecular compounds according to more than one of the groups C08F 251/00-C08F 289/00 [2, 2006.01]

291/02 • on to elastomers **[2, 2006.01]**

291/04 • on to halogen-containing macromolecules **[2, 2006.01]**

291/06 • on to oxygen-containing macromolecules **[2, 2006.01]**

291/08 • • on to macromolecules containing hydroxy radicals **[2, 2006.01]**

291/10 • • on to macromolecules containing epoxy radicals **[2, 2006.01]**

291/12 • on to nitrogen-containing macromolecules **[2, 2006.01]**

291/14 • on to sulfur-containing macromolecules **[2, 2006.01]**

291/16 • on to macromolecules containing more than two metal atoms **[2, 2006.01]**

291/18 • on to irradiated or oxidised macromolecules (epoxidised C08F 291/10) **[2, 2006.01]**

292/00 Macromolecular compounds obtained by polymerising monomers on to inorganic materials [3, 2006.01]

Block polymers [2]

293/00 Macromolecular compounds obtained by polymerisation on to a macromolecule having groups capable of inducing the formation of new polymer chains bound exclusively at one or both ends of the starting macromolecule (on to polymers modified by introduction of unsaturated end groups C08F 290/02) **[2, 2006.01]**

295/00 Macromolecular compounds obtained by polymerisation using successively different catalyst types without deactivating the intermediate polymer [2, 2006.01]

297/00 Macromolecular compounds obtained by successively polymerising different monomer systems using a catalyst of the ionic or coordination type without deactivating the intermediate polymer [2, 2006.01]

297/02 • using a catalyst of the anionic type **[2, 2006.01]**

297/04 • • polymerising vinyl aromatic monomers and conjugated dienes **[2, 2006.01]**

297/06 • using a catalyst of the coordination type **[2, 2006.01]**

297/08 • • polymerising mono-olefins **[2, 2006.01]**

299/00 Macromolecular compounds obtained by interreacting polymers involving only carbon-to-carbon unsaturated bond reactions, in the absence of non-macromolecular monomers [2, 6, 2006.01]

299/02 • from unsaturated polycondensates **[2, 2006.01]**

299/04 • • from polyesters **[2, 2006.01]**

299/06 • • from polyurethanes **[2, 2006.01]**

299/08 • • from polysiloxanes **[2, 2006.01]**

301/00 Macromolecular compounds not provided for in groups C08F 10/00-C08F 299/00 [2006.01]

C08G MACROMOLECULAR COMPOUNDS OBTAINED OTHERWISE THAN BY REACTIONS ONLY INVOLVING CARBON-TO-CARBON UNSATURATED BONDS (fermentation or enzyme-using processes to synthesise a desired chemical compound or composition or to separate optical isomers from a racemic mixture C12P) **[2]**

Note(s) [2, 7]

1. Therapeutic activity of compounds is further classified in subclass A61P.
2. In this subclass, group C08G 18/00 takes precedence over the other groups. A further classification is given if the polymers are obtained by reactions forming specific linkages for which an appropriate group is provided.
3. Within each main group of this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.
4. This subclass covers also compositions based on monomers which form macromolecular compounds classifiable in this subclass. In this subclass:
   a. if the monomers are defined, classification is made in groups C08G 2/00-C08G 79/00, C08G 83/00 according to the polymer to be formed;
   b. if the monomers are defined in a way that a composition cannot be classified within one main group of this subclass, the composition is classified in group C08G 85/00;
   c. if the compounding ingredients are of interest per se, classification is also made in subclass C08K.

Subclass index

MACROMOLECULAR COMPOUNDS OBTAINED FROM ALDEHYDES OR KETONES.....2/00-16/00
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MACROMOLECULAR COMPOUNDS OBTAINED FROM ISOCYANATES OR ISOTHIOCYANATES..18/00
EPOXY RESINS.....59/00
MACROMOLECULAR COMPOUNDS OBTAINED BY REACTIONS FORMING A LINKAGE IN THE MAIN CHAIN.....61/00-79/00
a carbon-to-carbon link.....61/00
a linkage containing oxygen.....63/00-67/00
a linkage containing nitrogen.....69/00-73/00
a linkage containing sulfur.....75/00
a linkage containing silicon.....77/00
a linkage containing atoms other than carbon, oxygen, nitrogen, sulfur, or silicon.....79/00
MACROMOLECULAR COMPOUNDS OBTAINED BY INTERREACTING POLYMERS IN THE ABSENCE OF MONOMERS.....81/00
OTHER MACROMOLECULAR COMPOUNDS.....83/00
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2/00 Addition polymers of aldehydes or cyclic oligomers thereof or of ketones; Addition copolymers thereof with less than 50 molar percent of other substances [2, 2006.01]

2/02 • Polymerisation initiated by wave energy or by particle radiation **[2, 2006.01]**

2/04 • Polymerisation by using compounds which act upon the molecular weight, e.g. chain-transferring agents **[2, 2006.01]**

2/06 • Catalysts **[2, 2006.01]**

2/08 • Polymerisation of formaldehyde **[2, 2006.01]**

2/10 • Polymerisation of cyclic oligomers of formaldehyde **[2, 2006.01]**

2/12 • Polymerisation of acetaldehyde or cyclic oligomers thereof **[2, 2006.01]**

2/14 • Polymerisation of single aldehydes not provided for in groups C08G 2/08-C08G 2/12 **[2, 2006.01]**

2/16 • Polymerisation of single ketones **[2, 2006.01]**

2/18 • Copolymerisation of aldehydes or ketones **[2, 2006.01]**

2/20 • • with other aldehydes or ketones **[2, 2006.01]**

2/22 • • with epoxy compounds **[2, 2006.01]**

2/24 • • with acetals **[2, 2006.01]**

2/26 • • with compounds containing carbon-to-carbon unsaturation **[2, 2006.01]**

2/28 • Post-polymerisation treatments **[2, 2006.01]**

2/30 • Chemical modification by after-treatment **[2, 2006.01]**

2/32 • • by esterification **[2, 2006.01]**

2/34 • • by etherification **[2, 2006.01]**

2/36 • • by depolymerisation **[2, 2006.01]**
2/38 • Block or graft polymers prepared by polymerisation of aldehydes or ketones on to macromolecular compounds **[2, 2006.01]**

4/00 Condensation polymers of aldehydes or ketones with polyalcohols; Addition polymers of heterocyclic oxygen compounds containing in the ring at least once the grouping —O—C—O— (of cyclic oligomers of aldehydes C08G 2/00) **[2, 2006.01]**

6/00 Condensation polymers of aldehydes or ketones only [2, 2006.01]
6/02 • of aldehydes with ketones **[2, 2006.01]**

8/00 Condensation polymers of aldehydes or ketones with phenols only [2, 2006.01]
8/02 • of ketones **[2, 2006.01]**
8/04 • of aldehydes **[2, 2006.01]**
8/06 • • of furfural **[2, 2006.01]**
8/08 • • of formaldehyde, e.g. of formaldehyde formed in situ **[2, 2006.01]**
8/10 • • • with phenol **[2, 2006.01]**
8/12 • • • with monohydric phenols having only one hydrocarbon substituent ortho or para to the OH group, e.g. p-tert.-butyl phenol **[2, 2006.01]**
8/14 • • • with halogenated phenols **[2, 2006.01]**
8/16 • • • with amino- or nitrophenols **[2, 2006.01]**
8/18 • • • with phenols substituted by carboxylic or sulfonic acid groups **[2, 2006.01]**
8/20 • • • with polyhydric phenols **[2, 2006.01]**
8/22 • • • • Resorcinol **[2, 2006.01]**
8/24 • • • with mixtures of two or more phenols which are not covered by only one of the groups C08G 8/10-C08G 8/20 **[2, 2006.01]**
8/26 • from mixtures of aldehydes and ketones **[2, 2006.01]**
8/28 • Chemically modified polycondensates **[2, 2006.01]**
8/30 • • by unsaturated compounds, e.g. terpenes **[2, 2006.01]**
8/32 • • by organic acids or derivatives thereof, e.g. fatty oils **[2, 2006.01]**
8/34 • • by natural resins or resin acids, e.g. rosin **[2, 2006.01]**
8/36 • • by etherifying **[2, 2006.01]**
8/38 • Block or graft polymers prepared by polycondensation of aldehydes or ketones on to macromolecular compounds **[2, 2006.01]**

10/00 Condensation polymers of aldehydes or ketones with aromatic hydrocarbons or halogenated aromatic hydrocarbons only [2, 2006.01]
10/02 • of aldehydes **[2, 2006.01]**
10/04 • • Chemically modified polycondensates **[2, 2006.01]**
10/06 • Block or graft polymers prepared by polycondensation of aldehydes or ketones on to macromolecular compounds **[2, 2006.01]**

12/00 Condensation polymers of aldehydes or ketones with only compounds containing hydrogen attached to nitrogen (amino phenols C08G 8/16) **[2, 2006.01]**
12/02 • of aldehydes **[2, 2006.01]**
12/04 • • with acyclic or carbocyclic compounds **[2, 2006.01]**
12/06 • • • Amines **[2, 2006.01]**
12/08 • • • • aromatic **[2, 2006.01]**
12/10 • • • with acyclic compounds having the moiety X=C(—N)$_2$ in which X is O, S, or —N **[2, 2006.01]**
12/12 • • • • Ureas; Thioureas **[2, 2006.01]**
12/14 • • • • Dicyandiamides; Dicyandiamidines; Guanidines; Biguanides; Biuret; Semicarbazides **[2, 2006.01]**
12/16 • • • • • Dicyandiamides **[2, 2006.01]**
12/18 • • • with cyanamide **[2, 2006.01]**
12/20 • • • with urethanes or thiourethanes **[2, 2006.01]**
12/22 • • • with carboxylic acid amides **[2, 2006.01]**
12/24 • • • with sulfonic acid amides **[2, 2006.01]**
12/26 • • with heterocyclic compounds **[2, 2006.01]**
12/28 • • • with substituted diazines, diazoles or triazoles **[2, 2006.01]**
12/30 • • • with substituted triazines **[2, 2006.01]**
12/32 • • • • Melamines **[2, 2006.01]**
12/34 • • • and acyclic or carbocyclic compounds **[2, 2006.01]**
12/36 • • • • Ureas; Thioureas **[2, 2006.01]**
12/38 • • • • • and melamines **[2, 2006.01]**
12/40 • • Chemically modified polycondensates **[2, 2006.01]**
12/42 • • • by etherifying **[2, 2006.01]**
12/44 • • • by esterifying **[2, 2006.01]**
12/46 • Block or graft polymers prepared by polycondensation of aldehydes or ketones on to macromolecular compounds **[2, 2006.01]**

14/00 Condensation polymers of aldehydes or ketones with two or more other monomers covered by at least two of the groups C08G 8/00-C08G 12/00 [2, 2006.01]
14/02 • of aldehydes **[2, 2006.01]**
14/04 • • with phenols **[2, 2006.01]**
14/06 • • • and monomers containing hydrogen attached to nitrogen **[2, 2006.01]**
14/067 • • • • Acyclic or carbocyclic monomers **[5, 2006.01]**
14/073 • • • • • Amines **[5, 2006.01]**
14/08 • • • • • Ureas; Thioureas **[2, 5, 2006.01]**
14/09 • • • • Heterocyclic monomers **[5, 2006.01]**
14/10 • • • • • Melamines **[2, 5, 2006.01]**
14/12 • • • Chemically modified polycondensates **[2, 2006.01]**
14/14 • Block or graft polymers prepared by polycondensation of aldehydes or ketones on to macromolecular compounds **[2, 2006.01]**

16/00 Condensation polymers of aldehydes or ketones with monomers not provided for in the groups C08G 4/00-C08G 14/00 [2, 2006.01]
16/02 • of aldehydes **[2, 2006.01]**
16/04 • • Chemically modified polycondensates **[2, 2006.01]**
16/06 • Block or graft polymers prepared by polycondensation of aldehydes or ketones on to macromolecular compounds **[2, 2006.01]**

18/00 Polymeric products of isocyanates or isothiocyanates [2, 2006.01]

Note(s) [5]

In this group, it is desirable to add the indexing code of group C08G 101/00.

18/02 • of isocyanates or isothiocyanates only **[2, 2006.01]**
18/04 • with vinyl compounds **[2, 2006.01]**
18/06 • with compounds having active hydrogen **[2, 2006.01]**

18/08 • • Processes **[2, 2006.01]**
18/09 • • • comprising oligomerisation of isocyanates or isothiocyanates involving reaction of a part of the isocyanate or isothiocyanate groups with each other in the reaction mixture **[7, 2006.01]**
18/10 • • • Prepolymer processes involving reaction of isocyanates or isothiocyanates with compounds having active hydrogen in a first reaction step **[2, 2006.01]**
18/12 • • • • using two or more compounds having active hydrogen in the first polymerisation step **[2, 2006.01]**
18/16 • • • Catalysts **[2, 2006.01]**
18/18 • • • • containing secondary or tertiary amines or salts thereof **[2, 2006.01]**
18/20 • • • • • Heterocyclic amines; Salts thereof **[2, 2006.01]**
18/22 • • • • containing metal compounds **[2, 2006.01]**
18/24 • • • • • of tin **[2, 2006.01]**
18/26 • • • • • of lead **[2, 2006.01]**
18/28 • • characterised by the compounds used containing active hydrogen **[2, 2006.01]**

Note(s) [2]

For the purpose of this group, the addition of water for the preparation of cellular materials is not taken into consideration.

18/30 • • • Low-molecular-weight compounds **[2, 2006.01]**
18/32 • • • • Polyhydroxy compounds; Polyamines; Hydroxy amines **[2, 2006.01]**
18/34 • • • • Carboxylic acids; Esters thereof with monohydroxyl compounds **[2, 2006.01]**
18/36 • • • • Hydroxylated esters of higher fatty acids **[2, 2006.01]**
18/38 • • • • having hetero atoms other than oxygen (C08G 18/32 takes precedence) **[2, 2006.01]**
18/40 • • • High-molecular-weight compounds **[2, 2006.01]**
18/42 • • • • Polycondensates having carboxylic or carbonic ester groups in the main chain **[2, 2006.01]**
18/44 • • • • • Polycarbonates **[2, 2006.01]**
18/46 • • • • • having hetero atoms other than oxygen **[2, 2006.01]**
18/48 • • • • Polyethers **[2, 2006.01]**
18/50 • • • • • having hetero atoms other than oxygen **[2, 2006.01]**
18/52 • • • • Polythioethers **[2, 2006.01]**
18/54 • • • • Polycondensates of aldehydes **[2, 2006.01]**
18/56 • • • • Polyacetals **[2, 2006.01]**
18/58 • • • • Epoxy resins **[2, 2006.01]**
18/60 • • • • Polyamides or polyester-amides **[2, 2006.01]**
18/61 • • • • Polysiloxanes **[2, 2006.01]**
18/62 • • • • Polymers of compounds having carbon-to-carbon double bonds **[2, 2006.01]**
18/63 • • • • Block or graft polymers obtained by polymerising compounds having carbon-to-carbon double bonds on to polymers **[2, 2006.01]**
18/64 • • • • Macromolecular compounds not provided for by groups C08G 18/42-C08G 18/63 **[2, 2006.01]**
18/65 • • • Low-molecular-weight compounds having active hydrogen with high-molecular-weight compounds having active hydrogen **[2, 2006.01]**
18/66 • • • • Compounds of groups C08G 18/42, C08G 18/48, or C08G 18/52 **[2, 2006.01]**
18/67 • • • Unsaturated compounds having active hydrogen **[2, 2006.01]**
18/68 • • • • Unsaturated polyesters **[2, 2006.01]**
18/69 • • • • Polymers of conjugated dienes **[2, 2006.01]**
18/70 • • characterised by the isocyanates or isothiocyanates used **[2, 2006.01]**
18/71 • • • Monoisocyanates or monoisothiocyanates **[2, 2006.01]**
18/72 • • • Polyisocyanates or polyisothiocyanates **[2, 2006.01]**
18/73 • • • • acyclic **[2, 2006.01]**
18/74 • • • • cyclic **[2, 2006.01]**
18/75 • • • • • cycloaliphatic **[2, 2006.01]**
18/76 • • • • • aromatic **[2, 2006.01]**
18/77 • • • • having hetero atoms in addition to the isocyanate or isothiocyanate nitrogen and oxygen or sulfur **[2, 2006.01]**
18/78 • • • • • Nitrogen **[2, 2006.01]**
18/79 • • • • • • characterised by the polyisocyanates used, these having groups formed by oligomerisation of isocyanates or isothiocyanates **[2, 2006.01]**
18/80 • • • • Masked polyisocyanates **[2, 2006.01]**
18/81 • • • Unsaturated isocyanates or isothiocyanates **[2, 2006.01]**
18/82 • • Post-polymerisation treatment **[2, 2006.01]**
18/83 • • Chemically modified polymers **[2, 2006.01]**
18/84 • • • by aldehydes **[2, 2006.01]**
18/85 • • • by azo compounds **[2, 2006.01]**
18/86 • • • by peroxides **[2, 2006.01]**
18/87 • • • by sulfur **[2, 2006.01]**

59/00 Polycondensates containing more than one epoxy group per molecule; Macromolecules obtained by reaction of epoxy polycondensates with monofunctional low-molecular-weight compounds; Macromolecules obtained by polymerising compounds containing more than one epoxy group per molecule using curing agents or catalysts which react with the epoxy groups [2, 2006.01]

59/02 • Polycondensates containing more than one epoxy group per molecule **[2, 2006.01]**
59/04 • • of polyhydroxy compounds with epihalohydrins or precursors thereof **[2, 2006.01]**
59/06 • • • of polyhydric phenols **[2, 2006.01]**
59/08 • • • • from phenol-aldehyde condensates **[2, 2006.01]**
59/10 • • of polyamines with epihalohydrins or precursors thereof **[2, 2006.01]**
59/12 • • of polycarboxylic acids with epihalohydrins or precursors thereof **[2, 2006.01]**
59/14 • Polycondensates modified by chemical after-treatment **[2, 2006.01]**
59/16 • • by monocarboxylic acids or by anhydrides, halides or low-molecular-weight esters thereof **[2, 2006.01]**
59/17 • • • by acrylic or methacrylic acid **[4, 2006.01]**
59/18 • Macromolecules obtained by polymerising compounds containing more than one epoxy group per molecule using curing agents or catalysts which react with the epoxy groups **[2, 2006.01]**
59/20 • • characterised by the epoxy compounds used **[2, 2006.01]**

Note(s) [2]

Preparation and curing of epoxy polycondensates, in which the epoxy polycondensate is not exclusively a low-molecular-weight compound and in which the method of curing is not important, are classified only in group C08G 59/02.

59/22 • • • Di-epoxy compounds **[2, 2006.01]**
59/24 • • • • carbocyclic **[2, 2006.01]**
59/26 • • • • heterocyclic **[2, 2006.01]**
59/28 • • • • containing acyclic nitrogen atoms **[2, 2006.01]**
59/30 • • • • containing atoms other than carbon, hydrogen, oxygen, and nitrogen **[2, 2006.01]**
59/32 • • • Epoxy compounds containing three or more epoxy groups **[2, 2006.01]**
59/34 • • • • obtained by epoxidation of an unsaturated polymer **[2, 2006.01]**
59/36 • • • • together with mono-epoxy compounds **[2, 2006.01]**
59/38 • • • • together with di-epoxy compounds **[2, 2006.01]**
59/40 • • characterised by the curing agents used **[2, 2006.01]**
59/42 • • • Polycarboxylic acids; Anhydrides, halides, or low-molecular-weight esters thereof **[2, 2006.01]**
59/44 • • • Amides **[2, 2006.01]**
59/46 • • • • together with other curing agents **[2, 2006.01]**
59/48 • • • • • with polycarboxylic acids or with anhydrides, halides, or low-molecular-weight esters thereof **[2, 2006.01]**
59/50 • • • Amines **[2, 2006.01]**
59/52 • • • • Amino carboxylic acids **[2, 2006.01]**
59/54 • • • • Amino amides **[2, 2006.01]**
59/56 • • • • together with other curing agents **[2, 2006.01]**
59/58 • • • • • with polycarboxylic acids or with anhydrides, halides, or low-molecular-weight esters thereof **[2, 2006.01]**
59/60 • • • • • with amides **[2, 2006.01]**
59/62 • • • Alcohols or phenols **[2, 2006.01]**
59/64 • • • • Amino alcohols **[2, 2006.01]**
59/66 • • • Mercaptans **[2, 2006.01]**
59/68 • • characterised by the catalysts used **[2, 2006.01]**
59/70 • • • Chelates **[2, 2006.01]**
59/72 • • • Complexes of boron halides **[2, 2006.01]**

Note(s) [2]

In groups C08G 61/00-C08G 79/00, in the absence of an indication to the contrary, macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess.

61/00 Macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain of the macromolecule (C08G 2/00-C08G 16/00 take precedence) **[2, 2006.01]**

61/02 • Macromolecular compounds containing only carbon atoms in the main chain of the macromolecule, e.g. polyxylylenes **[2, 2006.01]**
61/04 • • only aliphatic carbon atoms **[2, 2006.01]**
61/06 • • • prepared by ring-opening of carbocyclic compounds **[2, 2006.01]**
61/08 • • • • of carbocyclic compounds containing one or more carbon-to-carbon double bonds in the ring **[2, 2006.01]**
61/10 • • only aromatic carbon atoms, e.g. polyphenylenes **[2, 2006.01]**
61/12 • Macromolecular compounds containing atoms other than carbon in the main chain of the macromolecule **[2, 2006.01]**

63/00 Macromolecular compounds obtained by reactions forming a carboxylic ester link in the main chain of the macromolecule (polyester-amides C08G 69/44; polyester-imides C08G 73/16) **[2, 5, 2006.01]**

Note(s) [5]

Compounds characterised by the chemical constitution of the polyesters are classified in the groups for the type of polyester compound. Compounds characterised by the preparation process of the polyesters are classified in the groups for the process employed (groups C08G 63/78-C08G 63/87). Compounds characterised both by the chemical constitution and by the preparation process are classified according to each of these aspects.

63/02 • Polyesters derived from hydroxy carboxylic acids or from polycarboxylic acids and polyhydroxy compounds **[2, 2006.01]**
63/06 • • derived from hydroxy carboxylic acids **[2, 2006.01]**
63/08 • • • Lactones or lactides **[2, 2006.01]**
63/12 • • derived from polycarboxylic acids and polyhydroxy compounds **[2, 2006.01]**
63/123 • • • the acids or hydroxy compounds containing carbocyclic rings **[5, 2006.01]**
63/127 • • • • Acids containing aromatic rings **[5, 2006.01]**
63/13 • • • • • containing two or more aromatic rings **[5, 2006.01]**
63/133 • • • • Hydroxy compounds containing aromatic rings **[5, 2006.01]**
63/137 • • • • Acids or hydroxy compounds containing cycloaliphatic rings **[5, 2006.01]**
63/16 • • • Dicarboxylic acids and dihydroxy compounds **[2, 2006.01]**
63/18 • • • • the acids or hydroxy compounds containing carbocyclic rings **[2, 2006.01]**
63/181 • • • • • Acids containing aromatic rings **[5, 2006.01]**
63/183 • • • • • • Terephthalic acids **[5, 2006.01]**
63/185 • • • • • • containing two or more aromatic rings **[5, 2006.01]**
63/187 • • • • • • • containing condensed aromatic rings **[5, 2006.01]**
63/189 • • • • • • • • containing a naphthalene ring **[5, 2006.01]**
63/19 • • • • • Hydroxy compounds containing aromatic rings **[5, 2006.01]**
63/191 • • • • • • Hydroquinones **[5, 2006.01]**
63/193 • • • • • • containing two or more aromatic rings **[5, 2006.01]**
63/195 • • • • • • • Bisphenol A **[5, 2006.01]**
63/197 • • • • • • • containing condensed aromatic rings **[5, 2006.01]**
63/199 • • • • • Acids or hydroxy compounds containing cycloaliphatic rings **[5, 2006.01]**
63/20 • • • • Polyesters having been prepared in the presence of compounds having one reactive group or more than two reactive groups **[2, 2006.01]**

63/21 • • • • • in the presence of unsaturated monocarboxylic acids or unsaturated monohydric alcohols or reactive derivatives thereof **[5, 2006.01]**

63/40 • • • Polyesters derived from ester-forming derivatives of polycarboxylic acids or of polyhydroxy compounds, other than from esters thereof **[2, 2006.01]**

63/42 • • • • Cyclic ethers (C08G 59/00 takes precedence); Cyclic carbonates; Cyclic sulfites; Cyclic orthoesters **[2, 7, 2006.01]**

63/44 • • • • Polyamides; Polynitriles **[2, 2006.01]**

63/46 • • • Polyesters chemically modified by esterification (C08G 63/20 takes precedence) **[2, 2006.01]**

63/47 • • • • by unsaturated monocarboxylic acids or unsaturated monohydric alcohols or reactive derivatives thereof **[5, 2006.01]**

63/48 • • • • by unsaturated higher fatty oils or their acids; by resin acids **[2, 2006.01]**

63/49 • • • • • Alkyd resins **[5, 2006.01]**

63/50 • • • • by monohydric alcohols **[2, 2006.01]**

63/52 • • • Polycarboxylic acids or polyhydroxy compounds in which at least one of the two components contains aliphatic unsaturation **[2, 2006.01]**

63/54 • • • • the acids or hydroxy compounds containing carbocyclic rings **[2, 2006.01]**

63/547 • • • • • Hydroxy compounds containing aromatic rings **[5, 2006.01]**

63/553 • • • • • Acids or hydroxy compounds containing cycloaliphatic rings, e.g. Diels-Alder adducts **[5, 2006.01]**

63/56 • • • • Polyesters derived from ester-forming derivatives of polycarboxylic acids or of polyhydroxy compounds, other than from esters thereof **[2, 2006.01]**

63/58 • • • • • Cyclic ethers (C08G 59/00 takes precedence); Cyclic carbonates; Cyclic sulfites **[2, 2006.01]**

63/60 • • derived from the reaction of a mixture of hydroxy carboxylic acids, polycarboxylic acids and polyhydroxy compounds **[2, 2006.01]**

63/64 • Polyesters containing both carboxylic ester groups and carbonate groups **[2, 2006.01]**

63/66 • Polyesters containing oxygen in the form of ether groups (C08G 63/42, C08G 63/58 take precedence) **[2, 2006.01]**

63/664 • • derived from hydroxycarboxylic acids **[5, 2006.01]**

63/668 • • derived from polycarboxylic acids and polyhydroxy compounds **[5, 2006.01]**

63/672 • • • Dicarboxylic acids and dihydroxy compounds **[5, 2006.01]**

63/676 • • • in which at least one of the two components contains aliphatic unsaturation **[5, 2006.01]**

63/68 • Polyesters containing atoms other than carbon, hydrogen, and oxygen (C08G 63/64 takes precedence) **[4, 2006.01]**

63/682 • • containing halogens **[5, 2006.01]**

63/685 • • containing nitrogen **[5, 2006.01]**

63/688 • • containing sulfur **[5, 2006.01]**

63/692 • • containing phosphorus **[5, 2006.01]**

63/695 • • containing silicon **[5, 2006.01]**

63/698 • • containing boron **[5, 2006.01]**

63/78 • Preparation processes **[5, 2006.01]**

63/79 • • Interfacial processes, i.e. processes involving a reaction at the interface of two non-miscible liquids **[5, 2006.01]**

63/80 • • Solid-state polycondensation **[5, 2006.01]**

63/81 • • using solvents (C08G 63/79 takes precedence) **[5, 2006.01]**

63/82 • • characterised by the catalyst used **[5, 2006.01]**

63/83 • • • Alkali metals, alkaline earth metals, beryllium, magnesium, copper, silver, gold, zinc, cadmium, mercury, manganese, or compounds thereof **[5, 2006.01]**

63/84 • • • Boron, aluminium, gallium, indium, thallium, rare-earth metals, or compounds thereof **[5, 2006.01]**

63/85 • • • Germanium, tin, lead, arsenic, antimony, bismuth, titanium, zirconium, hafnium, vanadium, niobium, tantalum, or compounds thereof **[5, 2006.01]**

63/86 • • • • Germanium, antimony, or compounds thereof **[5, 2006.01]**

63/87 • • • Non-metals or inter-compounds thereof (boron C08G 63/84) **[5, 2006.01]**

63/88 • Post-polymerisation treatment **[5, 2006.01]**

63/89 • • Recovery of the polymer **[5, 2006.01]**

63/90 • • Purification; Drying **[5, 2006.01]**

63/91 • Polymers modified by chemical after-treatment **[5, 2006.01]**

64/00 **Macromolecular compounds obtained by reactions forming a carbonic ester link in the main chain of the macromolecule** (polycarbonate-amides C08G 69/44; polycarbonate-imides C08G 73/16) **[5, 2006.01]**

Note(s) [5]

Polymers containing both carboxylic ester groups and carbonate groups are always classified in group C08G 63/64, even when the carbonate groups are present in excess.

64/02 • Aliphatic polycarbonates **[5, 2006.01]**

64/04 • Aromatic polycarbonates **[5, 2006.01]**

64/06 • • not containing aliphatic unsaturation **[5, 2006.01]**

64/08 • • • containing atoms other than carbon, hydrogen or oxygen **[5, 2006.01]**

64/10 • • • • containing halogens **[5, 2006.01]**

64/12 • • • • containing nitrogen **[5, 2006.01]**

64/14 • • • containing a chain-terminating or -crosslinking agent **[5, 2006.01]**

64/16 • Aliphatic-aromatic or araliphatic polycarbonates **[5, 2006.01]**

64/18 • Block or graft polymers **[5, 2006.01]**

64/20 • General preparatory processes **[5, 2006.01]**

64/22 • • using carbonyl halides **[5, 2006.01]**

64/24 • • • and phenols **[5, 2006.01]**

64/26 • • using halocarbonates **[5, 2006.01]**

64/28 • • • and phenols **[5, 2006.01]**

64/30 • • using carbonates **[5, 2006.01]**

64/32 • • using carbon dioxide **[5, 2006.01]**

64/34 • • • and cyclic ethers **[5, 2006.01]**

64/36 • • using carbon monoxide **[5, 2006.01]**

64/38 • • using other monomers **[5, 2006.01]**

64/40 • Post-polymerisation treatment **[5, 2006.01]**

64/42 • Chemical after-treatment **[5, 2006.01]**

65/00 **Macromolecular compounds obtained by reactions forming an ether link in the main chain of the macromolecule** (epoxy resins C08G 59/00; polythioether-ethers C08G 75/12; polyethers containing less than eleven monomer units C07C) **[2, 2006.01]**

65/02 • from cyclic ethers by opening of the heterocyclic ring **[2, 2006.01]**

65/04 • • from cyclic ethers only **[2, 2006.01]**

65/06 • • • Cyclic ethers having no atoms other than carbon and hydrogen outside the ring **[2, 2006.01]**

65/08 • • • • Saturated oxiranes **[2, 2006.01]**

65/10 • • • • • characterised by the catalysts used **[2, 2006.01]**

65/12 • • • • • • containing organo-metallic compounds or metal hydrides **[2, 2006.01]**

65/14 • • • • Unsaturated oxiranes **[2, 2006.01]**

65/16 • • • • Cyclic ethers having four or more ring atoms **[2, 2006.01]**

65/18 • • • • • Oxetanes **[2, 2006.01]**

65/20 • • • • • Tetrahydrofuran **[2, 2006.01]**

65/22 • • • Cyclic ethers having at least one atom other than carbon and hydrogen outside the ring **[2, 2006.01]**

65/24 • • • • Epihalohydrins **[2, 2006.01]**

65/26 • • from cyclic ethers and other compounds **[2, 2006.01]**

65/28 • • • Cyclic ethers and hydroxy compounds **[2, 2006.01]**

65/30 • • Post-polymerisation treatment, e.g. recovery, purification, drying **[2, 2006.01]**

65/32 • • Polymers modified by chemical after-treatment **[2, 2006.01]**

65/321 • • • with inorganic compounds **[7, 2006.01]**

65/322 • • • • containing hydrogen **[7, 2006.01]**

65/323 • • • • containing halogens **[7, 2006.01]**

65/324 • • • • containing oxygen **[7, 2006.01]**

65/325 • • • • containing nitrogen **[7, 2006.01]**

65/326 • • • • containing sulfur **[7, 2006.01]**

65/327 • • • • containing phosphorus **[7, 2006.01]**

65/328 • • • • containing other elements **[7, 2006.01]**

65/329 • • • with organic compounds **[7, 2006.01]**

65/331 • • • • containing oxygen **[7, 2006.01]**

65/332 • • • • • containing carboxyl groups, or halides or esters thereof **[7, 2006.01]**

65/333 • • • • containing nitrogen **[7, 2006.01]**

65/334 • • • • containing sulfur **[7, 2006.01]**

65/335 • • • • containing phosphorus **[7, 2006.01]**

65/336 • • • • containing silicon **[7, 2006.01]**

65/337 • • • • containing other elements (organic compounds containing halogens only as halides of a carboxyl group C08G 65/332) **[7, 2006.01]**

65/338 • • • with inorganic and organic compounds **[7, 2006.01]**

65/34 • from hydroxy compounds or their metallic derivatives (C08G 65/28 takes precedence) **[2, 2006.01]**

65/36 • • Furfuryl alcohol **[2, 2006.01]**

65/38 • • derived from phenols **[2, 2006.01]**

65/40 • • • from phenols and other compounds **[2, 2006.01]**

65/42 • • • • Phenols and polyhydroxy ethers **[2, 2006.01]**

65/44 • • • by oxidation of phenols **[2, 2006.01]**

65/46 • • Post-polymerisation treatment, e.g. recovery, purification, drying **[2, 2006.01]**

65/48 • • Polymers modified by chemical after-treatment **[2, 2006.01]**

67/00 **Macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing oxygen or oxygen and carbon, not provided for in groups C08G 2/00-C08G 65/00 [2, 2006.01]**

67/02 • Copolymers of carbon monoxide and aliphatic unsaturated compounds **[2, 2006.01]**

67/04 • Polyanhydrides **[2, 2006.01]**

69/00 **Macromolecular compounds obtained by reactions forming a carboxylic amide link in the main chain of the macromolecule** (polyhydrazides C08G 73/08; polyamide acids C08G 73/10; polyamide-imides C08G 73/14) **[2, 2006.01]**

69/02 • Polyamides derived from amino carboxylic acids or from polyamines and polycarboxylic acids **[2, 2006.01]**

69/04 • • Preparatory processes **[2, 2006.01]**

69/06 • • • Solid state polycondensation **[2, 2006.01]**

69/08 • • derived from amino carboxylic acids **[2, 2006.01]**

69/10 • • • Alpha-amino-carboxylic acids **[2, 2006.01]**

69/12 • • • with both amino and carboxylic groups aromatically bound **[2, 2006.01]**

69/14 • • • Lactams **[2, 2006.01]**

69/16 • • • • Preparatory processes **[2, 2006.01]**

69/18 • • • • • Anionic polymerisation **[2, 2006.01]**

69/20 • • • • • • characterised by the catalysts used **[2, 2006.01]**

69/22 • • • • Beta-lactams **[2, 2006.01]**

69/24 • • • • Pyrrolidones or piperidones **[2, 2006.01]**

69/26 • • derived from polyamines and polycarboxylic acids **[2, 2006.01]**

69/28 • • • Preparatory processes **[2, 2006.01]**

69/30 • • • • Solid state polycondensation **[2, 2006.01]**

69/32 • • • from aromatic diamines and aromatic dicarboxylic acids with both amino and carboxylic groups aromatically bound **[2, 2006.01]**

69/34 • • • using polymerised unsaturated fatty acids **[2, 2006.01]**

69/36 • • derived from amino acids, polyamines, and polycarboxylic acids **[2, 2006.01]**

69/38 • Polyamides prepared from aldehydes and polynitriles **[2, 2006.01]**

69/40 • Polyamides containing oxygen in the form of ether groups (C08G 69/12, C08G 69/32 take precedence) **[2, 2006.01]**

69/42 • Polyamides containing atoms other than carbon, hydrogen, oxygen, and nitrogen (C08G 69/12, C08G 69/32 take precedence) **[2, 2006.01]**

69/44 • Polyester-amides **[2, 2006.01]**

69/46 • Post-polymerisation treatment **[2, 2006.01]**

69/48 • Polymers modified by chemical after-treatment **[2, 2006.01]**

69/50 • • with aldehydes **[2, 2006.01]**

71/00 **Macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a ureide or urethane link, otherwise than from isocyanate radicals [2, 2006.01]**

71/02 • Polyureas **[2, 2006.01]**

71/04 • Polyurethanes **[2, 2006.01]**

73/00 Macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen, with or without oxygen or carbon, not provided for in groups C08G 12/00-C08G 71/00 [2, 2006.01]

73/02 • Polyamines (containing less than eleven monomer units C07C) **[2, 2006.01]**

73/04 • • derived from alkyleneimines **[2, 2006.01]**

73/06 • Polycondensates having nitrogen-containing heterocyclic rings in the main chain of the macromolecule; Polyhydrazides; Polyamide acids or similar polyimide precursors **[2, 2006.01]**

73/08 • • Polyhydrazides; Polytriazoles; Polyaminotriazoles; Polyoxadiazoles **[2, 2006.01]**

73/10 • • Polyimides; Polyester-imides; Polyamide-imides; Polyamide acids or similar polyimide precursors **[2, 2006.01]**

73/12 • • • Unsaturated polyimide precursors **[2, 2006.01]**

73/14 • • • Polyamide-imides **[2, 2006.01]**

73/16 • • • Polyester-imides **[2, 2006.01]**

73/18 • • Polybenzimidazoles **[2, 2006.01]**

73/20 • • Pyrrones **[2, 2006.01]**

73/22 • • Polybenzoxazoles **[2, 2006.01]**

73/24 • Copolymers of a fluoronitroso organic compound and another fluoro organic compound, e.g. nitroso rubbers **[2, 2006.01]**

73/26 • • of trifluoronitrosomethane with a fluoro-olefin **[2, 2006.01]**

75/00 Macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing sulfur, with or without nitrogen, oxygen, or carbon [2, 2006.01]

*75/02 • Polythioethers **[2, 2006.01, 2016.01]***

*75/0204 • • Polyarylenethioethers **[2016.01]***

Note(s) [2016.01]

1. In this group, macromolecular compounds are classified for the inventive aspects which are relevant in any of the following sets of groups:
- *C08G 75/0209-C08G 75/0245;*
- *C08G 75/025-C08G 75/0268;*
- *C08G 75/0277-C08G 75/0281;*
- *C08G 75/0286-C08G 75/0295.*

2. Within each set of groups mentioned in Note (1), the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

*75/0209 • • • derived from monomers containing one aromatic ring **[2016.01]***

*75/0213 • • • • containing elements other than carbon, hydrogen or sulfur **[2016.01]***

*75/0222 • • • • • containing nitrogen **[2016.01]***

*75/0227 • • • derived from monomers containing two or more aromatic rings **[2016.01]***

*75/0231 • • • containing chain-terminating or chain-branching agents **[2016.01]***

*75/0236 • • • containing atoms other than carbon or sulfur in a linkage between arylene groups **[2016.01]***

*75/024 • • • • containing carbonyl groups **[2016.01]***

*75/0245 • • • Block or graft polymers **[2016.01]***

*75/025 • • • Preparatory processes **[2016.01]***

*75/0254 • • • • using metal sulfides **[2016.01]***

*75/0259 • • • • using metal hydrogensulfides **[2016.01]***

*75/0263 • • • • using elemental sulfur **[2016.01]***

*75/0268 • • • • using disulfides **[2016.01]***

*75/0277 • • • Post-polymerisation treatment (chemical after-treatment C08G 75/0286) **[2016.01]***

*75/0281 • • • • Recovery or purification **[2016.01]***

*75/0286 • • • Chemical after-treatment **[2016.01]***

*75/029 • • • • Modification with organic compounds **[2016.01]***

*75/0295 • • • • Modification with inorganic compounds **[2016.01]***

*75/04 • • from mercapto compounds or metallic derivatives thereof (C08G 75/0204 takes precedence) **[2, 2006.01, 2016.01]***

*75/045 • • • from mercapto compounds and unsaturated compounds **[2016.01]***

75/06 • • from cyclic thioethers **[2, 2006.01]**

75/08 • • • from thiiranes **[2, 2006.01]**

75/10 • • from sulfur or sulfur-containing compounds and aldehydes or ketones **[2, 2006.01]**

*75/12 • Polythioether-ethers (C08G 75/0245 takes precedence) **[2, 2006.01, 2016.01]***

75/14 • Polysulfides **[2, 2006.01]**

75/16 • • by polycondensation of organic compounds with inorganic polysulfides **[2, 2006.01]**

75/18 • Polysulfoxides **[2, 2006.01]**

*75/20 • Polysulfones **[2, 2006.01, 2016.01]***

*75/205 • • Copolymers of sulfur dioxide with unsaturated organic compounds **[2016.01]***

75/22 • • • Copolymers of sulfur dioxide with unsaturated aliphatic compounds **[2, 2006.01]**

75/23 • • Polyethersulfones **[2, 2006.01]**

75/24 • Polysulfonates **[2, 2006.01]**

75/26 • Polythioesters **[2, 2006.01]**

75/28 • Polythiocarbonates **[2, 2006.01]**

75/30 • Polysulfonamides; Polysulfonimides **[2, 2006.01]**

75/32 • Polythiazoles; Polythiadiazoles **[2, 2006.01]**

77/00 Macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon, with or without sulfur, nitrogen, oxygen, or carbon [2, 2006.01]

77/02 • Polysilicates **[2, 2006.01]**

77/04 • Polysiloxanes **[2, 2006.01]**

77/06 • • Preparatory processes **[2, 2006.01]**

77/08 • • • characterised by the catalysts used **[2, 2006.01]**

77/10 • • • Equilibration processes **[2, 2006.01]**

77/12 • • containing silicon bound to hydrogen **[2, 2006.01]**

77/14 • • containing silicon bound to oxygen-containing groups **[2, 2006.01]**

77/16 • • • to hydroxy groups **[2, 2006.01]**

77/18 • • • to alkoxy or aryloxy groups **[2, 2006.01]**

77/20 • • containing silicon bound to unsaturated aliphatic groups **[2, 2006.01]**

77/22 • • containing silicon bound to organic groups containing atoms other than carbon, hydrogen, and oxygen **[2, 2006.01]**

77/24 • • • halogen-containing groups **[2, 2006.01]**

77/26 • • • nitrogen-containing groups **[2, 2006.01]**

77/28 • • • sulfur-containing groups **[2, 2006.01]**

77/30 • • • phosphorus-containing groups **[2, 2006.01]**

77/32 • • Post-polymerisation treatment **[2, 2006.01]**

77/34 • • • Purification **[2, 2006.01]**

77/36 • • • Fractionation **[2, 2006.01]**

77/38 • • Polysiloxanes modified by chemical after-treatment **[2, 2006.01]**

77/382 • • • containing atoms other than carbon, hydrogen, oxygen or silicon **[5, 2006.01]**

77/385 • • • • containing halogens **[5, 2006.01]**
77/388 • • • • containing nitrogen **[5, 2006.01]**
77/392 • • • • containing sulfur **[5, 2006.01]**
77/395 • • • • containing phosphorus **[5, 2006.01]**
77/398 • • • • containing boron or metal atoms **[5, 2006.01]**
77/42 • Block- or graft-polymers containing polysiloxane sequences (polymerising aliphatic unsaturated monomers on to a polysiloxane C08F 283/12) **[2, 2006.01]**
77/44 • • containing only polysiloxane sequences **[2, 2006.01]**
77/442 • • containing vinyl polymer sequences **[5, 2006.01]**
77/445 • • containing polyester sequences **[5, 2006.01]**
77/448 • • containing polycarbonate sequences **[5, 2006.01]**
77/452 • • containing nitrogen-containing sequences **[5, 2006.01]**
77/455 • • • containing polyamide, polyesteramide or polyimide sequences **[5, 2006.01]**
77/458 • • • containing polyurethane sequences **[5, 2006.01]**
77/46 • • containing polyether sequences **[2, 2006.01]**
77/48 • in which at least two but not all the silicon atoms are connected by linkages other than oxygen atoms (C08G 77/42 takes precedence) **[2, 2006.01]**
77/50 • • by carbon linkages **[2, 2006.01]**
77/52 • • • containing aromatic rings **[2, 2006.01]**
77/54 • • Nitrogen-containing linkages **[2, 2006.01]**
77/56 • • Boron-containing linkages **[2, 2006.01]**
77/58 • • Metal-containing linkages **[2, 2006.01]**
77/60 • in which all the silicon atoms are connected by linkages other than oxygen atoms **[2, 2006.01]**
77/62 • • Nitrogen atoms **[2, 2006.01]**

79/00 Macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing atoms other than silicon, sulfur, nitrogen, oxygen, and carbon [2, 2006.01]
79/02 • *a linkage containing phosphorus **[2, 2006.01, 2016.01]***
79/025 • • *Polyphosphazenes **[2016.01]***
79/04 • • Phosphorus linked to oxygen or to oxygen and carbon **[2, 2006.01]**
79/06 • • Phosphorus linked to carbon only **[2, 2006.01]**
79/08 • a linkage containing boron **[2, 2006.01]**
79/10 • a linkage containing aluminium **[2, 2006.01]**
79/12 • a linkage containing tin **[2, 2006.01]**
79/14 • a linkage containing two or more elements other than carbon, oxygen, nitrogen, sulfur, and silicon **[2, 2006.01]**

81/00 Macromolecular compounds obtained by interreacting polymers in the absence of monomers, e.g. block polymers (involving only carbon-to-carbon unsaturated bond reactions C08F 299/00) **[2, 2006.01]**
81/02 • at least one of the polymers being obtained by reactions involving only carbon-to-carbon unsaturated bonds **[2, 2006.01]**

83/00 Macromolecular compounds not provided for in groups C08G 2/00-C08G 81/00 [2, 2006.01]

85/00 General processes for preparing compounds provided for in this subclass [2, 2006.01]

Indexing scheme associated with group C08G 18/00, relating to cellular products. [5]

101/00 Manufacture of cellular products [5, 2006.01]

C08H DERIVATIVES OF NATURAL MACROMOLECULAR COMPOUNDS (polysaccharides C08B; natural rubber C08C; natural resins or their derivatives C09F; working up pitch, asphalt or bitumen C10C 3/00)

Note(s) [7]

Therapeutic activity of compounds is further classified in subclass A61P.

1/00 Macromolecular products derived from proteins (food proteins A23, e.g. A23J; preparation of glue or gelatine C09H) **[1, 2006.01]**

1/02 • Protein-aldehyde condensates **[1, 2006.01]**
1/04 • • Casein-aldehyde condensates **[1, 2006.01]**
1/06 • derived from horn, hoofs, hair, skin, or leather **[1, 2006.01]**

3/00 Vulcanised oils, e.g. factice [1, 2006.01]

7/00 Lignin; Modified lignin; High-molecular-weight products derived therefrom (low-molecular-weight derivatives of lignin C07G 1/00) **[1, 2006.01, 2011.01]**

8/00 Macromolecular compounds derived from lignocellulosic materials [2010.01]

99/00 Subject matter not provided for in other groups of this subclass [2010.01]

C08J WORKING-UP; GENERAL PROCESSES OF COMPOUNDING; AFTER-TREATMENT NOT COVERED BY SUBCLASSES C08B, C08C, C08F, C08G or C08H (working, e.g. shaping, of plastics B29) **[2]**

Note(s) [2, 4, 2006.01]

1. This subclass covers processes, not covered by subclasses C08B-C08H, for treating polymers.
2. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

3. When classifying in this subclass, the materials used, which are considered to represent information of interest for search, may also be classified in subclass C08L as additional information.

3/00 Processes of treating or compounding macromolecular substances [2, 2006.01]

3/02 • Making solutions, dispersions, lattices or gels by other methods than by solution, emulsion or suspension polymerisation techniques **[2, 2006.01]**
3/03 • • in aqueous media **[5, 2006.01]**
3/05 • • • from solid polymers **[5, 2006.01]**
3/07 • • • from polymer solutions **[5, 2006.01]**
3/075 • • • Macromolecular gels **[6, 2006.01]**
3/09 • • in organic liquids **[5, 2006.01]**
3/11 • • • from solid polymers **[5, 2006.01]**
3/12 • Powdering or granulating **[2, 2006.01]**
3/14 • • by precipitation from solutions **[2, 2006.01]**
3/16 • • by coagulating dispersions **[2, 2006.01]**
3/18 • Plasticising macromolecular compounds (plasticisers C08K) **[2, 2006.01]**
3/20 • Compounding polymers with additives, e.g. colouring **[2, 2006.01]**
3/205 • • in the presence of a liquid phase **[5, 2006.01]**
3/21 • • • the polymer being premixed with a liquid phase **[5, 2006.01]**
3/215 • • • • at least one additive being also premixed with a liquid phase **[5, 2006.01]**
3/22 • • using masterbatch techniques **[2, 2006.01]**
3/24 • Crosslinking, e.g. vulcanising, of macromolecules (mechanical aspects B29C 35/00; crosslinking agents C08K) **[2, 2006.01]**
3/26 • • of latex **[2, 2006.01]**
3/28 • Treatment by wave energy or particle radiation **[2, 2006.01]**

5/00 Manufacture of articles or shaped materials containing macromolecular substances (manufacture of semi-permeable membranes B01D 67/00-B01D 71/00) **[2, 2006.01]**

5/02 • Direct processing of dispersions, e.g. latex, to articles **[2, 2006.01]**
5/04 • Reinforcing macromolecular compounds with loose or coherent fibrous material **[2, 2006.01]**
5/06 • • using pretreated fibrous materials **[2, 2006.01]**
5/08 • • • glass fibres **[2, 2006.01]**
5/10 • • characterised by the additives used in the polymer mixture **[2, 2006.01]**
5/12 • Bonding of a preformed macromolecular material to the same or other solid material such as metal, glass, leather, e.g. using adhesives **[2, 2006.01]**
5/14 • Manufacture of abrasive or friction articles or materials **[2, 2006.01]**
5/16 • Manufacture of articles or materials having reduced friction **[2, 2006.01]**
5/18 • Manufacture of films or sheets **[2, 2006.01]**
5/20 • Manufacture of shaped structures of ion-exchange resins **[2, 2006.01]**
5/22 • • Films, membranes or diaphragms **[2, 2006.01]**
5/24 • Impregnating materials with prepolymers which can be polymerised in situ, e.g. manufacture of prepregs **[2, 2006.01]**

7/00 Chemical treatment or coating of shaped articles made of macromolecular substances (coating with metallic material C23C; electrolytic deposition of metals C25) **[2, 2006.01]**

7/02 • with solvents, e.g. swelling agents **[2, 2006.01]**
7/04 • Coating **[2, 2006.01]**
7/06 • • with compositions not containing macromolecular substances **[2, 2006.01]**
7/12 • Chemical modification **[2, 2006.01]**
7/14 • • with acids, their salts or anhydrides **[2, 2006.01]**
7/16 • • with polymerisable compounds **[2, 2006.01]**
7/18 • • • using wave energy or particle radiation **[2, 2006.01]**

9/00 Working-up of macromolecular substances to porous or cellular articles or materials; After-treatment thereof (mechanical aspects of shaping of plastics or substances in a plastic state for the production of porous or cellular articles B29C) **[2, 2006.01]**

9/02 • using blowing gases generated by the reacting monomers or modifying agents during the preparation or modification of macromolecules **[2, 2006.01]**
9/04 • using blowing gases generated by a previously added blowing agent **[2, 2006.01]**
9/06 • • by a chemical blowing agent **[2, 2006.01]**
9/08 • • • developing carbon dioxide **[2, 2006.01]**
9/10 • • • developing nitrogen **[2, 2006.01]**
9/12 • • by a physical blowing agent **[2, 2006.01]**
9/14 • • • organic **[2, 2006.01]**

Note(s) [5]

In groups C08J 9/16-C08J 9/22, the following term is used with the meaning indicated:

- "expandable" includes also expanding, pre-expanded or expanded.

9/16 • Making expandable particles **[2, 5, 2006.01]**
9/18 • • by impregnating polymer particles with the blowing agent **[2, 2006.01]**
9/20 • • by suspension polymerisation in the presence of the blowing agent **[2, 2006.01]**
9/22 • After-treatment of expandable particles; Forming foamed products **[2, 5, 2006.01]**
9/224 • • Surface treatment **[5, 2006.01]**
9/228 • • Forming foamed products **[5, 2006.01]**
9/232 • • • by sintering expandable particles **[5, 2006.01]**
9/236 • • • using binding agents **[5, 2006.01]**
9/24 • by surface fusion and bonding of particles to form voids, e.g. sintering (of expandable particles C08J 9/232) **[2, 5, 2006.01]**
9/26 • by elimination of a solid phase from a macromolecular composition or article, e.g. leaching out **[2, 2006.01]**
9/28 • by elimination of a liquid phase from a macromolecular composition or article, e.g. drying of coagulum **[2, 2006.01]**
9/30 • by mixing gases into liquid compositions or plastisols, e.g. frothing with air **[2, 2006.01]**
9/32 • from compositions containing micro-balloons, e.g. syntactic foams **[2, 2006.01]**
9/33 • Agglomerating foam fragments, e.g. waste foam **[5, 2006.01]**
9/34 • Chemical features in the manufacture of articles consisting of a foamed macromolecular core and a macromolecular surface layer having a higher density than the core **[2, 2006.01]**
9/35 • Composite foams, i.e. continuous macromolecular foams containing discontinuous cellular particles or fragments **[5, 2006.01]**

9/36 • After-treatment (C08J 9/22 takes precedence) **[2, 5, 2006.01]**
9/38 • • Destruction of cell membranes **[2, 2006.01]**
9/40 • • Impregnation **[2, 2006.01]**
9/42 • • • with macromolecular compounds **[2, 2006.01]**

11/00 Recovery or working-up of waste materials (recovery of plastics B29B 17/00; polymerisation processes involving purification or recycling of waste polymers or their depolymerisation products C08B, C08C, C08F, C08G, C08H) **[4, 2006.01]**
11/02 • of solvents, plasticisers or unreacted monomers **[4, 2006.01]**
11/04 • of polymers **[2, 2006.01]**
11/06 • • without chemical reactions **[4, 2006.01]**
11/08 • • • using selective solvents for polymer components **[4, 2006.01]**
11/10 • • by chemically breaking down the molecular chains of polymers or breaking of crosslinks, e.g. devulcanisation (depolymerisation to the original monomer C07) **[4, 2006.01]**
11/12 • • • by dry-heat treatment only **[4, 2006.01]**
11/14 • • • by treatment with steam or water **[4, 2006.01]**
11/16 • • • by treatment with inorganic material (C08J 11/14 takes precedence) **[4, 2006.01]**
11/18 • • • by treatment with organic material **[4, 2006.01]**
11/20 • • • • by treatment with hydrocarbons or halogenated hydrocarbons **[4, 2006.01]**
11/22 • • • • by treatment with organic oxygen-containing compounds **[4, 2006.01]**
11/24 • • • • • containing hydroxyl groups **[4, 2006.01]**
11/26 • • • • • containing carboxylic acid groups, their anhydrides or esters **[4, 2006.01]**
11/28 • • • • by treatment with organic compounds containing nitrogen, sulfur or phosphorus **[4, 2006.01]**

99/00 Subject matter not provided for in other groups of this subclass [2006.01]

C08K USE OF INORGANIC OR NON-MACROMOLECULAR ORGANIC SUBSTANCES AS COMPOUNDING INGREDIENTS (paints, inks, varnishes, dyes, polishes, adhesives C09) [2]

Note(s) [2, 4, 6, 2006.01]

1. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, an ingredient is classified in the last appropriate place.
2. In this subclass:
   - a mixture of ingredients is classified in the most indented group covering all the essential ingredients of the mixture, e.g.:
     a mixture of a monohydroxylic and a polyhydroxylic alcohol C08K 5/05;
     a mixture of two polyhydroxylic alcohols C08K 5/053;
     a mixture of an alcohol and an ether C08K 5/04;
     a mixture of an ether and an amine C08K 5/00;
     a mixture of an amine and a metal C08K 13/02;
   - ammonium salts are classified in the same way as metal salts.
3. In this subclass, any ingredient of a mixture which is not identified by the classification according to Note (2) above, and the use of which is determined to be novel and non-obvious, must also be classified in this subclass according to Note (1). The ingredient can be either a single compound or a composition in itself.
4. Any ingredient of a mixture which is not identified by the classification according to Notes (2) or (3) above, and which is considered to represent information of interest for search, may also be classified in this subclass according to Note (1). This can, for example, be the case when it is considered of interest to enable searching of mixtures using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

3/00 Use of inorganic ingredients [2, 2006.01]
3/02 • Elements **[2, 2006.01]**
3/04 • • Carbon **[2, 2006.01]**
3/06 • • Sulfur **[2, 2006.01]**
3/08 • • Metals **[2, 2006.01]**
3/10 • Metal compounds **[2, 2006.01]**
3/12 • • Hydrides **[2, 2006.01]**
3/14 • • Carbides **[2, 2006.01]**
3/16 • Halogen-containing compounds **[2, 2006.01]**
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5/37 • • Thiols **[2, 7, 2006.01]**
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5/526 • • • • • with hydroxyaryl compounds **[5, 2006.01]**
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5/5397 • • • • Phosphine oxides **[5, 2006.01]**
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5/541 • • containing oxygen **[7, 2006.01]**
5/5415 • • • containing at least one Si—O bond **[7, 2006.01]**
5/5419 • • • • containing at least one Si—C bond **[7, 2006.01]**
5/5425 • • • containing at least one C=C bond **[7, 2006.01]**
5/5435 • • • containing oxygen in a ring **[7, 2006.01]**
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5/5445 • • • containing at least one Si—N bond **[7, 2006.01]**
5/5455 • • • containing at least one >N-C(=O)- group **[7, 2006.01]**
5/5465 • • • containing at least one C=N bond **[7, 2006.01]**
5/5475 • • • containing at least one C≡N bond **[7, 2006.01]**
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5/549 • • containing silicon in a ring **[7, 2006.01]**
5/55 • Boron-containing compounds **[2, 2006.01]**
5/56 • Organo-metallic compounds, i.e. organic compounds containing a metal-to-carbon bond **[2, 2006.01]**
5/57 • • Organo-tin compounds **[2, 2006.01]**
5/58 • • • containing sulfur **[2, 2006.01]**
5/59 • Arsenic- or antimony-containing compounds **[2, 2006.01]**

7/00 Use of ingredients characterised by shape [2, 2006.01]
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7/04 • • inorganic **[2, 2006.01]**
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7/22 • Expanded, porous or hollow particles **[2, 2006.01]**
7/24 • • inorganic **[2, 2006.01]**
7/26 • • • Silicon-containing compounds **[2, 2006.01]**
7/28 • • • Glass **[2, 2006.01]**

9/00 Use of pretreated ingredients (use of pretreated fibrous materials in the manufacture of articles or shaped materials containing macromolecular substances C08J 5/06) **[2, 2006.01]**
9/02 • Ingredients treated with inorganic substances **[2, 2006.01]**
9/04 • Ingredients treated with organic substances **[2, 2006.01]**
9/06 • • with silicon-containing compounds **[2, 2006.01]**
9/08 • Ingredients agglomerated by treatment with a binding agent **[2, 2006.01]**
9/10 • Encapsulated ingredients **[2, 2006.01]**
9/12 • Adsorbed ingredients **[2, 2006.01]**

11/00 Use of ingredients of unknown constitution, e.g. undefined reaction products [2, 2006.01]

13/00 Use of mixtures of ingredients not covered by any single one of main groups C08K 3/00-C08K 11/00, each of these compounds being essential [4, 2006.01]
13/02 • Organic and inorganic ingredients **[4, 2006.01]**
13/04 • Ingredients characterised by their shape and organic or inorganic ingredients **[4, 2006.01]**
13/06 • Pretreated ingredients and ingredients covered by the main groups C08K 3/00-C08K 7/00 **[4, 2006.01]**
13/08 • Ingredients of unknown constitution and ingredients covered by the main groups C08K 3/00-C08K 9/00 **[4, 2006.01]**

C08L COMPOSITIONS OF MACROMOLECULAR COMPOUNDS (compositions based on polymerisable monomers C08F, C08G; artificial filaments or fibres D01F; textile treating compositions D06) **[2]**

Note(s) [2, 2006.01]

1. In this subclass, the following term is used with the meaning indicated:
   - "rubber" includes:
     a. natural or conjugated diene rubbers;
     b. rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for compositions of such macromolecular compounds).
2. In this subclass:
   a. compositions are classified according to the mutual proportions by weight of only the macromolecular constituents;
   b. compositions are classified according to the macromolecular constituent or constituents present in the highest proportion; if all these constituents are present in equal proportions the composition is classified according to each of these constituents.

3. Any macromolecular constituent of a composition which is not identified by the classification according to Note (2) above, and the use of which is determined to be novel and non-obvious, must also be classified in this subclass. For example, a composition containing 80 parts polyethene and 20 parts polyvinyl chloride is classified in both groups C08L 23/06 and C08L 27/06, if the use of polyvinyl chloride is determined to be novel and non-obvious.
4. Any macromolecular constituent of a composition which is not identified by the classification according to Notes (2) or (3) above, and which is considered to represent information of interest for search, may also be classified in this subclass. This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

Subclass index

Compositions of polysaccharides or of their derivatives.....1/00-5/00
Compositions of rubbers or of their derivatives.....7/00-21/00
Compositions of macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds; Compositions of derivatives of such polymers.....23/00-57/00
Compositions of macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds; Compositions of derivatives of such polymers.....59/00-87/00
Compositions of natural macromolecular compounds or of derivatives thereof.....89/00-99/00
Compositions of unspecified macromolecular compounds.....101/00

Compositions of polysaccharides or of their derivatives [2]

1/00 Compositions of cellulose, modified cellulose, or cellulose derivatives [2, 2006.01]
1/02 • Cellulose; Modified cellulose **[2, 2006.01]**
1/04 • • Oxycellulose; Hydrocellulose **[2, 2006.01]**
1/06 • • Cellulose hydrate **[2, 2006.01]**
1/08 • Cellulose derivatives **[2, 2006.01]**
1/10 • • Esters of organic acids **[2, 2006.01]**
1/12 • • • Cellulose acetate **[2, 2006.01]**
1/14 • • • Mixed esters, e.g. cellulose acetate-butyrate **[2, 2006.01]**
1/16 • • Esters of inorganic acids **[2, 2006.01]**
1/18 • • • Cellulose nitrate **[2, 2006.01]**
1/20 • • Esters of both organic acids and inorganic acids **[2, 2006.01]**
1/22 • • Cellulose xanthate **[2, 2006.01]**
1/24 • • • Viscose **[2, 2006.01]**
1/26 • • Cellulose ethers **[2, 2006.01]**
1/28 • • • Alkyl ethers **[2, 2006.01]**
1/30 • • • Aryl ethers; Aralkyl ethers **[2, 2006.01]**
1/32 • • Cellulose ether-esters **[2, 2006.01]**

3/00 Compositions of starch, amylose or amylopectin or of their derivatives or degradation products [2, 2006.01]
3/02 • Starch; Degradation products thereof, e.g. dextrin **[2, 2006.01]**
3/04 • Starch derivatives **[2, 2006.01]**
3/06 • • Esters **[2, 2006.01]**
3/08 • • Ethers **[2, 2006.01]**
3/10 • • Oxidised starch **[2, 2006.01]**
3/12 • Amylose; Amylopectin; Degradation products thereof **[2, 2006.01]**
3/14 • Amylose derivatives; Amylopectin derivatives **[2, 2006.01]**
3/16 • • Esters **[2, 2006.01]**
3/18 • • Ethers **[2, 2006.01]**
3/20 • • Oxidised amylose; Oxidised amylopectin **[2, 2006.01]**

5/00 Compositions of polysaccharides or of their derivatives not provided for in group C08L 1/00 or C08L 3/00 [2, 2006.01]
5/02 • Dextran; Derivatives thereof **[2, 2006.01]**
5/04 • Alginic acid; Derivatives thereof **[2, 2006.01]**
5/06 • Pectin; Derivatives thereof **[2, 2006.01]**
5/08 • Chitin; Chondroitin sulfate; Hyaluronic acid; Derivatives thereof **[2, 2006.01]**
5/10 • Heparin; Derivatives thereof **[2, 2006.01]**
5/12 • Agar-agar; Derivatives thereof **[2, 2006.01]**
5/14 • Hemicellulose; Derivatives thereof **[2, 2006.01]**
5/16 • Cyclodextrin; Derivatives thereof **[2, 2006.01]**

Compositions of rubbers or of their derivatives [2]

7/00 Compositions of natural rubber [2, 2006.01]
7/02 • Latex **[2, 2006.01]**

9/00 Compositions of homopolymers or copolymers of conjugated diene hydrocarbons [2, 2006.01]
9/02 • Copolymers with acrylonitrile **[2, 2006.01]**
9/04 • • Latex **[2, 2006.01]**
9/06 • Copolymers with styrene **[2, 2006.01]**
9/08 • • Latex **[2, 2006.01]**
9/10 • Latex (C08L 9/04, C08L 9/08 take precedence) **[2, 2006.01]**

11/00 Compositions of homopolymers or copolymers of chloroprene [2, 2006.01]
11/02 • Latex **[2, 2006.01]**

13/00 Compositions of rubbers containing carboxyl groups [2, 2006.01]
13/02 • Latex **[2, 2006.01]**

15/00 Compositions of rubber derivatives (C08L 11/00, C08L 13/00 take precedence) **[4, 2006.01]**
15/02 • Rubber derivatives containing halogen **[2, 2006.01]**

17/00 Compositions of reclaimed rubber [2, 2006.01]

19/00 Compositions of rubbers not provided for in groups C08L 7/00-C08L 17/00 [2, 2006.01]
19/02 • Latex **[2, 2006.01]**

21/00 Compositions of unspecified rubbers [2, 2006.01]
21/02 • Latex **[2, 2006.01]**

Compositions of macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds [2]

Note(s) [2006.01]

1. In groups C08L 23/00-C08L 49/00, "aliphatic radical" means an acyclic or a non-aromatic carbocyclic carbon skeleton which is considered to be terminated by every bond to:
   a. an element other than carbon;
   b. a carbon atom having a double bond to one atom other than carbon;
   c. an aromatic carbocyclic ring or a heterocyclic ring.
2. In groups C08L 23/00-C08L 49/00, in the absence of an indication to the contrary, a copolymer is classified according to the major monomeric component.

23/00 Compositions of homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Compositions of derivatives of such polymers [2, 2006.01]

23/02 • not modified by chemical after-treatment **[2, 2006.01]**
23/04 • • Homopolymers or copolymers of ethene **[2, 2006.01]**
23/06 • • • Polyethene **[2, 2006.01]**
23/08 • • • Copolymers of ethene (C08L 23/16 takes precedence) **[2, 2006.01]**
23/10 • • Homopolymers or copolymers of propene **[2, 2006.01]**
23/12 • • • Polypropene **[2, 2006.01]**
23/14 • • • Copolymers of propene (C08L 23/16 takes precedence) **[2, 2006.01]**
23/16 • • Ethene-propene or ethene-propene-diene copolymers **[2, 2006.01]**
23/18 • • Homopolymers or copolymers of hydrocarbons having four or more carbon atoms **[2, 2006.01]**
23/20 • • • having four to nine carbon atoms **[2, 2006.01]**
23/22 • • • • Copolymers of isobutene; Butyl rubber **[2, 2006.01]**
23/24 • • • having ten or more carbon atoms **[2, 2006.01]**
23/26 • modified by chemical after-treatment **[2, 2006.01]**
23/28 • • by reaction with halogens or halogen-containing compounds (C08L 23/32 takes precedence) **[2, 2006.01]**
23/30 • • by oxidation **[2, 2006.01]**
23/32 • • by reaction with phosphorus- or sulfur-containing compounds **[2, 2006.01]**
23/34 • • • by chlorosulfonation **[2, 2006.01]**
23/36 • • by reaction with nitrogen-containing compounds, e.g. by nitration **[2, 2006.01]**

25/00 Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Compositions of derivatives of such polymers [2, 2006.01]

25/02 • Homopolymers or copolymers of hydrocarbons **[2, 2006.01]**
25/04 • • Homopolymers or copolymers of styrene **[2, 2006.01]**
25/06 • • • Polystyrene **[2, 2006.01]**
25/08 • • • Copolymers of styrene (C08L 29/08, C08L 35/06, C08L 55/02 take precedence) **[2, 2006.01]**
25/10 • • • • with conjugated dienes **[2, 2006.01]**
25/12 • • • • with unsaturated nitriles **[2, 2006.01]**
25/14 • • • • with unsaturated esters **[2, 2006.01]**
25/16 • • Homopolymers or copolymers of alkyl-substituted styrenes **[2, 2006.01]**
25/18 • Homopolymers or copolymers of aromatic monomers containing elements other than carbon and hydrogen **[2, 2006.01]**

27/00 Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen; Compositions of derivatives of such polymers [2, 2006.01]

27/02 • not modified by chemical after-treatment **[2, 2006.01]**
27/04 • • containing chlorine atoms **[2, 2006.01]**
27/06 • • • Homopolymers or copolymers of vinyl chloride **[2, 2006.01]**
27/08 • • • Homopolymers or copolymers of vinylidene chloride **[2, 2006.01]**
27/10 • • containing bromine or iodine atoms **[2, 2006.01]**
27/12 • • containing fluorine atoms **[2, 2006.01]**
27/14 • • • Homopolymers or copolymers of vinyl fluoride **[2, 2006.01]**
27/16 • • • Homopolymers or copolymers of vinylidene fluoride **[2, 2006.01]**
27/18 • • • Homopolymers or copolymers of tetrafluoroethene **[2, 2006.01]**
27/20 • • • Homopolymers or copolymers of hexafluoropropene **[2, 2006.01]**
27/22 • modified by chemical after-treatment **[2, 2006.01]**
27/24 • • halogenated **[2, 2006.01]**

29/00 Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal, or ketal radical; Compositions of hydrolysed polymers of esters of unsaturated alcohols with saturated carboxylic acids; Compositions of derivatives of such polymers [2, 2006.01]

29/02 • Homopolymers or copolymers of unsaturated alcohols (C08L 29/14 takes precedence) **[2, 2006.01]**
29/04 • • Polyvinyl alcohol; Partially hydrolysed homopolymers or copolymers of esters of unsaturated alcohols with saturated carboxylic acids **[2, 2006.01]**
29/06 • • Copolymers of allyl alcohol **[2, 2006.01]**
29/08 • • • with vinyl aromatic monomers **[2, 2006.01]**
29/10 • Homopolymers or copolymers of unsaturated ethers (C08L 35/08 takes precedence) **[2, 2006.01]**
29/12 • Homopolymers or copolymers of unsaturated ketones **[2, 2006.01]**
29/14 • Homopolymers or copolymers of acetals or ketals obtained by polymerisation of unsaturated acetals or ketals or by after-treatment of polymers of unsaturated alcohols **[2, 2006.01]**

31/00 **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid, or of a haloformic acid** (of hydrolysed polymers C08L 29/00)**; Compositions of derivatives of such polymers [2, 2006.01]**

31/02 • Homopolymers or copolymers of esters of monocarboxylic acids **[2, 2006.01]**

31/04 • • Homopolymers or copolymers of vinyl acetate **[2, 2006.01]**

31/06 • Homopolymers or copolymers of esters of polycarboxylic acids **[2, 2006.01]**

31/08 • • of phthalic acid **[2, 2006.01]**

33/00 **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and only one being terminated by only one carboxyl radical, or of salts, anhydrides, esters, amides, imides, or nitriles thereof; Compositions of derivatives of such polymers [2, 2006.01]**

33/02 • Homopolymers or copolymers of acids; Metal or ammonium salts thereof **[2, 2006.01]**

33/04 • Homopolymers or copolymers of esters **[2, 2006.01]**

33/06 • • of esters containing only carbon, hydrogen, and oxygen, the oxygen atom being present only as part of the carboxyl radical **[2, 2006.01]**

33/08 • • • Homopolymers or copolymers of acrylic acid esters **[2, 2006.01]**

33/10 • • • Homopolymers or copolymers of methacrylic acid esters **[2, 2006.01]**

33/12 • • • • Homopolymers or copolymers of methyl methacrylate **[2, 2006.01]**

33/14 • • of esters containing halogen, nitrogen, sulfur, or oxygen atoms in addition to the carboxy oxygen **[2, 2006.01]**

33/16 • • • Homopolymers or copolymers of esters containing halogen atoms **[2, 2006.01]**

33/18 • Homopolymers or copolymers of nitriles **[2, 2006.01]**

33/20 • • Homopolymers or copolymers of acrylonitrile (C08L 55/02 takes precedence) **[2, 2006.01]**

33/22 • • Homopolymers or copolymers of nitriles containing four or more carbon atoms **[2, 2006.01]**

33/24 • Homopolymers or copolymers of amides or imides **[2, 2006.01]**

33/26 • • Homopolymers or copolymers of acrylamide or methacrylamide **[2, 2006.01]**

35/00 **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least one other carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Compositions of derivatives of such polymers [2, 2006.01]**

35/02 • Homopolymers or copolymers of esters (C08L 35/06, C08L 35/08 take precedence) **[2, 2006.01]**

35/04 • Homopolymers or copolymers of nitriles (C08L 35/06, C08L 35/08 take precedence) **[2, 2006.01]**

35/06 • Copolymers with vinyl aromatic monomers **[2, 2006.01]**

35/08 • Copolymers with vinyl ethers **[2, 2006.01]**

37/00 **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen** (of cyclic esters of polyfunctional acids C08L 31/00; of cyclic anhydrides of unsaturated acids C08L 35/00)**; Compositions of derivatives of such polymers [2, 2006.01]**

39/00 **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a single or double bond to nitrogen or by a heterocyclic ring containing nitrogen; Compositions of derivatives of such polymers [2, 2006.01]**

39/02 • Homopolymers or copolymers of vinylamine **[2, 2006.01]**

39/04 • Homopolymers or copolymers of monomers containing heterocyclic rings having nitrogen as ring member **[2, 2006.01]**

39/06 • • Homopolymers or copolymers of N-vinyl-pyrrolidones **[2, 2006.01]**

39/08 • • Homopolymers or copolymers of vinyl-pyridine **[2, 2006.01]**

41/00 **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a bond to sulfur or by a heterocyclic ring containing sulfur; Compositions of derivatives of such polymers [2, 2006.01]**

43/00 **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing boron, silicon, phosphorus, selenium, tellurium, or a metal; Compositions of derivatives of such polymers [2, 2006.01]**

43/02 • Homopolymers or copolymers of monomers containing phosphorus **[2, 2006.01]**

43/04 • Homopolymers or copolymers of monomers containing silicon **[2, 2006.01]**

45/00 **Compositions of homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system; Compositions of derivatives of such polymers** (of cyclic esters of polyfunctional acids C08L 31/00; of cyclic anhydrides or imides C08L 35/00) **[2, 2006.01]**

45/02 • of coumarone-indene polymers **[2, 2006.01]**

47/00 **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds; Compositions of derivatives of such polymers** (C08L 45/00 takes precedence; of conjugated diene rubbers C08L 9/00-C08L 21/00) **[2, 2006.01]**

49/00 **Compositions of homopolymers or copolymers of compounds having one or more carbon-to-carbon triple bonds; Compositions of derivatives of such polymers [2, 2006.01]**

51/00 **Compositions of graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds** (for ABS polymers C08L 55/02)**; Compositions of derivatives of such polymers [2, 2006.01]**

51/02 • grafted on to polysaccharides **[2, 2006.01]**

51/04 • grafted on to rubbers **[2, 2006.01]**

51/06 • grafted on to homopolymers or copolymers of aliphatic hydrocarbons containing only one carbon-to-carbon double bond **[2, 2006.01]**

51/08 • grafted on to macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[2, 2006.01]**

51/10 • grafted on to inorganic materials **[3, 2006.01]**

53/00 **Compositions of block copolymers containing at least one sequence of a polymer obtained by reactions only involving carbon-to-carbon unsaturated bonds; Compositions of derivatives of such polymers [2, 2006.01]**

53/02 • of vinyl aromatic monomers and conjugated dienes **[2, 2006.01]**

55/00 **Compositions of homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups C08L 23/00-C08L 53/00 [2, 2006.01]**

55/02 • ABS [Acrylonitrile-Butadiene-Styrene] polymers **[2, 2006.01]**

55/04 • Polyadducts obtained by the diene synthesis **[2, 2006.01]**

57/00 **Compositions of unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds [2, 2006.01]**

57/02 • Copolymers of mineral oil hydrocarbons **[2, 2006.01]**

57/04 • Copolymers in which only the monomer in minority is defined **[2, 2006.01]**

57/06 • Homopolymers or copolymers containing elements other than carbon and hydrogen **[2, 2006.01]**

57/08 • • containing halogen atoms **[2, 2006.01]**

57/10 • • containing oxygen atoms **[2, 2006.01]**

57/12 • • containing nitrogen atoms **[2, 2006.01]**

Compositions of macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds [2]

59/00 **Compositions of polyacetals; Compositions of derivatives of polyacetals** (of polyvinyl acetals C08L 29/14) **[2, 2006.01]**

59/02 • Polyacetals containing polyoxymethylene sequences only **[2, 2006.01]**

59/04 • Copolyoxymethylenes **[3, 2006.01]**

61/00 **Compositions of condensation polymers of aldehydes or ketones** (with polyalcohols C08L 59/00; with polynitriles C08L 77/00)**; Compositions of derivatives of such polymers [2, 2006.01]**

61/02 • Condensation polymers of aldehydes or ketones only **[2, 2006.01]**

61/04 • Condensation polymers of aldehydes or ketones with phenols only **[2, 2006.01]**

61/06 • • of aldehydes with phenols **[2, 2006.01]**

61/08 • • • with monohydric phenols **[2, 2006.01]**

61/10 • • • • Phenol-formaldehyde condensates **[2, 2006.01]**

61/12 • • • with polyhydric phenols **[2, 2006.01]**

61/14 • • • Modified phenol-aldehyde condensates **[2, 2006.01]**

61/16 • • of ketones with phenols **[2, 2006.01]**

61/18 • Condensation polymers of aldehydes or ketones with aromatic hydrocarbons or their halogen derivatives only **[2, 2006.01]**

61/20 • Condensation polymers of aldehydes or ketones with only compounds containing hydrogen attached to nitrogen (with amino phenols C08L 61/04) **[2, 2006.01]**

61/22 • • of aldehydes with acyclic or carbocyclic compounds **[2, 2006.01]**

61/24 • • • with urea or thiourea **[2, 2006.01]**

61/26 • • of aldehydes with heterocyclic compounds **[2, 2006.01]**

61/28 • • • with melamine **[2, 2006.01]**

61/30 • • of aldehydes with heterocyclic and acyclic or carbocyclic compounds **[2, 2006.01]**

61/32 • • Modified amine-aldehyde condensates **[2, 2006.01]**

61/34 • Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups C08L 61/04, C08L 61/18, and C08L 61/20 **[2, 2006.01]**

63/00 **Compositions of epoxy resins; Compositions of derivatives of epoxy resins [2, 2006.01]**

63/02 • Polyglycidyl ethers of bis-phenols **[2, 2006.01]**

63/04 • Epoxynovolacs **[2, 2006.01]**

63/06 • Triglycidylisocyanurates **[2, 2006.01]**

63/08 • Epoxidised polymerised polyenes **[2, 2006.01]**

63/10 • Epoxy resins modified by unsaturated compounds **[2, 2006.01]**

Note(s) [2]

In groups C08L 65/00-C08L 85/00, in the absence of an indication to the contrary, compositions of macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess.

65/00 **Compositions of macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain** (C08L 7/00-C08L 57/00, C08L 61/00 take precedence)**; Compositions of derivatives of such polymers [2, 2006.01]**

65/02 • Polyphenylenes **[2, 2006.01]**

65/04 • Polyxylylenes **[2, 2006.01]**

67/00 **Compositions of polyesters obtained by reactions forming a carboxylic ester link in the main chain** (of polyester-amides C08L 77/12; of polyester-imides C08L 79/08)**; Compositions of derivatives of such polymers [2, 2006.01]**

67/02 • Polyesters derived from dicarboxylic acids and dihydroxy compounds (C08L 67/06 takes precedence) **[2, 2006.01]**

67/03 • • the dicarboxylic acids and dihydroxy compounds having the hydroxy and the carboxyl groups directly linked to aromatic rings **[5, 2006.01]**

67/04 • Polyesters derived from hydroxy carboxylic acids, e.g. lactones (C08L 67/06 takes precedence) **[2, 2006.01]**
67/06 • Unsaturated polyesters **[2, 2006.01]**
67/07 • • having terminal carbon-to-carbon unsaturated bonds **[5, 2006.01]**
67/08 • Polyesters modified with higher fatty oils or their acids, or with natural resins or resin acids **[2, 2006.01]**

69/00 Compositions of polycarbonates; Compositions of derivatives of polycarbonates [2, 2006.01]

71/00 Compositions of polyethers obtained by reactions forming an ether link in the main chain (of polyacetals C08L 59/00; of epoxy resins C08L 63/00; of polythioether-ethers C08L 81/02; of polyethersulfones C08L 81/06)**; Compositions of derivatives of such polymers [2, 2006.01]**
71/02 • Polyalkylene oxides **[2, 2006.01]**
71/03 • • Polyepihalohydrins **[5, 2006.01]**
71/08 • Polyethers derived from hydroxy compounds or from their metallic derivatives (C08L 71/02 takes precedence) **[5, 2006.01]**
71/10 • • from phenols **[5, 2006.01]**
71/12 • • • Polyphenylene oxides **[5, 2006.01]**
71/14 • • Furfuryl alcohol polymers **[5, 2006.01]**

73/00 Compositions of macromolecular compounds obtained by reactions forming a linkage containing oxygen or oxygen and carbon in the main chain, not provided for in groups C08L 59/00-C08L 71/00; Compositions of derivatives of such polymers [2, 2006.01]
73/02 • Polyanhydrides **[2, 2006.01]**

75/00 Compositions of polyureas or polyurethanes; Compositions of derivatives of such polymers [2, 2006.01]
75/02 • Polyureas **[2, 2006.01]**
75/04 • Polyurethanes **[2, 2006.01]**
75/06 • • from polyesters **[2, 2006.01]**
75/08 • • from polyethers **[2, 2006.01]**
75/10 • • from polyacetals **[2, 2006.01]**
75/12 • • from compounds containing nitrogen and active hydrogen, the nitrogen atom not being part of an isocyanate group **[2, 2006.01]**
75/14 • • Polyurethanes having carbon-to-carbon unsaturated bonds **[5, 2006.01]**
75/16 • • • having terminal carbon-to-carbon unsaturated bonds **[5, 2006.01]**

77/00 Compositions of polyamides obtained by reactions forming a carboxylic amide link in the main chain (of polyhydrazides C08L 79/06; of polyamide-imides or polyamide acids C08L 79/08)**; Compositions of derivatives of such polymers [2, 2006.01]**
77/02 • Polyamides derived from omega-amino carboxylic acids or from lactams thereof (C08L 77/10 takes precedence) **[2, 2006.01]**
77/04 • Polyamides derived from alpha-amino carboxylic acids (C08L 77/10 takes precedence) **[2, 2006.01]**
77/06 • Polyamides derived from polyamines and polycarboxylic acids (C08L 77/10 takes precedence) **[2, 2006.01]**
77/08 • • from polyamines and polymerised unsaturated fatty acids **[2, 2006.01]**
77/10 • Polyamides derived from aromatically bound amino and carboxyl groups of amino carboxylic acids or of polyamines and polycarboxylic acids **[2, 2006.01]**
77/12 • Polyester-amides **[2, 2006.01]**

79/00 Compositions of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen with or without oxygen, or carbon only, not provided for in groups C08L 61/00-C08L 77/00 [2, 2006.01]
79/02 • Polyamines **[2, 2006.01]**
79/04 • Polycondensates having nitrogen-containing heterocyclic rings in the main chain; Polyhydrazides; Polyamide acids or similar polyimide precursors **[2, 2006.01]**
79/06 • • Polyhydrazides; Polytriazoles; Polyamino-triazoles; Polyoxadiazoles **[2, 2006.01]**
79/08 • • Polyimides; Polyester-imides; Polyamide-imides; Polyamide acids or similar polyimide precursors **[2, 2006.01]**

81/00 Compositions of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing sulfur with or without nitrogen, oxygen, or carbon only; Compositions of polysulfones; Compositions of derivatives of such polymers [2, 2006.01]
81/02 • Polythioethers; Polythioether-ethers **[2, 2006.01]**
81/04 • Polysulfides **[2, 2006.01]**
81/06 • Polysulfones; Polyethersulfones **[2, 2006.01]**
81/08 • Polysulfonates **[2, 2006.01]**
81/10 • Polysulfonamides; Polysulfonimides **[2, 2006.01]**

83/00 Compositions of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon with or without sulfur, nitrogen, oxygen, or carbon only; Compositions of derivatives of such polymers [2, 2006.01]
83/02 • Polysilicates **[2, 2006.01]**
83/04 • Polysiloxanes **[2, 2006.01]**
83/05 • • containing silicon bound to hydrogen **[4, 2006.01]**
83/06 • • containing silicon bound to oxygen-containing groups (C08L 83/12 takes precedence) **[2, 2006.01]**
83/07 • • containing silicon bound to unsaturated aliphatic groups **[4, 2006.01]**
83/08 • • containing silicon bound to organic groups containing atoms other than carbon, hydrogen, and oxygen **[2, 2006.01]**
83/10 • Block- or graft-copolymers containing polysiloxane sequences (obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane C08L 51/08, C08L 53/00) **[2, 2006.01]**
83/12 • • containing polyether sequences **[2, 2006.01]**
83/14 • in which at least two but not all the silicon atoms are connected by linkages other than oxygen atoms (C08L 83/10 takes precedence) **[2, 2006.01]**
83/16 • in which all the silicon atoms are connected by linkages other than oxygen atoms **[2, 2006.01]**

85/00 Compositions of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing atoms other than silicon, sulfur, nitrogen, oxygen, and carbon; Compositions of derivatives of such polymers [2, 2006.01]
85/02 • containing phosphorus **[2, 2006.01]**

85/04 • containing boron **[2, 2006.01]**

87/00 Compositions of unspecified macromolecular compounds, obtained otherwise than by polymerisation reactions only involving unsaturated carbon-to-carbon bonds [2, 2006.01]

Compositions of natural macromolecular compounds or of derivatives thereof [2]

89/00 Compositions of proteins; Compositions of derivatives thereof [2, 2006.01]

89/02 • Casein-aldehyde condensates **[2, 2006.01]**

89/04 • Products derived from waste materials, e.g. horn, hoof or hair **[2, 2006.01]**

89/06 • • derived from leather or skin **[2, 2006.01]**

91/00 Compositions of oils, fats or waxes; Compositions of derivatives thereof [2, 2006.01]

91/02 • Vulcanised oils, e.g. factice **[2, 2006.01]**

91/04 • Linoxyn **[2, 2006.01]**

91/06 • Waxes **[2, 2006.01]**

91/08 • • Mineral waxes **[2, 2006.01]**

93/00 Compositions of natural resins; Compositions of derivatives thereof (of polysaccharides C08L 1/00-C08L 5/00; of natural rubber C08L 7/00) **[2, 2006.01]**

93/02 • Shellac **[2, 2006.01]**

93/04 • Rosin **[2, 2006.01]**

95/00 Compositions of bituminous materials, e.g. asphalt, tar or pitch [2, 2006.01]

97/00 Compositions of lignin-containing materials (of polysaccharides C08L 1/00-C08L 5/00) **[2, 2006.01]**

97/02 • Lignocellulosic material, e.g. wood, straw or bagasse **[2, 2006.01]**

99/00 Compositions of natural macromolecular compounds or of derivatives thereof not provided for in groups C08L 1/00-C08L 7/00 or C08L 89/00-C08L 97/00 [2, 2006.01]

101/00 Compositions of unspecified macromolecular compounds [2, 2006.01]

101/02 • characterised by the presence of specified groups **[2, 2006.01]**

101/04 • • containing halogen atoms **[2, 2006.01]**

101/06 • • containing oxygen atoms **[2, 2006.01]**

101/08 • • • Carboxyl groups **[2, 2006.01]**

101/10 • • containing hydrolysable silane groups **[4, 2006.01]**

101/12 • characterised by physical features, e.g. anisotropy, viscosity or electrical conductivity **[6, 2006.01]**

101/14 • • the macromolecular compounds being water soluble or water swellable, e.g. aqueous gels **[6, 2006.01]**

101/16 • the macromolecular compounds being biodegradable **[7, 2006.01]**

C09 DYES; PAINTS; POLISHES; NATURAL RESINS; ADHESIVES; COMPOSITIONS NOT OTHERWISE PROVIDED FOR; APPLICATIONS OF MATERIALS NOT OTHERWISE PROVIDED FOR

C09B ORGANIC DYES OR CLOSELY-RELATED COMPOUNDS FOR PRODUCING DYES; MORDANTS; LAKES

(fermentation or enzyme-using processes to synthesise a desired chemical compound C12P)

Note(s)

In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a compound is classified in the last appropriate place.

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5/30 • • 1.2 azoles of the anthracene series **[1, 2006.01]**
5/32 • • 1.3 azoles of the anthracene series **[1, 2006.01]**
5/34 • • Anthraquinone acridones or thioxanthones **[1, 2006.01]**
5/36 • • • Amino acridones **[1, 2006.01]**
5/38 • • • Compounds containing acridone and carbazole rings **[1, 2006.01]**
5/40 • • • Condensation products of benzanthronyl-amino anthraquinones **[1, 2006.01]**
5/42 • • Pyridino anthraquinones **[1, 2006.01]**
5/44 • • Azines of the anthracene series **[1, 2006.01]**
5/46 • • • Para-diazines **[1, 2006.01]**
5/48 • • • • Bis-anthraquinonediazines (indanthrone) **[1, 2006.01]**
5/50 • • • • • Preparation by alkaline melting of 2-amino anthraquinones **[1, 2006.01]**
5/52 • • • • • Preparation by condensation of 1.2-halogeno-amino anthraquinones **[1, 2006.01]**
5/54 • • • • • Preparation from 2-amino anthrahydroquinones **[1, 2006.01]**
5/56 • • • • • Preparation from starting materials already containing the indanthrene nucleus **[1, 2006.01]**
5/58 • • • • • • by halogenation **[1, 2006.01]**
5/60 • • • Thiazines; Oxazines **[1, 2006.01]**
5/62 • Cyclic imides or amidines of peri-dicarboxylic acids of the anthracene, benzanthrene, or perylene series **[1, 2006.01]**

6/00 Anthracene dyes not provided for above [2, 2006.01]

7/00 Indigoid dyes [1, 2006.01]
7/02 • Bis-indole indigos **[1, 2006.01]**
7/04 • • Halogenation thereof **[1, 2006.01]**
7/06 • Indone-thionaphthene indigos **[1, 2006.01]**
7/08 • Other indole-indigos **[1, 2006.01]**
7/10 • Bis-thionaphthene indigos **[1, 2006.01]**
7/12 • Other thionaphthene indigos **[1, 2006.01]**

9/00 Esters or ester-salts of leuco compounds of vat dyestuffs [1, 2006.01]
9/02 • of anthracene dyes **[1, 2006.01]**
9/04 • of indigoid dyes **[1, 2006.01]**

11/00 Diaryl- or triarylmethane dyes [1, 2006.01]
11/02 • derived from diarylmethanes **[1, 2006.01]**
11/04 • derived from triarylmethanes **[1, 2006.01]**
11/06 • • Hydroxy derivatives of triarylmethanes in which at least one —OH group is bound to an aryl nucleus **[1, 2006.01]**
11/08 • • • Phthaleins **[1, 2006.01]**
11/10 • • Amino derivatives of triarylmethanes **[1, 2006.01]**
11/12 • • • without any —OH group bound to an aryl nucleus **[1, 2006.01]**
11/14 • • • • Preparation from aromatic aldehydes, aromatic carboxylic acids or derivatives thereof, and aromatic amines **[1, 2006.01]**
11/16 • • • • Preparation from diarylketones or diarylcarbinols **[1, 2006.01]**
11/18 • • • • Preparation by oxidation **[1, 2006.01]**
11/20 • • • • Preparation from other triarylmethane derivatives **[1, 2006.01]**
11/22 • • • containing —OH groups bound to an aryl nucleus **[1, 2006.01]**
11/24 • • • Phthaleins containing amino groups **[1, 2006.01]**
11/26 • • Triarylmethane dyes in which at least one of the aromatic nuclei is heterocyclic **[1, 2006.01]**
11/28 • Pyronines **[1, 2006.01]**

13/00 Oxyketone dyes [1, 2006.01]
13/02 • of the naphthalene series, e.g. naphthazarin **[1, 2006.01]**
13/04 • of the pyrene series **[1, 2006.01]**
13/06 • of the acetophenone series **[1, 2006.01]**

Acridine, azine, oxazine, or thiazine dyes

15/00 Acridine dyes [1, 2006.01]

17/00 Azine dyes [1, 2006.01]
17/02 • of the benzene series **[1, 2006.01]**
17/04 • of the naphthalene series **[1, 2006.01]**
17/06 • Fluorindine or its derivatives **[1, 2006.01]**

19/00 Oxazine dyes [1, 2006.01]
19/02 • Bisoxazines prepared from amino quinones **[1, 2006.01]**

21/00 Thiazine dyes [1, 2006.01]

Quinoline or polymethine dyes

23/00 Methine or polymethine dyes, e.g. cyanine dyes [1, 2006.01]
23/01 • characterised by the methine chain **[3, 2006.01]**
23/02 • • containing an odd number of ›CH groups **[1, 3, 2006.01]**
23/04 • • • one ›CH group, e.g. cyanines, isocyanines, pseudocyanines **[1, 3, 2006.01]**
23/06 • • • three ›CH groups, e.g. carbocyanines **[1, 3, 2006.01]**
23/08 • • • more than three ›CH groups, e.g. polycarbocyanines **[1, 3, 2006.01]**
23/10 • • containing an even number of ›CH groups **[1, 3, 2006.01]**
23/12 • the polymethine chain being branched **[1, 2006.01]**
23/14 • Styryl dyes **[1, 2006.01]**
23/16 • the polymethine chain containing hetero atoms **[1, 2006.01]**

25/00 Quinophthalones [1, 2006.01]

26/00 Hydrazone dyes; Triazene dyes [3, 2006.01]
26/02 • Hydrazone dyes (hydrazone-azo dyes C09B 56/18) **[3, 2006.01]**
26/04 • • cationic **[3, 2006.01]**
26/06 • Triazene dyes (triazene-azo dyes C09B 56/20) **[3, 2006.01]**

Azo dyes

Note(s) [4]

In groups C09B 27/00-C09B 46/00, arrows in the formulae of the various types of azo dyes indicate which part of an azo dye, prepared by diazotising and coupling, is derived from the diazo component and which part is derived from the coupling component. The arrow is pointing to the part derived from the coupling component.

27/00 Azo dyes in which the azo group is formed in any way other than by diazotising and coupling [1, 2006.01]
27/06 • Tartrazines **[3, 2006.01]**

29/00 Monoazo dyes prepared by diazotising and coupling [1, 2006.01]
29/01 • characterised by the diazo component **[3, 2006.01]**
29/02 • • from diazotised o-amino-hydroxy compounds **[1, 3, 2006.01]**
29/03 • • from diazotised o-amino carboxylic acids or o-amino-sulfonic acids **[3, 2006.01]**
29/033 • • from diazotised amines containing a heterocyclic ring **[3, 2006.01]**
29/036 • • • the heterocyclic ring containing only nitrogen as hetero atoms **[3, 2006.01]**
29/039 • • • the heterocyclic ring containing nitrogen and sulfur as hetero atoms **[3, 2006.01]**
29/042 • • • • the hetero ring being a thiazole ring **[3, 2006.01]**
29/045 • • • • • Benzothiazoles **[3, 2006.01]**
29/048 • • • • the hetero ring being a thiadiazole ring **[3, 2006.01]**
29/06 • from coupling components containing amino as the only directing group **[1, 2006.01]**
29/08 • • Amino benzenes **[1, 2006.01]**
29/085 • • • coupled with diazotised anilines **[3, 2006.01]**
29/09 • • • coupled with diazotised amines containing heterocyclic rings **[3, 2006.01]**
29/095 • • Amino naphthalenes **[3, 2006.01]**
29/10 • from coupling components containing hydroxy as the only directing group **[1, 2006.01]**
29/12 • • of the benzene series **[1, 2006.01]**
29/14 • • • Hydroxy carboxylic acids **[1, 2006.01]**
29/15 • • of the naphthalene series **[3, 2006.01]**
29/16 • • • Naphthol-sulfonic acids **[1, 3, 2006.01]**
29/18 • • ortho-Hydroxy carbonamides **[1, 2006.01]**
29/20 • • • of the naphthalene series **[1, 2006.01]**
29/22 • • • of heterocyclic compounds **[1, 2006.01]**
29/24 • from coupling components containing both hydroxy and amino directing groups **[1, 2006.01]**
29/26 • • Amino phenols **[1, 2006.01]**
29/28 • • Amino naphthols **[1, 2006.01]**
29/30 • • • Amino naphtholsulfonic acid **[1, 2006.01]**
29/32 • from coupling components containing a reactive methylene group **[1, 2006.01]**
29/33 • • Aceto- or benzoyl-acetylarylides **[3, 2006.01]**
29/34 • from other coupling components **[1, 2006.01]**
29/36 • • from heterocyclic compounds **[1, 2006.01]**
29/40 • • • containing a five-membered ring with one nitrogen atom as the only ring hetero atom **[3, 2006.01]**
29/42 • • • containing a six-membered ring with one nitrogen atom as the only ring hetero atom **[3, 2006.01]**
29/44 • • • • Quinolines or hydrogenated quinolines **[3, 2006.01]**
29/46 • • • 1,2-Diazoles or hydrogenated 1,2-diazoles **[3, 2006.01]**
29/48 • • • • Amino-1,2-diazoles **[3, 2006.01]**
29/50 • • • • 1,2-Diazolones **[3, 2006.01]**
29/52 • • • Diazines **[3, 2006.01]**

31/00 Disazo or polyazo dyes of the type A → B → C, A → B → C → D, or the like, prepared by diazotising and coupling [1, 2006.01]
31/02 • Disazo dyes **[1, 2006.01]**
31/04 • • from a coupling component "C" containing a directive amino group **[1, 2006.01]**
31/043 • • • Amino benzenes **[3, 2006.01]**
31/047 • • • • containing acid groups, e.g. —COOH, —SO_3H, —PO_3H_2, —OSO_3H, —OPO_2H_2; Salts thereof **[3, 2006.01]**
31/053 • • • Amino naphthalenes **[3, 2006.01]**

31/057 • • • • containing acid groups, e.g. —COOH, —SO_3H, —PO_3H_2, —OSO_3H, —OPO_2H_2; Salts thereof **[3, 2006.01]**
31/06 • • from a coupling component "C" containing a directive hydroxy group **[1, 2006.01]**
31/062 • • • Phenols **[3, 2006.01]**
31/065 • • • • containing acid groups, e.g. —COOH, —SO_3H, —PO_3H_2, —OSO_3H, —OPO_2H_2; Salts thereof **[3, 2006.01]**
31/068 • • • Naphthols **[3, 2006.01]**
31/072 • • • • containing acid groups, e.g. —COOH, —SO_3H, —PO_3H_2, —OSO_3H, —OPO_2H_2; Salts thereof **[3, 2006.01]**
31/075 • • • ortho-Hydroxy carboxylic acid amides **[3, 2006.01]**
31/078 • • • • containing acid groups, e.g. —COOH, —SO_3H, —PO_3H_2, —OSO_3H, —OPO_2H_2; Salts thereof **[3, 2006.01]**
31/08 • • from a coupling component "C" containing directive hydroxy and amino groups **[1, 2006.01]**
31/10 • • from a coupling component "C" containing reactive methylene groups **[1, 2006.01]**
31/11 • • • Aceto- or benzoyl-acetylarylides **[3, 2006.01]**
31/12 • • from other coupling components "C" **[1, 2006.01]**
31/14 • • • Heterocyclic components **[1, 2006.01]**
31/143 • • • • 1,2-Diazoles **[3, 2006.01]**
31/147 • • • • • Pyrazoles **[3, 2006.01]**
31/15 • • • • Indoles **[3, 2006.01]**
31/153 • • • • containing a six-membered ring with one nitrogen atom as the only ring hetero atom **[3, 2006.01]**
31/157 • • • • • Quinolines or hydrogenated quinolines **[3, 2006.01]**
31/16 • Trisazo dyes **[1, 2006.01]**
31/18 • • from a coupling component "D" containing a directive amino group **[1, 2006.01]**
31/20 • • from a coupling component "D" containing a directive hydroxy group **[1, 2006.01]**
31/22 • • from a coupling component "D" containing directive hydroxy and amino groups **[1, 2006.01]**
31/24 • • from a coupling component "D" containing reactive methylene groups **[1, 2006.01]**
31/26 • • from other coupling components "D" **[1, 2006.01]**
31/28 • • • Heterocyclic compounds **[1, 2006.01]**
31/30 • Other polyazo dyes **[1, 2006.01]**

33/00 Disazo or polyazo dyes of the types A → K ← B, A → B → K ← C, or the like, prepared by diazotising and coupling [1, 2006.01]
33/02 • Disazo dyes **[1, 2006.01]**
33/04 • • in which the coupling component is a dihydroxy or polyhydroxy compound **[1, 2006.01]**
33/044 • • • the coupling component being a bis-phenol **[3, 2006.01]**
33/048 • • • the coupling component being a bis-naphthol **[3, 2006.01]**
33/052 • • • the coupling component being a bis-(naphthol-amine) **[3, 2006.01]**
33/056 • • • the coupling component being a bis-(naphthol-urea) **[3, 2006.01]**
33/06 • • in which the coupling component is a diamine or polyamine **[1, 2006.01]**
33/08 • • in which the coupling component is a hydroxy-amino compound **[1, 2006.01]**
33/10 • • • in which the coupling component is an amino naphthol **[1, 2006.01]**
33/12 • • in which the coupling component is a heterocyclic compound **[1, 2006.01]**
33/13 • • • the coupling component being a bis-pyrazolone **[3, 2006.01]**
33/147 • • in which the coupling component is a bis-(o-hydroxy carboxylic acid amide) **[3, 2006.01]**
33/153 • • in which the coupling component is a bis-(aceto-acetyl amide) or a bis-(benzoyl-acetylamide) **[3, 2006.01]**
33/16 • • from other coupling components **[1, 2006.01]**
33/18 • Trisazo or higher polyazo dyes **[1, 2006.01]**
33/22 • • Trisazo dyes of the type A → B → K ← C **[3, 2006.01]**
33/24 • • Trisazo dyes of the type **[3, 2006.01]**
33/26 • • Tetrazo dyes of the type A → B → C → K ← D **[3, 2006.01]**
33/28 • • Tetrazo dyes of the type A → B → K ← C ← D **[3, 2006.01]**
33/30 • • Tetrazo dyes of the type **[3, 2006.01]**
33/32 • • Tetrazo dyes of the type **[3, 2006.01]**

35/00 Disazo or polyazo dyes of the type A ← D → B prepared by diazotising and coupling [1, 2006.01]
35/02 • Disazo dyes **[1, 2006.01]**
35/021 • • characterised by two coupling components of the same type **[3, 2006.01]**
35/023 • • • in which the coupling component is a hydroxy or polyhydroxy compound **[3, 2006.01]**
35/025 • • • in which the coupling component is an amine or polyamine **[3, 2006.01]**
35/027 • • • in which the coupling component is a hydroxy-amino compound **[3, 2006.01]**
35/029 • • • • Amino naphthol **[3, 2006.01]**
35/03 • • • in which the coupling component is a heterocyclic compound **[3, 2006.01]**
35/031 • • • • containing a six-membered ring with one nitrogen atom as the only ring hetero atom **[3, 2006.01]**
35/033 • • • in which the coupling component is an arylamide of an o-hydroxy carboxylic acid or of a beta-keto-carboxylic acid **[3, 2006.01]**
35/035 • • • in which the coupling component contains an activated methylene group **[3, 2006.01]**
35/037 • • characterised by two coupling components of different types **[3, 2006.01]**
35/039 • • characterised by the tetrazo component **[3, 2006.01]**
35/04 • • • the tetrazo component being a benzene derivative **[1, 3, 2006.01]**
35/06 • • • the tetrazo component being a naphthalene derivative **[1, 3, 2006.01]**
35/08 • • • the tetrazo component being a derivative of biphenyl **[1, 3, 2006.01]**
35/10 • • • • from two coupling components of the same type **[1, 3, 2006.01]**
35/12 • • • • • from amines **[1, 3, 2006.01]**
35/14 • • • • • from hydroxy compounds **[1, 3, 2006.01]**
35/16 • • • • • from hydroxy amines **[1, 3, 2006.01]**

35/18 • • • • • from heterocyclic compounds **[1, 3, 2006.01]**

35/20 • • • • from two coupling compounds of different types **[1, 3, 2006.01]**

35/205 • • • the tetrazo component being a derivative of a diaryl- or triaryl-alkane or -alkene **[3, 2006.01]**

35/21 • • • • of diarylmethane or triarylmethane **[3, 2006.01]**

35/215 • • • • of diarylethane or diarylethene **[3, 2006.01]**

35/22 • • • the tetrazo component being a derivative of a diaryl ether **[1, 3, 2006.01]**

35/227 • • • the tetrazo component being a derivative of a diaryl sulfide or diaryl polysulfide **[3, 2006.01]**

35/233 • • • the tetrazo component being a derivative of a diaryl ketone or benzil **[3, 2006.01]**

35/24 • • • the tetrazo component being a derivative of a diaryl amine **[1, 3, 2006.01]**

35/26 • • • the tetrazo component being a derivative of a diaryl urea **[1, 3, 2006.01]**

35/28 • • • the tetrazo component containing two aryl nuclei linked by at least one of the groups —CON<, —SO_2N<, —SO_2—, or —SO_2O— **[1, 3, 2006.01]**

35/30 • • • • from two identical coupling components **[1, 3, 2006.01]**

35/32 • • • • from two different coupling components **[1, 3, 2006.01]**

35/34 • • • the tetrazo component being heterocyclic **[1, 3, 2006.01]**

35/35 • Trisazo dyes in which the tetrazo component is a diamino-azo-aryl compound **[3, 2006.01]**

35/36 • Trisazo dyes of the type **[1, 2006.01]**

35/362 • • D is benzene **[3, 2006.01]**

35/364 • • D is naphthalene **[3, 2006.01]**

35/366 • • D is diphenyl **[3, 2006.01]**

35/368 • • D is a diarylether, a diarylsulfide or a diarylpolysulfide **[3, 2006.01]**

35/37 • • D is a diarylamine **[3, 2006.01]**

35/372 • • D is a diarylurea **[3, 2006.01]**

35/374 • • D contains two aryl nuclei linked by at least one of the groups —CON<, —SO_2N<, —SO_2—, or —SO_2O— **[3, 2006.01]**

35/376 • • D is a heterocyclic compound **[3, 2006.01]**

35/378 • Trisazo dyes of the type **[3, 2006.01]**

35/38 • Trisazo dyes ot the types **[1, 2006.01]**

35/40 • • the component K being a dihydroxy or polyhydroxy compound **[1, 2006.01]**

35/42 • • the component K being a diamine or polyamine **[1, 2006.01]**

35/44 • • the component K being a hydroxy amine **[1, 2006.01]**

35/46 • • • the component K being an amino naphthol **[1, 2006.01]**

35/48 • • the component K being heterocyclic **[1, 2006.01]**

35/50 • Tetrazo dyes **[1, 2006.01]**

35/52 • • of the type **[3, 2006.01]**

35/54 • • of the type **[3, 2006.01]**

35/56 • • of the type **[3, 2006.01]**

35/58 • • of the type **[3, 2006.01]**

35/60 • • of the type **[3, 2006.01]**

35/62 • • of the type **[3, 2006.01]**

35/64 • Higher polyazo dyes, e.g. of the types

[3, 2006.01]

37/00 Azo dyes prepared by coupling the diazotised amine with itself [1, 2006.01]

39/00 Other azo dyes prepared by diazotising and coupling [1, 2006.01]

41/00 Special methods of performing the coupling reaction [1, 2006.01]

43/00 Preparation of azo dyes from other azo compounds [1, 2006.01]

43/02 • by sulfonation **[1, 2006.01]**

43/04 • by nitration **[1, 2006.01]**

43/06 • by oxidation **[1, 2006.01]**

43/08 • by reduction (deamination C09B 43/44) **[1, 2006.01]**

43/10 • • with formation of a new azo or an azoxy bridge **[1, 2006.01]**

43/11 • by introducing hydrocarbon radicals or substituted hydrocarbon radicals on primary or secondary amino groups (formation of an amino group by reduction, e.g. of a nitro group, C09B 43/08) **[3, 2006.01]**

43/12 • by acylation of amino groups **[1, 2006.01]**

43/124 • • with monocarboxylic acids, carbamic esters or halides, monoisocyanates, or haloformic acid esters **[3, 2006.01]**

43/128 • • • Aliphatic, cycloaliphatic or araliphatic acids **[3, 2006.01]**

43/132 • • • having the carboxyl group directly attached to an aromatic carbocyclic ring **[3, 2006.01]**

43/136 • • with polyfunctional acylating agents **[3, 2006.01]**

43/14 • • • with phosgene or thiophosgene **[1, 3, 2006.01]**

43/145 • • • with polycarboxylic acids **[3, 2006.01]**

43/15 • • • • with formation of cyclic imides of ortho-or peri-dicarboxylic acids **[3, 2006.01]**

43/155 • • • with di- or poly-isocyanates **[3, 2006.01]**

43/16 • • • linking amino-azo compounds with other amino compounds by cyanuric acid or cyanuric acid residues **[1, 3, 2006.01]**

43/18 • by acylation of hydroxy groups **[1, 2006.01]**

43/20 • • with monocarboxylic acids, carbamic acid esters or halides, monoisocyanates or haloformic acid esters **[3, 2006.01]**

43/22 • • • having the carboxyl group directly attached to an aromatic carbocyclic ring **[3, 2006.01]**
43/24 • • with formation of —O—SO_2—R or —O—SO_3H radicals **[3, 2006.01]**
43/26 • • with polyfunctional acylating agents **[3, 2006.01]**
43/28 • by etherification of hydroxy groups **[3, 2006.01]**
43/30 • by esterification of —COOH or —SO_3H groups **[3, 2006.01]**
43/32 • by reacting carboxyl or sulfonic groups, or derivatives thereof, with amines; by reacting keto groups with amines **[3, 2006.01]**
43/34 • • by reacting ortho- or peri-dicarboxylic dyes **[3, 2006.01]**
43/36 • • with amino anthracene or amino anthraquinone dyes **[3, 2006.01]**
43/38 • • by reacting two or more ortho-hydroxy naphthoic acid dyes with polyamines **[3, 2006.01]**
43/40 • by substituting hetero atoms by radicals containing other hetero atoms **[3, 2006.01]**
43/42 • • by substituting radicals containing hetero atoms for —CN radicals **[3, 2006.01]**
43/44 • by substituting amine groups for hydroxyl groups or hydroxy groups for amine groups; Desacylation of amino-acyl groups; Deaminating **[3, 2006.01]**

44/00 Azo dyes containing onium groups [3, 2006.01]
44/02 • containing ammonium groups not directly attached to an azo group **[3, 2006.01]**
44/04 • • from coupling components containing amino as the only directing group **[3, 2006.01]**
44/06 • • from coupling components containing hydroxyl as the only directing group **[3, 2006.01]**
44/08 • • from coupling components containing heterocyclic rings **[3, 2006.01]**
44/10 • containing cyclammonium groups attached to an azo group by a carbon atom of the ring system **[3, 2006.01]**
44/12 • • having one nitrogen atom as the only ring hetero atom **[3, 2006.01]**
44/14 • • 1,2-Diazoles or hydrogenated 1,2-diazoles **[3, 2006.01]**
44/16 • • 1,3-Diazoles or hydrogenated 1,3-diazoles **[3, 2006.01]**
44/18 • • having three nitrogen atoms as the only ring hetero atoms **[3, 2006.01]**
44/20 • • Thiazoles or hydrogenated thiazoles **[3, 2006.01]**

45/00 Complex metal compounds of azo dyes [1, 2006.01]
45/01 • characterised by the method of metallisation **[3, 2006.01]**
45/02 • Preparation from dyes containing in o-position a hydroxy group and in o1-position hydroxy, alkoxy, carboxyl, amino, or keto groups **[1, 2, 2006.01]**
45/04 • • Azo compounds in general **[1, 2006.01]**
45/06 • • • Chromium compounds **[1, 2006.01]**
45/08 • • • Copper compounds **[1, 2006.01]**
45/10 • • • Cobalt compounds **[1, 2006.01]**
45/12 • • • other metal compounds **[1, 2006.01]**
45/14 • • Monoazo compounds **[1, 2006.01]**
45/16 • • • containing chromium **[1, 2006.01]**
45/18 • • • containing copper **[1, 2006.01]**
45/20 • • • containing cobalt **[1, 2006.01]**
45/22 • • • containing other metals **[1, 2006.01]**
45/24 • • Disazo or polyazo compounds **[1, 2006.01]**
45/26 • • • containing chromium **[1, 2006.01]**
45/28 • • • containing copper **[1, 2006.01]**
45/30 • • • containing cobalt **[1, 2006.01]**
45/32 • • • containing other metals **[1, 2006.01]**
45/34 • Preparation from o-monohydroxy azo compounds having in the o1-position an atom or functional group other than hydroxy, alkoxy, carboxyl, amino, or keto groups **[1, 2006.01]**
45/36 • • by oxidation of hydrogen in o1-position **[1, 2006.01]**
45/38 • Preparation from compounds with —OH and —COOH adjacent in the same ring or in peri position **[1, 2006.01]**
45/40 • • Chromium compounds **[1, 2006.01]**
45/42 • • Copper compounds **[1, 2006.01]**
45/44 • • Cobalt compounds **[1, 2006.01]**
45/46 • • Other metal compounds **[1, 2006.01]**
45/48 • Preparation from other complex metal compounds of azo dyes **[1, 2006.01]**

46/00 Azo dyes not provided for in groups C09B 27/00-C09B 45/00 [2, 2006.01]

47/00 Porphines; Azaporphines [1, 2006.01]
47/04 • Phthalocyanines **[1, 3, 2006.01]**
47/06 • • Preparation from carboxylic acids or derivatives thereof **[1, 3, 2006.01]**
47/067 • • • from phthalodinitriles **[3, 2006.01]**
47/073 • • Preparation from isoindolenines **[3, 2006.01]**
47/08 • • Preparation from other phthalocyanine compounds **[1, 3, 2006.01]**
47/10 • • • Obtaining compounds having halogen atoms directly bound to the phthalocyanine skeleton **[1, 3, 2006.01]**
47/12 • • • Obtaining compounds having alkyl radicals, or alkyl radicals substituted by hetero atoms, bound to the phthalocyanine skeleton **[3, 2006.01]**
47/14 • • • • having alkyl radicals substituted by halogen atoms **[3, 2006.01]**
47/16 • • • • having alkyl radicals substituted by nitrogen atoms **[3, 2006.01]**
47/18 • • • Obtaining compounds having oxygen atoms directly bound to the phthalocyanine skeleton **[3, 2006.01]**
47/20 • • • Obtaining compounds having sulfur atoms directly bound to the phthalocyanine skeleton **[3, 2006.01]**
47/22 • • • Obtaining compounds having nitrogen atoms directly bound to the phthalocyanine skeleton **[3, 2006.01]**
47/24 • • • Obtaining compounds having —COOH or —SO_3H radicals, or derivatives thereof, directly bound to the phthalocyanine radical **[3, 2006.01]**
47/26 • • • • Amide radicals **[3, 2006.01]**
47/28 • • Phthalocyanine dyes containing —S—SO_3H radicals **[3, 2006.01]**
47/30 • • Metal-free phthalocyanines **[3, 2006.01]**
47/32 • • Cationic phthalocyanine dyes **[3, 2006.01]**

48/00 Quinacridones [1, 2006.01]

49/00 Sulfur dyes [1, 2006.01]
49/02 • from nitro compounds of the benzene, naphthalene or anthracene series **[1, 2006.01]**
49/04 • from amino compounds of the benzene, naphthalene or anthracene series **[1, 2006.01]**

49/06 • from azines, oxazines, thiazines, or thiazoles **[1, 2006.01]**
49/08 • from urea derivatives **[1, 2006.01]**
49/10 • from diphenylamines, indamines, or indophenols **[1, 2006.01]**
49/12 • from other compounds **[1, 2006.01]**

50/00 Formazane dyes; Tetrazolium dyes [3, 2006.01]
50/02 • Tetrazolium dyes **[3, 2006.01]**
50/04 • Metal-free formazane dyes **[3, 2006.01]**
50/06 • Bis-formazane dyes **[3, 2006.01]**
50/08 • Meso-acyl formazane dyes **[3, 2006.01]**
50/10 • Cationic formazane dyes **[3, 2006.01]**

51/00 Nitro or nitroso dyes [1, 2006.01]

53/00 Quinone imides [1, 2006.01]
53/02 • Indamines; Indophenols **[1, 2006.01]**

55/00 Azomethine dyes [1, 2006.01]

56/00 Azo dyes containing other chromophoric systems [3, 2006.01]
56/02 • Azomethine-azo dyes **[3, 2006.01]**
56/04 • Stilbene-azo dyes **[3, 2006.01]**
56/06 • • Bis- or poly-stilbene-azo dyes **[3, 2006.01]**
56/08 • Styryl-azo dyes **[3, 2006.01]**
56/10 • Formazane-azo dyes **[3, 2006.01]**
56/12 • Anthraquinone-azo dyes **[3, 2006.01]**
56/14 • Phthalocyanine-azo dyes **[3, 2006.01]**
56/16 • Methine- or polymethine-azo dyes **[3, 2006.01]**
56/18 • Hydrazone-azo dyes **[3, 2006.01]**
56/20 • Triazene-azo dyes **[3, 2006.01]**

57/00 Other synthetic dyes of known constitution [1, 2006.01]
57/02 • Coumarine dyes **[3, 2006.01]**
57/04 • Isoindoline dyes **[3, 2006.01]**
57/06 • Naphtholactam dyes **[3, 2006.01]**
57/08 • Naphthalimide dyes; Phthalimide dyes **[3, 2006.01]**
57/10 • Metal complexes of organic compounds not being dyes in uncomplexed form **[3, 2006.01]**
57/12 • Perinones, i.e. naphthoylene-aryl-imidazoles **[3, 2006.01]**
57/14 • Benzoxanthene dyes; Benzothioxanthene dyes **[3, 2006.01]**

59/00 Artificial dyes of unknown constitution [1, 2006.01]

61/00 Dyes of natural origin prepared from natural sources [1, 2006.01]

62/00 Reactive dyes, i.e. dyes which form covalent bonds with the substrates or which polymerise with themselves [1, 3, 2006.01]
62/002 • with the linkage of the reactive group being alternatively specified **[3, 2006.01]**
62/004 • • Anthracene dyes **[3, 2006.01]**
62/006 • • Azo dyes **[3, 2006.01]**
62/008 • • • Monoazo dyes **[3, 2006.01]**
62/01 • • • Disazo or polyazo dyes **[3, 2006.01]**
62/012 • • • Metal complex azo dyes **[3, 2006.01]**
62/014 • • Nitro dyes **[3, 2006.01]**
62/016 • • Porphines; Azaporphines **[3, 2006.01]**
62/018 • • Formazane dyes **[3, 2006.01]**
62/02 • with the reactive group directly attached to a heterocyclic ring **[1, 2006.01]**
62/022 • • the heterocyclic ring being alternatively specified **[3, 2006.01]**
62/024 • • • Anthracene dyes **[3, 2006.01]**
62/026 • • • Azo dyes **[3, 2006.01]**
62/028 • • • • Monoazo dyes **[3, 2006.01]**
62/03 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/032 • • • • Metal complex azo dyes **[3, 2006.01]**
62/034 • • • Nitro dyes **[3, 2006.01]**
62/036 • • • Porphines; Azaporphines **[3, 2006.01]**
62/038 • • • Formazane dyes **[3, 2006.01]**
62/04 • • to a triazine ring **[1, 2006.01]**
62/06 • • • Anthracene dyes **[1, 2006.01]**
62/08 • • • Azo dyes **[1, 2006.01]**
62/085 • • • • Monoazo dyes **[3, 2006.01]**
62/09 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/095 • • • • Metal complex azo dyes **[3, 2006.01]**
62/10 • • • Porphines; Azaporphines **[1, 2006.01]**
62/12 • • to a pyridazine ring **[1, 2006.01]**
62/14 • • • Anthracene dyes **[1, 2006.01]**
62/16 • • • Azo dyes **[1, 2006.01]**
62/165 • • • • Monoazo dyes **[3, 2006.01]**
62/17 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/175 • • • • Metal complex azo dyes **[3, 2006.01]**
62/18 • • • Porphines; Azaporphines **[1, 2006.01]**
62/20 • • to a pyrimidine ring **[1, 2006.01]**
62/22 • • • Anthracene dyes **[1, 2006.01]**
62/24 • • • Azo dyes **[1, 2006.01]**
62/245 • • • • Monoazo dyes **[3, 2006.01]**
62/25 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/255 • • • • Metal complex azo dyes **[3, 2006.01]**
62/26 • • • Porphines; Azaporphines **[1, 2006.01]**
62/28 • • to a pyrazine ring **[1, 2006.01]**
62/30 • • • Anthracene dyes **[1, 2006.01]**
62/32 • • • Azo dyes **[1, 2006.01]**
62/325 • • • • Monoazo dyes **[3, 2006.01]**
62/33 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/335 • • • • Metal complex azo dyes **[3, 2006.01]**
62/34 • • • Porphines; Azaporphines **[1, 2006.01]**
62/343 • • to a five-membered ring **[3, 2006.01]**
62/345 • • • Anthracene dyes **[3, 2006.01]**
62/347 • • • Azo dyes **[3, 2006.01]**
62/35 • • • • Monoazo dyes **[3, 2006.01]**
62/353 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/355 • • • • Metal complex azo dyes **[3, 2006.01]**
62/357 • • • Porphines; Azaporphines **[3, 2006.01]**
62/36 • • to some other heterocyclic ring **[1, 2006.01]**
62/38 • • • Anthracene dyes **[1, 2006.01]**
62/40 • • • Azo dyes **[1, 2006.01]**
62/405 • • • • Monoazo dyes **[3, 2006.01]**
62/41 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/415 • • • • Metal complex azo dyes **[3, 2006.01]**
62/42 • • • Porphines; Azaporphines **[1, 2006.01]**
62/44 • with the reactive group not directly attached to a heterocyclic ring **[1, 2006.01]**
62/443 • • the reactive group being alternatively specified **[3, 2006.01]**
62/445 • • • Anthracene dyes **[3, 2006.01]**
62/447 • • • Azo dyes **[3, 2006.01]**
62/45 • • • • Monoazo dyes **[3, 2006.01]**
62/453 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/455 • • • • Metal complex azo dyes **[3, 2006.01]**
62/457 • • • Porphines; Azaporphines **[3, 2006.01]**
62/463 • • • Formazane dyes **[3, 2006.01]**

62/465 • • the reactive group being an acryloyl group, a quaternised or non-quaternised aminoalkyl carbonyl group, or a $(—N)_n—CO—A—O—X$ or $(—N)_n—CO—A—Hal$ group, wherein A is an alkylene or alkylidene group, X is hydrogen or an acyl radical of an organic or inorganic acid, Hal is a halogen atom, and n is 0 or 1 **[3, 2006.01]**
62/467 • • • Anthracene dyes **[3, 2006.01]**
62/47 • • • Azo dyes **[3, 2006.01]**
62/473 • • • • Monoazo dyes **[3, 2006.01]**
62/475 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/477 • • • • Metal complex azo dyes **[3, 2006.01]**
62/483 • • • Porphines; Azaporphines **[3, 2006.01]**
62/485 • • the reactive group being a halo-cyclobutyl-carbonyl, halo-cyclobutyl-vinyl-carbonyl, or halo-cyclobutenyl-carbonyl group **[3, 2006.01]**
62/487 • • • Anthracene dyes **[3, 2006.01]**
62/489 • • • Azo dyes **[3, 2006.01]**
62/491 • • • • Monoazo dyes **[3, 2006.01]**
62/493 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/495 • • • • Metal complex azo dyes **[3, 2006.01]**
62/497 • • • Porphines; Azaporphines **[3, 2006.01]**
62/503 • • the reactive group being an esterified or non-esterified hydroxyalkyl sulfonyl or mercaptoalkyl sulfonyl group, a quaternised or non-quaternised aminoalkyl sulfonyl group, a heterylmercapto alkyl sulfonyl group, a vinyl sulfonyl or a substituted vinyl sulfonyl group, or a thiophene-dioxide group **[3, 2006.01]**
62/505 • • • Anthracene dyes **[3, 2006.01]**
62/507 • • • Azo dyes **[3, 2006.01]**
62/51 • • • • Monoazo dyes **[3, 2006.01]**
62/513 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/515 • • • • Metal complex azo dyes **[3, 2006.01]**
62/517 • • • Porphines; Azaporphines **[3, 2006.01]**
62/523 • • the reactive group being an esterified or non-esterified hydroxyalkyl sulfonyl amido or hydroxyalkyl amino sulfonyl group, a quaternised or non-quaternised amino alkyl sulfonyl amido group, or a substituted alkyl amino sulfonyl group, or a halogen alkyl sulfonyl amido or halogen alkyl amino sulfonyl group or a vinyl sulfonylamido or a substituted vinyl sulfonamido group **[3, 2006.01]**
62/525 • • • Anthracene dyes **[3, 2006.01]**
62/527 • • • Azo dyes **[3, 2006.01]**
62/53 • • • • Monoazo dyes **[3, 2006.01]**
62/533 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/535 • • • • Metal complex azo dyes **[3, 2006.01]**
62/537 • • • Porphines; Azaporphines **[3, 2006.01]**
62/54 • • the reactive group being an epoxy or halohydrin group **[1, 3, 2006.01]**
62/56 • • • Anthracene dyes **[1, 2006.01]**
62/58 • • • Azo dyes **[1, 2006.01]**
62/585 • • • • Monoazo dyes **[3, 2006.01]**
62/59 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/595 • • • • Metal complex azo dyes **[3, 2006.01]**
62/60 • • • Porphines; Azaporphines **[1, 2006.01]**
62/62 • • the reactive group being an ethylenimino or N-acylated ethylenimino group or a $—CO—NH—CH_2—CH_2—X$ group, wherein X is a halogen atom, a quaternary ammonium group or O-acyl and acyl is derived from an organic or inorganic acid, or a beta-substituted ethylamine group **[1, 2006.01]**
62/64 • • • Anthracene dyes **[1, 2006.01]**
62/66 • • • Azo dyes **[1, 2006.01]**
62/665 • • • • Monoazo dyes **[3, 2006.01]**
62/67 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/675 • • • • Metal complex azo dyes **[3, 2006.01]**
62/68 • • • Porphines; Azaporphines **[1, 2006.01]**
62/763 • • the reactive group being a N-methylol group or an O-derivative thereof **[3, 2006.01]**
62/765 • • • Anthracene dyes **[3, 2006.01]**
62/767 • • • Azo dyes **[3, 2006.01]**
62/77 • • • • Monoazo dyes **[3, 2006.01]**
62/773 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/775 • • • • Metal complex azo dyes **[3, 2006.01]**
62/777 • • • Porphines; Azaporphines **[3, 2006.01]**
62/78 • • with other reactive groups **[1, 2006.01]**
62/80 • • • Anthracene dyes **[1, 2006.01]**
62/82 • • • Azo dyes **[1, 2006.01]**
62/825 • • • • Monoazo dyes **[3, 2006.01]**
62/83 • • • • Disazo or polyazo dyes **[3, 2006.01]**
62/835 • • • • Metal complex azo dyes **[3, 2006.01]**
62/84 • • • Porphines; Azaporphines **[1, 2006.01]**

Lakes; Mordants; Dyestuff preparations

63/00 Lakes [1, 2006.01]

65/00 Compositions containing mordants [1, 2006.01]

67/00 Influencing the physical, e.g. the dyeing or printing, properties of dyestuffs without chemical reaction, e.g. by treating with solvents; Process features in the making of dyestuff preparations; Dyestuff preparations of a special physical nature, e.g. tablets, films [1, 2006.01]
67/02 • Dyestuff preparations characterised by special physical forms, e.g. tablets, films **[3, 2006.01]**
67/04 • Grinding or milling (C09B 67/14 takes precedence) **[3, 2006.01]**
67/06 • Drying **[3, 2006.01]**
67/08 • Coated particulate pigments or dyes **[3, 2006.01]**
67/10 • Influencing the physical properties by treatment with a liquid, e.g. solvents (C09B 67/14, C09B 67/18, C09B 67/20 take precedence) **[3, 2006.01]**
67/12 • • of phthalocyanines **[3, 2006.01]**
67/14 • Influencing the physical properties by treatment with an acid **[3, 2006.01]**
67/16 • • of phthalocyanines **[3, 2006.01]**
67/18 • Influencing the physical properties by treatment with an amine **[3, 2006.01]**
67/20 • Preparations of organic pigments **[3, 2006.01]**
67/22 • Mixtures of different pigments or dyes or solid solutions of pigments or dyes **[3, 2006.01]**
67/24 • Preparations of acid dyes or reactive dyes **[3, 2006.01]**
67/26 • • in liquid form **[3, 2006.01]**
67/28 • Preparations of vat or sulfur dyes **[3, 2006.01]**
67/30 • • in liquid form **[3, 2006.01]**
67/32 • Preparations of cationic or basic dyes **[3, 2006.01]**
67/34 • • in liquid form **[3, 2006.01]**
67/36 • Azoic dyestuff preparations **[3, 2006.01]**
67/38 • Preparations of disperse dyes **[3, 2006.01]**
67/40 • • in liquid form **[3, 2006.01]**
67/42 • Preparations of dyes not provided for in a single one of groups C09B 67/24-C09B 67/40 **[3, 2006.01]**
67/44 • • Solutions **[3, 2006.01]**
67/46 • • Dispersions **[3, 2006.01]**

67/48 • Crystalline modifications of pigments or dyestuff (C09B 67/24 takes precedence) **[3, 2006.01]**
67/50 • • of phthalocyanines **[3, 2006.01]**
67/52 • • of quinacridones **[3, 2006.01]**
67/54 • Separation; Purification (C09B 67/06, C09B 67/10 take precedence) **[3, 2006.01]**

69/00 Dyes not provided for by a single group of this subclass [2, 2006.01]

69/02 • Dyestuff salts, e.g. salts of acid dyes with basic dyes (for Na, K, or NH_4+ salts of dyes or for chlorides, sulfates or chlorozincates, see the relevant dye groups) **[3, 2006.01]**
69/04 • • of anionic dyes with nitrogen containing compounds **[3, 2006.01]**
69/06 • • of cationic dyes with organic acids **[3, 2006.01]**
69/08 • Dyes containing a splittable water solubilising group **[3, 2006.01]**
69/10 • Polymeric dyes; Reaction products of dyes with monomers or with macromolecular compounds **[3, 2006.01]**

C09C TREATMENT OF INORGANIC MATERIALS, OTHER THAN FIBROUS FILLERS, TO ENHANCE THEIR PIGMENTING OR FILLING PROPERTIES (preparation of inorganic compounds or non-metallic elements C01; treatment of materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone C04B 14/00, C04B 18/00, C04B 20/00)**; PREPARATION OF CARBON BLACK [4]**

Note(s)

In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a compound is classified in the last appropriate place.

1/00 Treatment of specific inorganic materials other than fibrous fillers (luminescent or tenebrescent materials C09K)**; Preparation of carbon black [1, 2006.01]**
1/02 • Compounds of alkaline earth metals or magnesium **[1, 2006.01]**
1/04 • Compounds of zinc **[1, 2006.01]**
1/06 • • Lithopone **[1, 2006.01]**
1/08 • • Zinc chromate **[1, 2006.01]**
1/10 • Compounds of cadmium **[1, 2006.01]**
1/12 • • Cadmium sulfoselenide **[1, 2006.01]**
1/14 • Compounds of lead **[1, 2006.01]**
1/16 • • White lead **[1, 2006.01]**
1/18 • • Red lead **[1, 2006.01]**
1/20 • • Lead chromate **[1, 2006.01]**
1/22 • Compounds of iron **[1, 2006.01]**
1/24 • • Oxides of iron **[1, 2006.01]**
1/26 • • Iron blues **[1, 2006.01]**
1/28 • Compounds of silicon **[1, 2006.01]**
1/30 • • Silicic acid **[1, 2006.01]**
1/32 • • Ultramarine **[1, 2006.01]**
1/34 • Compounds of chromium **[1, 2006.01]**
1/36 • Compounds of titanium **[1, 2006.01]**
1/38 • Compounds of mercury **[1, 2006.01]**
1/40 • Compounds of aluminium **[1, 2006.01]**
1/42 • • Clays (preparatory treatment for clay-wares C04B 33/04) **[1, 2006.01]**
1/44 • Carbon **[1, 2006.01]**
1/46 • • Graphite (preparation of graphite C01B 31/04) **[1, 2006.01]**
1/48 • • Carbon black **[1, 2006.01]**
1/50 • • • Furnace black **[1, 2006.01]**
1/52 • • • Channel black **[1, 2006.01]**
1/54 • • • Acetylene black; thermal black **[1, 2006.01]**
1/56 • • • Treatment of carbon black **[1, 2006.01]**
1/58 • • • • Agglomerating, pelleting, or the like by wet methods **[1, 2006.01]**
1/60 • • • • Agglomerating, pelleting, or the like by dry methods **[1, 2006.01]**
1/62 • Metallic pigments or fillers (obtaining metal powder, see the relevant class for the method used, e.g. B22F 9/00, C21B 15/02, C22B 5/20, C25C 5/00) **[1, 2006.01]**
1/64 • • Aluminium **[1, 2006.01]**
1/66 • • Copper alloys, e.g. bronze **[1, 2006.01]**
1/68 • Loose abrasive particles **[1, 2006.01]**

3/00 Treatment in general of inorganic materials, other than fibrous fillers, to enhance their pigmenting or filling properties (dyeing other macromolecular particles C08J 3/20; dyeing macromolecular fibres D06P) **[1, 2006.01]**
3/04 • Physical treatment, e.g. grinding, treatment with ultrasonic vibrations **[2, 2006.01]**
3/06 • Treatment with inorganic compounds **[2, 2006.01]**
3/08 • Treatment with low-molecular-weight organic compounds **[2, 2006.01]**
3/10 • Treatment with macromolecular organic compounds **[2, 2006.01]**
3/12 • Treatment with organosilicon compounds **[2, 2006.01]**

C09D COATING COMPOSITIONS, e.g. PAINTS, VARNISHES OR LACQUERS; FILLING PASTES; CHEMICAL PAINT OR INK REMOVERS; INKS; CORRECTING FLUIDS; WOODSTAINS; PASTES OR SOLIDS FOR COLOURING OR PRINTING; USE OF MATERIALS THEREFOR (cosmetics A61K; processes for applying liquids or other fluent materials to surfaces, in general, B05D; staining wood B27K 5/02; glazes or vitreous enamels C03C; natural resins, French polish, drying-oils, driers, turpentine, per se, C09F; polishing compositions other than French polish, ski waxes C09G; adhesives or use of materials as adhesives C09J; materials for sealing or packing joints or covers C09K 3/10; materials for stopping leaks C09K 3/12; processes for the electrolytic or electrophoretic production of coatings C25D) **[5]**

Note(s) [5]

1. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "use of materials for coating compositions" means the use of known or new polymers or products;
   - "rubber" includes:
     a. natural or conjugated diene rubbers;
     b. rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for coating compositions based on such macromolecular compounds);
   - "based on" is defined by means of Note (3), below;
   - "filling pastes" means materials used to fill up the holes or cavities of a substrate in order to smooth its surface prior to coating.
2. In this subclass, coating compositions, containing specific organic macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.
   Example: a coating composition containing polyethene and amino-propyltrimethoxysilane is classified in group C09D 123/06.
   However, coating compositions containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups C09D 159/00-C09D 187/00 are classified according to the unsaturated non-macromolecular component in group C09D 4/00.
   Example: a coating composition containing polyethene and styrene monomer is classified in group C09D 4/00.
   Aspects relating to the physical nature of the coating compositions or to the effects produced, as defined in group C09D 5/00, if clearly and explicitly stated, are also classified in this subclass.
   Coating compositions characterised by other features, e.g. additives, are classified in group C09D 7/00, unless the macromolecular constituent is specified.
3. In this subclass, coating compositions comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the composition is based. If the composition is based on two or more constituents, present in equal proportions, the composition is classified according to each of these constituents.
   Example: a coating composition containing 80 parts of polyethene and 20 parts of polyvinylchloride is classified in group C09D 123/06.
   A coating composition containing 40 parts of polyethene and 40 parts of polyvinylchloride is classified in groups C09D 123/06 and C09D 127/06.

Subclass index

COATING COMPOSITIONS, e.g. PAINTS, VARNISHES, LACQUERS
Based on inorganic substances....1/00
Based on organic macromolecular substances....101/00-201/00
Based on organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond....4/00
Physical nature or effects produced, including use as filling pastes....5/00
Other features....7/00
INKS....11/00
WOODSTAINS....15/00
CHEMICAL PAINT OR INK REMOVERS....9/00
CORRECTING FLUIDS....10/00
PASTES OR SOLIDS FOR COLOURING OR PRINTING
Pencil-leads; crayon compositions; chalk compositions....13/00
Pigment pastes....17/00

1/00 Coating compositions, e.g. paints, varnishes or lacquers, based on inorganic substances (C04B takes precedence; glazes or vitreous enamels C03C) **[1, 2006.01]**

1/02 • alkali metal silicates **[1, 2006.01]**
1/04 • • with organic additives **[1, 2006.01]**
1/06 • cement **[1, 2006.01]**
1/08 • • with organic additives **[1, 2006.01]**
1/10 • lime **[1, 2006.01]**
1/12 • • with organic additives **[1, 2006.01]**

4/00 Coating compositions, e.g. paints, varnishes or lacquers, based on organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond [5, 2006.01]

4/02 • Acrylmonomers **[5, 2006.01]**
4/04 • • Cyanoacrylate monomers **[5, 2006.01]**
4/06 • in combination with a macromolecular compound other than an unsaturated polymer of groups C09D 159/00-C09D 187/00 **[5, 2006.01]**

5/00 Coating compositions, e.g. paints, varnishes or lacquers, characterised by their physical nature or the effects produced; Filling pastes [1, 5, 2006.01]

5/02 • Emulsion paints **[1, 2006.01]**
5/03 • Powdery paints (C09D 5/46 takes precedence) **[4, 2006.01]**
5/04 • Thixotropic paints **[1, 2006.01]**
5/06 • Artists' paints **[1, 2006.01]**
5/08 • Anti-corrosive paints **[1, 2006.01]**
5/10 • • containing metal dust **[1, 2006.01]**
5/12 • • Wash primers **[1, 2006.01]**
5/14 • Paints containing biocides, e.g. fungicides, insecticides or pesticides (C09D 5/16 takes precedence) **[1, 6, 2006.01]**
5/16 • Anti-fouling paints; Underwater paints **[1, 6, 2006.01]**
5/18 • Fireproof paints **[1, 2006.01]**
5/20 • for coatings strippable as coherent films, e.g. temporary coatings strippable as coherent films **[1, 2006.01]**
5/22 • Luminous paints **[1, 2006.01]**

5/23 • Magnetisable or magnetic paints or lacquers **[2, 2006.01]**
5/24 • Electrically-conducting paints **[1, 2006.01]**
5/25 • Electrically-insulating paints or lacquers **[2, 2006.01]**
5/26 • Thermosensitive paints **[1, 2006.01]**
5/28 • for wrinkle, crackle, orange-peel, or similar decorative effects **[1, 2006.01]**
5/29 • for multicolour effects **[2, 2006.01]**
5/30 • Camouflage paints **[1, 2006.01]**
5/32 • Radiation-absorbing paints **[1, 2006.01]**
5/33 • Radiation-reflecting paints (C09D 5/30 takes precedence) **[4, 2006.01]**
5/34 • Filling pastes (materials for sealing or packing joints or covers C09K 3/10; materials for stopping leaks C09K 3/12) **[1, 2006.01]**
5/36 • Pearl essence, e.g. coatings containing platelet-like pigments for pearl lustre **[1, 2006.01]**
5/38 • Paints containing free metal not provided for in groups C09D 5/00-C09D 5/36 **[2, 2006.01]**
5/44 • for electrophoretic applications (C09D 5/46 takes precedence; processes for coating by electrophoresis C25D 13/00) **[4, 2006.01]**
5/46 • for flame-spraying; for electrostatic or whirl-sintering coating **[4, 2006.01]**

7/00 Features of coating compositions, not provided for in group C09D 5/00 (driers C09F 9/00) **[1, 2006.01]**
7/02 • Use of compounds as anti-settling agents **[1, 2006.01]**
7/04 • Use of compounds as anti-skinning agents **[1, 2006.01]**
7/06 • Use of compounds as levelling agents **[1, 2006.01]**
7/12 • Other additives **[1, 2006.01]**
7/14 • Special processes for incorporating ingredients **[1, 2006.01]**

9/00 Chemical paint or ink removers (fluid media for correction of typographical errors by coating C09D 10/00) **[1, 4, 2006.01]**
9/02 • with abrasives **[1, 2006.01]**
9/04 • with surface-active agents **[1, 2006.01]**

10/00 Correcting fluids, e.g. fluid media for correction of typographical errors by coating [5, 2006.01]

11/00 Inks [1, 2006.01, 2014.01]
11/02 • Printing inks (C09D 11/30 takes precedence) **[1, 2006.01, 2014.01]**
11/023 • • Emulsion inks **[2014.01]**
11/0235 • • • Duplicating inks, e.g. for stencil printing **[2014.01]**
11/03 • • characterised by features other than the chemical nature of the binder **[2014.01]**
11/033 • • • characterised by the solvent **[2014.01]**
11/037 • • • characterised by the pigment **[2014.01]**
11/04 • • based on proteins **[1, 2006.01]**
11/06 • • based on fatty oils **[1, 2006.01]**
11/08 • • based on natural resins **[1, 2006.01]**
11/10 • • based on artificial resins **[1, 2006.01, 2014.01]**
11/101 • • • Inks specially adapted for printing processes involving curing by wave energy or particle radiation, e.g. with UV-curing following the printing **[2014.01]**
11/102 • • • containing macromolecular compounds obtained by reactions other than those only involving unsaturated carbon-to-carbon bonds **[2014.01]**
11/103 • • • • of aldehydes, e.g. phenol-formaldehyde resins **[2014.01]**
11/104 • • • • Polyesters **[2014.01]**
11/105 • • • • • Alkyd resins **[2014.01]**
11/106 • • • containing macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds **[2014.01]**
11/107 • • • • from unsaturated acids or derivatives thereof **[2014.01]**
11/108 • • • • Hydrocarbon resins **[2014.01]**
11/12 • • based on waxes or bitumen **[1, 2006.01]**
11/14 • • based on carbohydrates **[1, 2006.01]**
11/16 • Writing inks **[1, 2006.01, 2014.01]**
11/17 • • characterised by colouring agents **[2014.01]**
11/18 • • for use in ball-point writing instruments **[1, 2006.01]**
11/20 • • indelible **[1, 2006.01]**
11/30 • Inkjet printing inks **[2014.01]**
11/32 • • characterised by colouring agents **[2014.01]**
11/322 • • • Pigment inks **[2014.01]**
11/324 • • • • containing carbon black **[2014.01]**
11/326 • • • • characterised by the pigment dispersant **[2014.01]**
11/328 • • • characterised by dyes **[2014.01]**
11/34 • • Hot-melt inks **[2014.01]**
11/36 • • based on non-aqueous solvents **[2014.01]**
11/38 • • characterised by non-macromolecular additives other than solvents, pigments or dyes **[2014.01]**
11/40 • • Ink-sets specially adapted for multi-colour inkjet printing **[2014.01]**
11/50 • Sympathetic, colour-changing or similar inks **[2014.01]**
11/52 • Electrically conductive inks **[2014.01]**
11/54 • Inks based on two liquids, one liquid being the ink, the other liquid being a reaction solution, a fixer or a treatment solution for the ink **[2014.01]**

13/00 Pencil-leads; Crayon compositions; Chalk compositions [1, 2006.01]

15/00 Woodstains [2, 2006.01]

17/00 Pigment pastes, e.g. for mixing in paints [2, 2006.01]

Coating compositions based on polysaccharides or on their derivatives [5]

Note(s) [2006.01]

1. In groups C09D 101/00-C09D 201/00, any macromolecular constituent of a coating composition which is not identified by the classification according to Note (3) after the title of subclass C09D, and the use of which is determined to be novel and non-obvious, must also be classified in a group chosen from groups C09D 101/00-C09D 201/00.

2. Any macromolecular constituent of a coating composition which is not identified by the classification according to Note (3) after the title of subclass C09D or Note (1) above, and which is considered to represent information of interest for search, may also be classified in a group chosen from groups C09D 101/00-C09D 201/00. This can for example be the case when it is considered of interest to enable searching of coating compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information."

101/00 Coating compositions based on cellulose, modified cellulose, or cellulose derivatives [5, 2006.01]
101/02 • Cellulose; Modified cellulose **[5, 2006.01]**
101/04 • • Oxycellulose; Hydrocellulose **[5, 2006.01]**
101/06 • • Cellulose hydrate **[5, 2006.01]**
101/08 • Cellulose derivatives **[5, 2006.01]**
101/10 • • Esters of organic acids (of both organic acids and inorganic acids C09D 101/20) **[5, 2006.01]**
101/12 • • • Cellulose acetate **[5, 2006.01]**
101/14 • • • Mixed esters, e.g. cellulose acetate-butyrate **[5, 2006.01]**
101/16 • • Esters of inorganic acids (of both organic acids and inorganic acids C09D 101/20) **[5, 2006.01]**
101/18 • • • Cellulose nitrate **[5, 2006.01]**
101/20 • • Esters of both organic acids and inorganic acids **[5, 2006.01]**
101/22 • • Cellulose xanthate **[5, 2006.01]**
101/24 • • • Viscose **[5, 2006.01]**
101/26 • • Cellulose ethers **[5, 2006.01]**
101/28 • • • Alkyl ethers **[5, 2006.01]**
101/30 • • • Aryl ethers; Aralkyl ethers **[5, 2006.01]**
101/32 • • Cellulose ether-esters **[5, 2006.01]**

103/00 Coating compositions based on starch, amylose or amylopectin or on their derivatives or degradation products [5, 2006.01]
103/02 • Starch; Degradation products thereof, e.g. dextrin **[5, 2006.01]**
103/04 • Starch derivatives **[5, 2006.01]**
103/06 • • Esters **[5, 2006.01]**
103/08 • • Ethers **[5, 2006.01]**
103/10 • • Oxidised starch **[5, 2006.01]**
103/12 • Amylose; Amylopectin; Degradation products thereof **[5, 2006.01]**
103/14 • Amylose derivatives; Amylopectin derivatives **[5, 2006.01]**
103/16 • • Esters **[5, 2006.01]**
103/18 • • Ethers **[5, 2006.01]**
103/20 • • Oxidised amylose; Oxidised amylopectin **[5, 2006.01]**

105/00 Coating compositions based on polysaccharides or on their derivatives, not provided for in groups C09D 101/00 or C09D 103/00 [5, 2006.01]
105/02 • Dextran; Derivatives thereof **[5, 2006.01]**
105/04 • Alginic acid; Derivatives thereof **[5, 2006.01]**
105/06 • Pectin; Derivatives thereof **[5, 2006.01]**
105/08 • Chitin; Chondroitin sulfate; Hyaluronic acid; Derivatives thereof **[5, 2006.01]**
105/10 • Heparin; Derivatives thereof **[5, 2006.01]**
105/12 • Agar-agar; Derivatives thereof **[5, 2006.01]**
105/14 • Hemicellulose; Derivatives thereof **[5, 2006.01]**
105/16 • Cyclodextrin; Derivatives thereof **[5, 2006.01]**

Coating compositions based on rubbers or on their derivatives [5]

107/00 Coating composition based on natural rubber [5, 2006.01]
107/02 • Latex **[5, 2006.01]**

109/00 Coating compositions based on homopolymers or copolymers of conjugated diene hydrocarbons [5, 2006.01]
109/02 • Copolymers with acrylonitrile **[5, 2006.01]**
109/04 • • Latex **[5, 2006.01]**
109/06 • Copolymers with styrene **[5, 2006.01]**
109/08 • • Latex **[5, 2006.01]**
109/10 • Latex (C09D 109/04, C09D 109/08 take precedence) **[5, 2006.01]**

111/00 Coating compositions based on homopolymers or copolymers of chloroprene [5, 2006.01]
111/02 • Latex **[5, 2006.01]**

113/00 Coating compositions based on rubbers containing carboxyl groups [5, 2006.01]
113/02 • Latex **[5, 2006.01]**

115/00 Coating compositions based on rubber derivatives (C09D 111/00, C09D 113/00 take precedence) **[5, 2006.01]**
115/02 • Rubber derivatives containing halogen **[5, 2006.01]**

117/00 Coating compositions based on reclaimed rubber [5, 2006.01]

119/00 Coating compositions based on rubbers, not provided for in groups C09D 107/00-C09D 117/00 [5, 2006.01]
119/02 • Latex **[5, 2006.01]**

121/00 Coating compositions based on unspecified rubbers [5, 2006.01]
121/02 • Latex **[5, 2006.01]**

Coating compositions based on organic macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds [5]

Note(s) [2006.01]

1. In groups C09D 123/00-C09D 149/00, "aliphatic radical" means an acyclic or a non-aromatic carbocyclic carbon skeleton which is considered to be terminated by every bond to:
   a. an element other than carbon;
   b. a carbon atom having a double bond to one atom other than carbon;
   c. an aromatic carbocyclic ring or a heterocyclic ring.
2. In groups C09D 123/00-C09D 149/00, in the absence of an indication to the contrary, a copolymer is classified according to the major monomeric component.

123/00 Coating compositions based on homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Coating compositions based on derivatives of such polymers [5, 2006.01]
123/02 • not modified by chemical after-treatment **[5, 2006.01]**
123/04 • • Homopolymers or copolymers of ethene **[5, 2006.01]**

123/06 • • • Polyethene **[5, 2006.01]**
123/08 • • • Copolymers of ethene (C09D 123/16 takes precedence) **[5, 2006.01]**
123/10 • • Homopolymers or copolymers of propene **[5, 2006.01]**
123/12 • • • Polypropene **[5, 2006.01]**
123/14 • • • Copolymers of propene (C09D 123/16 takes precedence) **[5, 2006.01]**
123/16 • • Ethene-propene or ethene-propene-diene copolymers **[5, 2006.01]**
123/18 • • Homopolymers or copolymers of hydrocarbons having four or more carbon atoms **[5, 2006.01]**
123/20 • • • having four to nine carbon atoms **[5, 2006.01]**
123/22 • • • • Copolymers of isobutene; Butyl rubber **[5, 2006.01]**
123/24 • • • having ten or more carbon atoms **[5, 2006.01]**
123/26 • modified by chemical after-treatment **[5, 2006.01]**
123/28 • • by reaction with halogens or halogen-containing compounds (C09D 123/32 takes precedence) **[5, 2006.01]**
123/30 • • by oxidation **[5, 2006.01]**
123/32 • • by reaction with phosphorus- or sulfur- containing compounds **[5, 2006.01]**
123/34 • • • by chlorosulfonation **[5, 2006.01]**
123/36 • • by reaction with nitrogen-containing compounds, e.g. by nitration **[5, 2006.01]**

125/00 Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Coating compositions based on derivatives of such polymers [5, 2006.01]
125/02 • Homopolymers or copolymers of hydrocarbons **[5, 2006.01]**
125/04 • • Homopolymers or copolymers of styrene **[5, 2006.01]**
125/06 • • • Polystyrene **[5, 2006.01]**
125/08 • • • Copolymers of styrene (C09D 129/08, C09D 135/06, C09D 155/02 take precedence) **[5, 2006.01]**
125/10 • • • • with conjugated dienes **[5, 2006.01]**
125/12 • • • • with unsaturated nitriles **[5, 2006.01]**
125/14 • • • • with unsaturated esters **[5, 2006.01]**
125/16 • • Homopolymers or copolymers of alkyl-substituted styrenes **[5, 2006.01]**
125/18 • Homopolymers or copolymers of aromatic monomers containing elements other than carbon and hydrogen **[5, 2006.01]**

127/00 Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen; Coating compositions based on derivatives of such polymers [5, 2006.01]
127/02 • not modified by chemical after-treatment **[5, 2006.01]**
127/04 • • containing chlorine atoms **[5, 2006.01]**
127/06 • • • Homopolymers or copolymers of vinyl chloride **[5, 2006.01]**
127/08 • • • Homopolymers or copolymers of vinylidene chloride **[5, 2006.01]**
127/10 • • containing bromine or iodine atoms **[5, 2006.01]**
127/12 • • containing fluorine atoms **[5, 2006.01]**
127/14 • • • Homopolymers or copolymers of vinyl fluoride **[5, 2006.01]**
127/16 • • • Homopolymers or copolymers of vinylidene fluoride **[5, 2006.01]**
127/18 • • • Homopolymers or copolymers of tetrafluoroethene **[5, 2006.01]**
127/20 • • • Homopolymers or copolymers of hexafluoropropene **[5, 2006.01]**
127/22 • modified by chemical after-treatment **[5, 2006.01]**
127/24 • • halogenated **[5, 2006.01]**

129/00 Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal, or ketal radical; Coating compositions based on hydrolysed polymers of esters of unsaturated alcohols with saturated carboxylic acids; Coating compositions based on derivatives of such polymers [5, 2006.01]
129/02 • Homopolymers or copolymers of unsaturated alcohols (C09D 129/14 takes precedence) **[5, 2006.01]**
129/04 • • Polyvinyl alcohol; Partially hydrolysed homopolymers or copolymers of esters of unsaturated alcohols with saturated carboxylic acids **[5, 2006.01]**
129/06 • • Copolymers of allyl alcohol **[5, 2006.01]**
129/08 • • • with vinyl aromatic monomers **[5, 2006.01]**
129/10 • Homopolymers or copolymers of unsaturated ethers (C09D 135/08 takes precedence) **[5, 2006.01]**
129/12 • Homopolymers or copolymers of unsaturated ketones **[5, 2006.01]**
129/14 • Homopolymers or copolymers of acetals or ketals obtained by polymerisation of unsaturated acetals or ketals or by after-treatment of polymers of unsaturated alcohols **[5, 2006.01]**

131/00 Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid, or of a haloformic acid (based on hydrolysed polymers C09D 129/00)**; Coating compositions based on derivatives of such polymers [5, 2006.01]**
131/02 • Homopolymers or copolymers of esters of monocarboxylic acids **[5, 2006.01]**
131/04 • • Homopolymers or copolymers of vinyl acetate **[5, 2006.01]**
131/06 • Homopolymers or copolymers of esters of polycarboxylic acids **[5, 2006.01]**
131/08 • • of phthalic acid **[5, 2006.01]**

133/00 Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by only one carboxyl radical, or of salts, anhydrides, esters, amides, imides, or nitriles thereof; Coating compositions based on derivatives of such polymers [5, 2006.01]
133/02 • Homopolymers or copolymers of acids; Metal or ammonium salts thereof **[5, 2006.01]**
133/04 • Homopolymers or copolymers of esters **[5, 2006.01]**
133/06 • • of esters containing only carbon, hydrogen and oxygen, the oxygen atom being present only as part of the carboxyl radical **[5, 2006.01]**

133/08 • • • Homopolymers or copolymers of acrylic acid esters **[5, 2006.01]**

133/10 • • • Homopolymers or copolymers of methacrylic acid esters **[5, 2006.01]**

133/12 • • • • Homopolymers or copolymers of methyl methacrylate **[5, 2006.01]**

133/14 • • of esters containing halogen, nitrogen, sulfur or oxygen atoms in addition to the carboxy oxygen **[5, 2006.01]**

133/16 • • • Homopolymers or copolymers of esters containing halogen atoms **[5, 2006.01]**

133/18 • Homopolymers or copolymers of nitriles **[5, 2006.01]**

133/20 • • Homopolymers or copolymers of acrylonitrile (C09D 155/02 takes precedence) **[5, 2006.01]**

133/22 • • Homopolymers or copolymers of nitriles containing four or more carbon atoms **[5, 2006.01]**

133/24 • Homopolymers or copolymers of amides or imides **[5, 2006.01]**

133/26 • • Homopolymers or copolymers of acrylamide or methacrylamide **[5, 2006.01]**

135/00 Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least another carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Coating compositions based on derivatives of such polymers [5, 2006.01]

135/02 • Homopolymers or copolymers of esters (C09D 135/06, C09D 135/08 take precedence) **[5, 2006.01]**

135/04 • Homopolymers or copolymers of nitriles (C09D 135/06, C09D 135/08 take precedence) **[5, 2006.01]**

135/06 • Copolymers with vinyl aromatic monomers **[5, 2006.01]**

135/08 • Copolymers with vinyl ethers **[5, 2006.01]**

137/00 Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (based on polymers of cyclic esters of polyfunctional acids C09D 131/00; based on polymers of cyclic anhydrides of unsaturated acids C09D 135/00)**; Coating compositions based on derivatives of such polymers [5, 2006.01]**

139/00 Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a single or double bond to nitrogen or by a heterocyclic ring containing nitrogen; Coating compositions based on derivatives of such polymers [5, 2006.01]

139/02 • Homopolymers or copolymers of vinylamine **[5, 2006.01]**

139/04 • Homopolymers or copolymers of monomers containing heterocyclic rings having nitrogen as ring member **[5, 2006.01]**

139/06 • • Homopolymers or copolymers of N-vinyl-pyrrolidones **[5, 2006.01]**

139/08 • • Homopolymers or copolymers of vinyl-pyridine **[5, 2006.01]**

141/00 Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a bond to sulfur or by a heterocyclic ring containing sulfur; Coating compositions based on derivatives of such polymers [5, 2006.01]

143/00 Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing boron, silicon, phosphorus, selenium, tellurium or a metal; Coating compositions based on derivatives of such polymers [5, 2006.01]

143/02 • Homopolymers or copolymers of monomers containing phosphorus **[5, 2006.01]**

143/04 • Homopolymers or copolymers of monomers containing silicon **[5, 2006.01]**

145/00 Coating compositions based on homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system; Coating compositions based on derivatives of such polymers (based on polymers of cyclic esters of polyfunctional acids C09D 131/00; based on polymers of cyclic anhydrides or imides C09D 135/00) **[5, 2006.01]**

145/02 • Coumarone-indene polymers **[5, 2006.01]**

147/00 Coating compositions based on homolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds; Coating compositions based on derivatives of such polymers (C09D 145/00 takes precedence; based on conjugated diene rubbers C09D 109/00-C09D 121/00) **[5, 2006.01]**

149/00 Coating compositions based on homopolymers or copolymers of compounds having one or more carbon-to-carbon triple bonds; Coating compositions based on derivatives of such polymers [5, 2006.01]

151/00 Coating compositions based on graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds (based on ABS polymers C09D 155/02)**; Coating compositions based on derivatives of such polymers [5, 2006.01]**

151/02 • grafted on to polysaccharides **[5, 2006.01]**

151/04 • grafted on to rubbers **[5, 2006.01]**

151/06 • grafted on to homopolymers or copolymers of aliphatic hydrocarbons containing only one carbon-to-carbon double bond **[5, 2006.01]**

151/08 • grafted on to macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[5, 2006.01]**

151/10 • grafted on to inorganic materials **[5, 2006.01]**

153/00 Coating compositions based on block copolymers containing at least one sequence of a polymer obtained by reactions only involving carbon-to-carbon unsaturated bonds; Coating compositions based on derivatives of such polymers [5, 2006.01]

153/02 • Vinyl aromatic monomers and conjugated dienes **[5, 2006.01]**

155/00 Coating composition based on homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups C09D 123/00-C09D 153/00 [5, 2006.01]

155/02 • ABS [Acrylonitrile-Butadiene-Styrene] polymers **[5, 2006.01]**

155/04 • Polyadducts obtained by the diene synthesis **[5, 2006.01]**

157/00 Coating compositions based on unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds [5, 2006.01]

157/02 • Copolymers of mineral oil hydrocarbons **[5, 2006.01]**

157/04 • Copolymers in which only the monomer in minority is defined **[5, 2006.01]**

157/06 • Homopolymers or copolymers containing elements other than carbon and hydrogen **[5, 2006.01]**

157/08 • • containing halogen atoms **[5, 2006.01]**

157/10 • • containing oxygen atoms **[5, 2006.01]**

157/12 • • containing nitrogen atoms **[5, 2006.01]**

Coating compositions based on organic macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds [5]

159/00 Coating compositions based on polyacetals; Coating compositions based on derivatives of polyacetals [5, 2006.01]

159/02 • Polyacetals containing polyoxymethylene sequence only **[5, 2006.01]**

159/04 • Copolyoxymethylenes **[5, 2006.01]**

161/00 Coating compositions based on condensation polymers of aldehydes or ketones (with polyalcohols C09D 159/00; with polynitriles C09D 177/00)**; Coating compositions based on derivatives of such polymers [5, 2006.01]**

161/02 • Condensation polymers of aldehydes or ketones only **[5, 2006.01]**

161/04 • Condensation polymers of aldehydes or ketones with phenols only **[5, 2006.01]**

161/06 • • of aldehydes with phenols **[5, 2006.01]**

161/08 • • • with monohydric phenols **[5, 2006.01]**

161/10 • • • • Phenol-formaldehyde condensates **[5, 2006.01]**

161/12 • • • with polyhydric phenols **[5, 2006.01]**

161/14 • • • Modified phenol-aldehyde condensates **[5, 2006.01]**

161/16 • • of ketones with phenols **[5, 2006.01]**

161/18 • Condensation polymers of aldehydes or ketones with aromatic hydrocarbons or their halogen derivatives only **[5, 2006.01]**

161/20 • Condensation polymers of aldehydes or ketones with only compounds containing hydrogen attached to nitrogen (with amino phenols C09D 161/04) **[5, 2006.01]**

161/22 • • of aldehydes with acyclic or carbocyclic compounds **[5, 2006.01]**

161/24 • • • with urea or thiourea **[5, 2006.01]**

161/26 • • of aldehydes with heterocyclic compounds **[5, 2006.01]**

161/28 • • • with melamine **[5, 2006.01]**

161/30 • • of aldehydes with heterocyclic and acyclic or carbocyclic compounds **[5, 2006.01]**

161/32 • • Modified amine-aldehyde condensates **[5, 2006.01]**

161/34 • Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups C09D 161/04, C09D 161/18 and C09D 161/20 **[5, 2006.01]**

163/00 Coating compositions based on epoxy resins; Coating compositions based on derivatives of epoxy resins [5, 2006.01]

163/02 • Polyglycidyl ethers of bis-phenols **[5, 2006.01]**

163/04 • Epoxynovolacs **[5, 2006.01]**

163/06 • Triglycidylisocyanurates **[5, 2006.01]**

163/08 • Epoxidised polymerised polyenes **[5, 2006.01]**

163/10 • Epoxy resins modified by unsaturated compounds **[5, 2006.01]**

Note(s) [5]

In groups C09D 165/00-C09D 185/00, in the absence of an indication to the contrary, coating compositions based on macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess.

165/00 Coating compositions based on macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain (C09D 107/00-C09D 157/00, C09D 161/00 take precedence)**; Coating compositions based on derivatives of such polymers [5, 2006.01]**

165/02 • Polyphenylenes **[5, 2006.01]**

165/04 • Polyxylylenes **[5, 2006.01]**

167/00 Coating compositions based on polyesters obtained by reactions forming a carboxylic ester link in the main chain (based on polyester-amides C09D 177/12; based on polyester-imides C09D 179/08)**; Coating compositions based on derivatives of such polymers [5, 2006.01]**

167/02 • Polyesters derived from dicarboxylic acids and dihydroxy compounds (C09D 167/06 takes precedence) **[5, 2006.01]**

167/03 • • the dicarboxylic acids and dihydroxy compounds having the hydroxy and the carboxyl groups directly linked to aromatic rings **[5, 2006.01]**

167/04 • Polyesters derived from hydroxy carboxylic acids, e.g. lactones (C09D 167/06 takes precedence) **[5, 2006.01]**

167/06 • Unsaturated polyesters having carbon-to-carbon unsaturation **[5, 2006.01]**

167/07 • • having terminal carbon-to-carbon unsaturated bonds **[5, 2006.01]**

167/08 • Polyesters modified with higher fatty oils or their acids, or with natural resins or resin acids **[5, 2006.01]**

169/00 Coating compositions based on polycarbonates; Coating compositions based on derivatives of polycarbonates [5, 2006.01]

171/00 Coating compositions based on polyethers obtained by reactions forming an ether link in the main chain (based on polyacetals C09D 159/00; based on epoxy resins C09D 163/00; based on polythioether-ethers C09D 181/02; based on polyethersulfones C09D 181/06)**; Coating compositions based on derivatives of such polymers [5, 2006.01]**

171/02 • Polyalkylene oxides **[5, 2006.01]**

171/03 • • Polyepihalohydrins **[5, 2006.01]**

171/08 • Polyethers derived from hydroxy compounds or from their metallic derivatives (C09D 171/02 takes precedence) **[5, 2006.01]**
171/10 • • from phenols **[5, 2006.01]**
171/12 • • • Polyphenylene oxides **[5, 2006.01]**
171/14 • • Furfuryl alcohol polymers **[5, 2006.01]**

173/00 Coating compositions based on macromolecular compounds obtained by reactions forming a linkage containing oxygen or oxygen and carbon in the main chain, not provided for in groups C09D 159/00-C09D 171/00; Coating compositions based on derivatives of such polymers [5, 2006.01]
173/02 • Polyanhydrides **[5, 2006.01]**

175/00 Coating compositions based on polyureas or polyurethanes; Coating compositions based on derivatives of such polymers [5, 2006.01]
175/02 • Polyureas **[5, 2006.01]**
175/04 • Polyurethanes **[5, 2006.01]**
175/06 • • from polyesters **[5, 2006.01]**
175/08 • • from polyethers **[5, 2006.01]**
175/10 • • from polyacetals **[5, 2006.01]**
175/12 • • from compounds containing nitrogen and active hydrogen, the nitrogen atom not being part of an isocyanate group **[5, 2006.01]**
175/14 • • Polyurethanes having carbon-to-carbon unsaturated bonds **[5, 2006.01]**
175/16 • • • having terminal carbon-to-carbon unsaturated bonds **[5, 2006.01]**

177/00 Coating compositions based on polyamides obtained by reactions forming a carboxylic amide link in the main chain (based on polyhydrazides C09D 179/06; based on polyamide-imides C09D 179/08)**; Coating compositions based on derivatives of such polymers [5, 2006.01]**
177/02 • Polyamides derived from omega-amino carboxylic acids or from lactams thereof (C09D 177/10 takes precedence) **[5, 2006.01]**
177/04 • Polyamides derived from alpha-amino carboxylic acids (C09D 177/10 takes precedence) **[5, 2006.01]**
177/06 • Polyamides derived from polyamines and polycarboxylic acids (C09D 177/10 takes precedence) **[5, 2006.01]**
177/08 • • from polyamines and polymerised unsaturated fatty acids **[5, 2006.01]**
177/10 • Polyamides derived from aromatically bound amino and carboxyl groups of amino carboxylic acids or of polyamines and polycarboxylic acids **[5, 2006.01]**
177/12 • Polyester-amides **[5, 2006.01]**

179/00 Coating compositions based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen, with or without oxygen, or carbon only, not provided for in groups C09D 161/00-C09D 177/00 [5, 2006.01]
179/02 • Polyamines **[5, 2006.01]**
179/04 • Polycondensates having nitrogen-containing heterocyclic rings in the main chain; Polyhydrazides; Polyamide acids or similar polyimide precursors **[5, 2006.01]**
179/06 • • Polyhydrazides; Polytriazoles; Polyamino-triazoles; Polyoxadiazoles **[5, 2006.01]**
179/08 • • Polyimides; Polyester-imides; Polyamide-imides; Polyamide acids or similar polyimide precursors **[5, 2006.01]**

181/00 Coating compositions based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing sulfur, with or without nitrogen, oxygen, or carbon only; Coating compositions based on polysulfones; Coating compositions based on derivatives of such polymers [5, 2006.01]
181/02 • Polythioethers; Polythioether-ethers **[5, 2006.01]**
181/04 • Polysulfides **[5, 2006.01]**
181/06 • Polysulfones; Polyethersulfones **[5, 2006.01]**
181/08 • Polysulfonates **[5, 2006.01]**
181/10 • Polysulfonamides; Polysulfonimides **[5, 2006.01]**

183/00 Coating compositions based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon, with or without sulfur, nitrogen, oxygen, or carbon only; Coating compositions based on derivatives of such polymers [5, 2006.01]
183/02 • Polysilicates **[5, 2006.01]**
183/04 • Polysiloxanes **[5, 2006.01]**
183/05 • • containing silicon bound to hydrogen **[5, 2006.01]**
183/06 • • containing silicon bound to oxygen-containing groups (C09D 183/12 takes precedence) **[5, 2006.01]**
183/07 • • containing silicon bound to unsaturated aliphatic groups **[5, 2006.01]**
183/08 • • containing silicon bound to organic groups containing atoms other than carbon, hydrogen, and oxygen **[5, 2006.01]**
183/10 • Block or graft copolymers containing polysiloxane sequences (obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane C09D 151/08, C09D 153/00) **[5, 2006.01]**
183/12 • • containing polyether sequences **[5, 2006.01]**
183/14 • in which at least two but not all the silicon atoms are connected by linkages other than oxygen atoms (C09D 183/10 takes precedence) **[5, 2006.01]**
183/16 • in which all the silicon atoms are connected by linkages other than oxygen atoms **[5, 2006.01]**

185/00 Coating compositions based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing atoms other than silicon, sulfur, nitrogen, oxygen, and carbon; Coating compositions based on derivatives of such polymers [5, 2006.01]
185/02 • containing phosphorus **[5, 2006.01]**
185/04 • containing boron **[5, 2006.01]**

187/00 Coating compositions based on unspecified macromolecular compounds, obtained otherwise than by polymerisation reactions only involving unsaturated carbon-to-carbon bonds [5, 2006.01]

Coating compositions based on natural macromolecular compounds or on derivatives thereof [5]

189/00 Coating compositions based on proteins; Coating compositions based on derivatives thereof [5, 2006.01]
189/02 • Casein-aldehyde condensates **[5, 2006.01]**
189/04 • Products derived from waste materials, e.g. horn, hoof or hair **[5, 2006.01]**
189/06 • • derived from leather or skin **[5, 2006.01]**

191/00 **Coating compositions based on oils, fats or waxes; Coating compositions based on derivatives thereof** (polishing compositions, ski waxes C09G) **[5, 2006.01]**
191/02 • Vulcanised oils, e.g. factice **[5, 2006.01]**
191/04 • Linoxyn **[5, 2006.01]**
191/06 • Waxes **[5, 2006.01]**
191/08 • • Mineral waxes **[5, 2006.01]**

193/00 **Coating compositions based on natural resins; Coating compositions based on derivatives thereof** (based on polysaccharides C09D 101/00-C09D 105/00; based on natural rubber C09D 107/00; polishing compositions C09G) **[5, 2006.01]**
193/02 • Shellac **[5, 2006.01]**
193/04 • Rosin **[5, 2006.01]**

195/00 **Coating compositions based on bituminous materials, e.g. asphalt, tar or pitch [5, 2006.01]**

197/00 **Coating compositions based on lignin-containing materials** (based on polysaccharides C09D 101/00-C09D 105/00) **[5, 2006.01]**
197/02 • Lignocellulosic material, e.g. wood, straw or bagasse **[5, 2006.01]**

199/00 **Coating compositions based on natural macromolecular compounds or on derivatives thereof, not provided for in groups C09D 101/00-C09D 107/00 or C09D 189/00-C09D 197/00 [5, 2006.01]**

201/00 **Coating compositions based on unspecified macromolecular compounds [5, 2006.01]**
201/02 • characterised by the presence of specified groups **[5, 2006.01]**
201/04 • • containing halogen atoms **[5, 2006.01]**
201/06 • • containing oxygen atoms **[5, 2006.01]**
201/08 • • • Carboxyl groups **[5, 2006.01]**
201/10 • • containing hydrolysable silane groups **[5, 2006.01]**

C09F NATURAL RESINS; FRENCH POLISH; DRYING-OILS; DRIERS (SICCATIVES); TURPENTINE

1/00 **Obtaining, purification, or chemical modification of natural resins, e.g. oleo-resins [1, 2006.01]**
1/02 • Purification **[1, 2006.01]**
1/04 • Chemical modification, e.g. esterification **[1, 2006.01]**

3/00 **Obtaining spirits of turpentine [1, 2006.01]**
3/02 • as a by-product in the paper-pulping process **[1, 2006.01]**

5/00 **Obtaining drying-oils [1, 2006.01]**
5/02 • from natural sources **[1, 2006.01]**
5/04 • • from cashew nuts **[1, 2006.01]**
5/06 • by dehydration of hydroxylated fatty acids or oils **[1, 2006.01]**
5/08 • by esterification of fatty acids **[1, 2006.01]**
5/10 • Refining **[1, 2006.01]**
5/12 • • by distillation **[1, 2006.01]**

7/00 **Chemical modification of drying-oils** (factice C08H) **[1, 2006.01]**
7/02 • by oxidising **[1, 2006.01]**
7/04 • by voltolising **[1, 2006.01]**
7/06 • by polymerisation **[1, 2006.01]**
7/08 • by isomerisation **[1, 2006.01]**
7/10 • by re-esterification **[1, 2006.01]**
7/12 • Apparatus therefor **[1, 2006.01]**

9/00 **Compounds to be used as driers (siccatives) [1, 2006.01]**

11/00 **Preparation of French polish [1, 2006.01]**

C09G POLISHING COMPOSITIONS OTHER THAN FRENCH POLISH; SKI WAXES

1/00 **Polishing compositions** (French polish C09F 11/00; detergents C11D) **[1, 2006.01]**
1/02 • containing abrasives or grinding agents **[1, 2006.01]**
1/04 • Aqueous dispersions (C09G 1/02 takes precedence) **[1, 2006.01]**
1/06 • Other polishing compositions **[1, 2006.01]**
1/08 • • based on wax **[1, 2006.01]**
1/10 • • • based on mixtures of wax and natural or synthetic resin **[1, 2006.01]**
1/12 • • • • mixtures of wax and silicon-containing polycondensates **[1, 2006.01]**
1/14 • • based on non-waxy substances **[1, 2006.01]**
1/16 • • • on natural or synthetic resins **[1, 2006.01]**
1/18 • • • on other substances **[1, 2006.01]**

3/00 **Ski waxes [1, 2006.01]**

C09H PREPARATION OF GLUE OR GELATINE

1/00 **Pretreatment of collagen-containing raw materials for the manufacture of glue [1, 2006.01]**
1/02 • of bones (defatting bones C11B) **[1, 2006.01]**
1/04 • of hides, hooves or leather scrap **[1, 2006.01]**

3/00 **Isolation of glue or gelatine from raw materials, e.g. by extracting, by heating** (gelatine for foodstuffs A23J 1/10) **[1, 2006.01]**
3/02 • Purification of solutions of gelatine **[1, 2006.01]**

5/00 Stabilisation of solutions of glue or gelatine [1, 2006.01]

7/00 Preparation of water-insoluble gelatine [1, 2006.01]

9/00 Drying of glue or gelatine [1, 2006.01]

9/02 • in the form of foils **[1, 2006.01]**

9/04 • in the form of granules, e.g. beads **[1, 2006.01]**

C09J ADHESIVES; NON-MECHANICAL ASPECTS OF ADHESIVE PROCESSES IN GENERAL; ADHESIVE PROCESSES NOT PROVIDED FOR ELSEWHERE; USE OF MATERIALS AS ADHESIVES (surgical adhesives A61L 24/00; adhesives on the basis of non specified organic macromolecular compounds used as bonding agents in layered products B32B; labelling fabrics or comparable materials or articles with deformable surface using adhesives and thermo-activatable adhesives respectively B65C 5/02, B65C 5/04; preparation of glue or gelatine C09H; adhesive labels, tag tickets or similar identification of indication means G09F 3/10) **[5]**

Note(s) [5]

1. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "use of materials as adhesives" means the use of known or new polymers or products;
   - "rubber" includes:
     a. natural or conjugated diene rubbers;
     b. rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for adhesives based on such macromolecular compounds);
   - "based on" is defined by means of Note (3), below.
2. In this subclass, adhesives containing specific organic macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.
   Example: an adhesive containing polyethene and amino-propyltrimethoxysilane is classified in group C09J 123/06.
   However, adhesives containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups C09J 159/00-C09J 187/00 are classified according to the unsaturated non-macromolecular component in group C09J 4/00.
   Example: an adhesive containing polyethene and styrene monomer is classified in group C09J 4/00.
   Aspects relating to the physical nature of the adhesives or to the effects produced, as defined in group C09J 9/00, if clearly and explicitly stated, are also classified in this subclass.
   Adhesives characterised by other features, e.g. additives, are classified in group C09J 11/00, unless the macromolecular constituent is specified.
3. In this subclass, adhesives comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the adhesive is based. If the adhesive is based on two or more constituents, present in equal proportions, the adhesive is classified according to each of these constituents.
   Example: an adhesive containing 80 parts of polyethene and 20 parts of polyvinylchloride is classified in group C09J 123/06. An adhesive containing 40 parts of polyethene and 40 parts of polyvinylchloride is classified in groups C09J 123/06 and C09J 127/06.

Subclass index

ADHESIVES
Based on inorganic constituents....1/00
Based on organic macromolecular constituents....101/00-201/00
Based on organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond....4/00
Physical nature or effects produced....9/00
Other features, e.g. additives....11/00
ADHESIVE PROCESSES IN GENERAL; ADHESIVE PROCESSES NOT PROVIDED FOR ELSEWHERE....5/00
ADHESIVES IN THE FORM OF FILMS OR FOILS....7/00

1/00 Adhesives based on inorganic constituents [1, 2006.01]

1/02 • containing water-soluble alkali silicates **[1, 2006.01]**

4/00 Adhesives based on organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond [5, 2006.01]

4/02 • Acrylmonomers **[5, 2006.01]**

4/04 • • Cyanoacrylate monomers **[5, 2006.01]**

4/06 • in combination with a macromolecular compound other than an unsaturated polymer of groups C09J 159/00-C09J 187/00 **[5, 2006.01]**

5/00 Adhesive processes in general; Adhesive processes not provided for elsewhere, e.g. relating to primers [1, 2006.01]

5/02 • involving pretreatment of the surfaces to be joined **[1, 2006.01]**

5/04 • involving separate application of adhesive ingredients to the different surfaces to be joined **[1, 2006.01]**

5/06 • involving heating of the applied adhesive **[1, 2006.01]**

5/08 • using foamed adhesives **[1, 2006.01]**

5/10 • Joining materials by welding overlapping edges with an insertion of plastic material **[1, 2006.01]**

7/00 Adhesives in the form of films or foils [1, 2006.01]

7/02 • on carriers **[1, 2006.01]**

7/04 • • on paper or textile fabric (adhesive bandages, dressings or absorbent pads A61L 15/16) **[1, 2006.01]**

9/00 **Adhesives characterised by their physical nature or the effects produced, e.g. glue sticks** (C09J 7/00 takes precedence) **[5, 2006.01]**

9/02 • Electrically-conducting adhesives (electrically conductive adhesives specially adapted for use in therapy or testing in vivo A61K 50/00) **[5, 2006.01]**

11/00 **Features of adhesives not provided for in group C09J 9/00, e.g. additives [5, 2006.01]**

11/02 • Non-macromolecular additives **[5, 2006.01]**
11/04 • • inorganic **[5, 2006.01]**
11/06 • • organic **[5, 2006.01]**
11/08 • Macromolecular additives **[5, 2006.01]**

Adhesives based on polysaccharides or on their derivatives [5]

Note(s) [2006.01]

1. In groups C09J 101/00-C09J 201/00, any macromolecular constituent of an adhesive composition which is not identified by the classification according to Note (3) after the title of subclass C09J, and the use of which is determined to be novel and non-obvious, must also be classified in a group chosen from groups C09J 101/00-C09J 201/00.
2. Any macromolecular constituent of an adhesive composition which is not identified by the classification according to Note (3) after the title of subclass C09J or Note (1) above, and which is considered to represent information of interest for search, may also be classified in a group chosen from groups C09J 101/00-C09J 201/00. This can, for example, be the case when it is considered of interest to enable searching of adhesive compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

101/00 **Adhesives based on cellulose, modified cellulose, or cellulose derivatives [5, 2006.01]**

101/02 • Cellulose; Modified cellulose **[5, 2006.01]**
101/04 • • Oxycellulose; Hydrocellulose **[5, 2006.01]**
101/06 • • Cellulose hydrate **[5, 2006.01]**
101/08 • Cellulose derivatives **[5, 2006.01]**
101/10 • • Esters of organic acids (of both organic acids and inorganic acids C09J 101/20) **[5, 2006.01]**
101/12 • • • Cellulose acetate **[5, 2006.01]**
101/14 • • • Mixed esters, e.g. cellulose acetate-butyrate **[5, 2006.01]**
101/16 • • Esters of inorganic acids (of both organic acids and inorganic acids C09J 101/20) **[5, 2006.01]**
101/18 • • • Cellulose nitrate **[5, 2006.01]**
101/20 • • Esters of both organic acids and inorganic acids **[5, 2006.01]**
101/22 • • Cellulose xanthate **[5, 2006.01]**
101/24 • • • Viscose **[5, 2006.01]**
101/26 • • Cellulose ethers **[5, 2006.01]**
101/28 • • • Alkyl ethers **[5, 2006.01]**
101/30 • • • Aryl ethers; Aralkyl ethers **[5, 2006.01]**
101/32 • • Cellulose ether-esters **[5, 2006.01]**

103/00 **Adhesives based on starch, amylose or amylopectin or on their derivatives or degradation products [5, 2006.01]**

103/02 • Starch; Degradation products thereof, e.g. dextrin **[5, 2006.01]**
103/04 • Starch derivatives **[5, 2006.01]**
103/06 • • Esters **[5, 2006.01]**
103/08 • • Ethers **[5, 2006.01]**
103/10 • • Oxidised starch **[5, 2006.01]**
103/12 • Amylose; Amylopectin; Degradation products thereof **[5, 2006.01]**
103/14 • Amylose derivatives; Amylopectin derivatives **[5, 2006.01]**
103/16 • • Esters **[5, 2006.01]**
103/18 • • Ethers **[5, 2006.01]**
103/20 • • Oxidised amylose; Oxidised amylopectin **[5, 2006.01]**

105/00 **Adhesives based on polysaccharides or on their derivatives, not provided for in groups C09J 101/00 or C09J 103/00 [5, 2006.01]**

105/02 • Dextran; Derivatives thereof **[5, 2006.01]**
105/04 • Alginic acid; Derivatives thereof **[5, 2006.01]**
105/06 • Pectin; Derivatives thereof **[5, 2006.01]**
105/08 • Chitin; Chondroitin sulfate; Hyaluronic acid; Derivatives thereof **[5, 2006.01]**
105/10 • Heparin; Derivatives thereof **[5, 2006.01]**
105/12 • Agar-agar; Derivatives thereof **[5, 2006.01]**
105/14 • Hemicellulose; Derivatives thereof **[5, 2006.01]**
105/16 • Cyclodextrin; Derivatives thereof **[5, 2006.01]**

Adhesives based on rubbers or on their derivatives [5]

107/00 **Adhesives based on natural rubber [5, 2006.01]**

107/02 • Latex **[5, 2006.01]**

109/00 **Adhesives based on homopolymers or copolymers of conjugated diene hydrocarbons [5, 2006.01]**

109/02 • Copolymers with acrylonitrile **[5, 2006.01]**
109/04 • • Latex **[5, 2006.01]**
109/06 • Copolymers with styrene **[5, 2006.01]**
109/08 • • Latex **[5, 2006.01]**
109/10 • Latex (C09J 109/04, C09J 109/08 take precedence) **[5, 2006.01]**

111/00 **Adhesives based on homopolymers or copolymers of chloroprene [5, 2006.01]**

111/02 • Latex **[5, 2006.01]**

113/00 **Adhesives based on rubbers containing carboxyl groups [5, 2006.01]**

113/02 • Latex **[5, 2006.01]**

115/00 **Adhesives based on rubber derivatives** (C09J 111/00, C09J 113/00 take precedence) **[5, 2006.01]**

115/02 • Rubber derivatives containing halogen **[5, 2006.01]**

117/00 **Adhesives based on reclaimed rubber [5, 2006.01]**

119/00 **Adhesives based on rubbers, not provided for in groups C09J 107/00-C09J 117/00 [5, 2006.01]**

119/02 • Latex **[5, 2006.01]**

121/00 **Adhesives based on unspecified rubbers [5, 2006.01]**

121/02 • Latex **[5, 2006.01]**

Adhesives based on organic macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds [5]

Note(s) [1, 2006.01]

1. In groups C09J 123/00-C09J 149/00, "aliphatic radical" means an acyclic or a non-aromatic carbocyclic carbon skeleton which is considered to be terminated by every bond to:
   a. an element other than carbon;
   b. a carbon atom having a double bond to one atom other than carbon;
   c. an aromatic carbocyclic ring or a heterocyclic ring.
2. In groups C09J 123/00-C09J 149/00, in the absence of an indication to the contrary, a copolymer is classified according to the major monomeric component.

123/00 Adhesives based on homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Adhesives based on derivatives of such polymers [5, 2006.01]

123/02 • not modified by chemical after-treatment **[5, 2006.01]**
123/04 • • Homopolymers or copolymers of ethene **[5, 2006.01]**
123/06 • • • Polyethene **[5, 2006.01]**
123/08 • • • Copolymers of ethene (C09J 123/16 takes precedence) **[5, 2006.01]**
123/10 • • Homopolymers or copolymers of propene **[5, 2006.01]**
123/12 • • • Polypropene **[5, 2006.01]**
123/14 • • • Copolymers of propene (C09J 123/16 takes precedence) **[5, 2006.01]**
123/16 • • Ethene-propene or ethene-propene-diene copolymers **[5, 2006.01]**
123/18 • • Homopolymers or copolymers of hydrocarbons having four or more carbon atoms **[5, 2006.01]**
123/20 • • • having four to nine carbon atoms **[5, 2006.01]**
123/22 • • • • Copolymers of isobutene; Butyl rubber **[5, 2006.01]**
123/24 • • • having ten or more carbon atoms **[5, 2006.01]**
123/26 • modified by chemical after-treatment **[5, 2006.01]**
123/28 • • by reaction with halogens or halogen-containing compounds (C09J 123/32 takes precedence) **[5, 2006.01]**
123/30 • • by oxidation **[5, 2006.01]**
123/32 • • by reaction with phosphorus- or sulfur-containing compounds **[5, 2006.01]**
123/34 • • • by chlorosulfonation **[5, 2006.01]**
123/36 • • by reaction with nitrogen-containing compounds, e.g. by nitration **[5, 2006.01]**

125/00 Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Adhesives based on derivatives of such polymers [5, 2006.01]

125/02 • Homopolymers or copolymers of hydrocarbons **[5, 2006.01]**
125/04 • • Homopolymers or copolymers of styrene **[5, 2006.01]**
125/06 • • • Polystyrene **[5, 2006.01]**
125/08 • • • Copolymers of styrene (C09J 129/08, C09J 135/06, C09J 155/02 take precedence) **[5, 2006.01]**
125/10 • • • • with conjugated dienes **[5, 2006.01]**
125/12 • • • • with unsaturated nitriles **[5, 2006.01]**
125/14 • • • • with unsaturated esters **[5, 2006.01]**
125/16 • • Homopolymers or copolymers of alkyl-substituted styrenes **[5, 2006.01]**
125/18 • Homopolymers or copolymers of aromatic monomers containing elements other than carbon and hydrogen **[5, 2006.01]**

127/00 Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen; Adhesives based on derivatives of such polymers [5, 2006.01]

127/02 • not modified by chemical after-treatment **[5, 2006.01]**
127/04 • • containing chlorine atoms **[5, 2006.01]**
127/06 • • • Homopolymers or copolymers of vinyl chloride **[5, 2006.01]**
127/08 • • • Homopolymers or copolymers of vinylidene chloride **[5, 2006.01]**
127/10 • • containing bromine or iodine atoms **[5, 2006.01]**
127/12 • • containing fluorine atoms **[5, 2006.01]**
127/14 • • • Homopolymers or copolymers of vinyl fluoride **[5, 2006.01]**
127/16 • • • Homopolymers or copolymers of vinylidene fluoride **[5, 2006.01]**
127/18 • • • Homopolymers or copolymers of tetrafluoroethene **[5, 2006.01]**
127/20 • • • Homopolymers or copolymers of hexafluoropropene **[5, 2006.01]**
127/22 • modified by chemical after-treatment **[5, 2006.01]**
127/24 • • halogenated **[5, 2006.01]**

129/00 Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal, or ketal radical; Adhesives based on hydrolysed polymers of esters of unsaturated alcohols with saturated carboxylic acids; Adhesives based on derivatives of such polymers [5, 2006.01]

129/02 • Homopolymers or copolymers of unsaturated alcohols (C09J 129/14 takes precedence) **[5, 2006.01]**
129/04 • • Polyvinyl alcohol; Partially hydrolysed homopolymers or copolymers of esters of unsaturated alcohols with saturated carboxylic acids **[5, 2006.01]**
129/06 • • Copolymers of allyl alcohol **[5, 2006.01]**
129/08 • • • with vinyl aromatic monomers **[5, 2006.01]**
129/10 • Homopolymers or copolymers of unsaturated ethers (C09J 135/08 takes precedence) **[5, 2006.01]**
129/12 • Homopolymers or copolymers of unsaturated ketones **[5, 2006.01]**
129/14 • Homopolymers or copolymers of acetals or ketals obtained by polymerisation of unsaturated acetals or ketals or by after-treatment of polymers of unsaturated alcohols **[5, 2006.01]**

131/00 **Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid, or of a haloformic acid** (based on hydrolysed polymers C09J 129/00)**; Adhesives based on derivatives of such polymers [5, 2006.01]**

131/02 • Homopolymers or copolymers of esters of monocarboxylic acids **[5, 2006.01]**

131/04 • • Homopolymers or copolymers of vinyl acetate **[5, 2006.01]**

131/06 • Homopolymers or copolymers of esters of polycarboxylic acids **[5, 2006.01]**

131/08 • • of phthalic acid **[5, 2006.01]**

133/00 **Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by only one carboxyl radical, or of salts, anhydrides, esters, amides, imides, or nitriles thereof; Adhesives based on derivatives of such polymers [5, 2006.01]**

133/02 • Homopolymers or copolymers of acids; Metal or ammonium salts thereof **[5, 2006.01]**

133/04 • Homopolymers or copolymers of esters **[5, 2006.01]**

133/06 • • of esters containing only carbon, hydrogen and oxygen, the oxygen atom being present only as part of the carboxyl radical **[5, 2006.01]**

133/08 • • • Homopolymers or copolymers of acrylic acid esters **[5, 2006.01]**

133/10 • • • Homopolymers or copolymers of methacrylic acid esters **[5, 2006.01]**

133/12 • • • • Homopolymers or copolymers of methyl methacrylate **[5, 2006.01]**

133/14 • • of esters containing halogen, nitrogen, sulfur or oxygen atoms in addition to the carboxy oxygen **[5, 2006.01]**

133/16 • • • Homopolymers or copolymers of esters containing halogen atoms **[5, 2006.01]**

133/18 • Homopolymers or copolymers of nitriles **[5, 2006.01]**

133/20 • • Homopolymers or copolymers of acrylonitrile (C09J 155/02 takes precedence) **[5, 2006.01]**

133/22 • • Homopolymers or copolymers of nitriles containing four or more carbon atoms **[5, 2006.01]**

133/24 • Homopolymers or copolymers of amides or imides **[5, 2006.01]**

133/26 • • Homopolymers or copolymers of acrylamide or methacrylamide **[5, 2006.01]**

135/00 **Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least another carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Adhesives based on derivatives of such polymers [5, 2006.01]**

135/02 • Homopolymers or copolymers of esters (C09J 135/06, C09J 135/08 take precedence) **[5, 2006.01]**

135/04 • Homopolymers or copolymers of nitriles (C09J 135/06, C09J 135/08 take precedence) **[5, 2006.01]**

135/06 • Copolymers with vinyl aromatic monomers **[5, 2006.01]**

135/08 • Copolymers with vinyl ethers **[5, 2006.01]**

137/00 **Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen** (based on polymers of cyclic esters of polyfunctional acids C09J 131/00; based on polymers of cyclic anhydrides of unsaturated acids C09J 135/00)**; Adhesives based on derivatives of such polymers [5, 2006.01]**

139/00 **Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a single or double bond to nitrogen or by a heterocyclic ring containing nitrogen; Adhesives based on derivatives of such polymers [5, 2006.01]**

139/02 • Homopolymers or copolymers of vinylamine **[5, 2006.01]**

139/04 • Homopolymers or copolymers of monomers containing heterocyclic rings having nitrogen as ring member **[5, 2006.01]**

139/06 • • Homopolymers or copolymers of N-vinyl-pyrrolidones **[5, 2006.01]**

139/08 • • Homopolymers or copolymers of vinyl-pyridine **[5, 2006.01]**

141/00 **Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a bond to sulfur or by a heterocyclic ring containing sulfur; Adhesives based on derivatives of such polymers [5, 2006.01]**

143/00 **Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing boron, silicon, phosphorus, selenium, tellurium, or a metal; Adhesives based on derivatives of such polymers [5, 2006.01]**

143/02 • Homopolymers or copolymers of monomers containing phosphorus **[5, 2006.01]**

143/04 • Homopolymers or copolymers of monomers containing silicon **[5, 2006.01]**

145/00 **Adhesives based on homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system; Adhesives based on derivatives of such polymers** (based on polymers of cyclic esters of polyfunctional acids C09J 131/00; based on polymers of cyclic anhydrides or imides C09J 135/00) **[5, 2006.01]**

145/02 • Coumarone-indene polymers **[5, 2006.01]**

147/00 **Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds; Adhesives based on derivatives of such polymers** (C09J 145/00 takes precedence; based on conjugated diene rubbers C09J 109/00-C09J 121/00) **[5, 2006.01]**

149/00 **Adhesives based on homopolymers or copolymers of compounds having one or more carbon-to-carbon triple bonds; Adhesives based on derivatives of such polymers [5, 2006.01]**

151/00 **Adhesives based on graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds** (based on ABS polymers C09J 155/02)**; Adhesives based on derivatives of such polymers [5, 2006.01]**

151/02 • grafted on to polysaccharides **[5, 2006.01]**

151/04 • grafted on to rubbers **[5, 2006.01]**

151/06 • grafted on to homopolymers or copolymers of aliphatic hydrocarbons containing only one carbon-to-carbon double bond **[5, 2006.01]**

151/08 • grafted on to macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[5, 2006.01]**

151/10 • grafted on to inorganic materials **[5, 2006.01]**

153/00 **Adhesives based on block copolymers containing at least one sequence of a polymer obtained by reactions only involving carbon-to-carbon unsaturated bonds; Adhesives based on derivatives of such polymers [5, 2006.01]**

153/02 • Vinyl aromatic monomers and conjugated dienes **[5, 2006.01]**

155/00 **Adhesives based on homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups C09J 123/00-C09J 153/00 [5, 2006.01]**

155/02 • ABS [Acrylonitrile-Butadiene-Styrene] polymers **[5, 2006.01]**

155/04 • Polyadducts obtained by the diene synthesis **[5, 2006.01]**

157/00 **Adhesives based on unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds [5, 2006.01]**

157/02 • Copolymers of mineral oil hydrocarbons **[5, 2006.01]**

157/04 • Copolymers in which only the monomer in minority is defined **[5, 2006.01]**

157/06 • Homopolymers or copolymers containing elements other than carbon and hydrogen **[5, 2006.01]**

157/08 • • containing halogen atoms **[5, 2006.01]**

157/10 • • containing oxygen atoms **[5, 2006.01]**

157/12 • • containing nitrogen atoms **[5, 2006.01]**

Adhesives based on organic macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds [5]

159/00 **Adhesives based on polyacetals; Adhesives based on derivatives of polyacetals [5, 2006.01]**

159/02 • Polyacetals containing polyoxymethylene sequences only **[5, 2006.01]**

159/04 • Copolyoxymethylenes **[5, 2006.01]**

161/00 **Adhesives based on condensation polymers of aldehydes or ketones** (with polyalcohols C09J 159/00; with polynitriles C09J 177/00)**; Adhesives based on derivatives of such polymers [5, 2006.01]**

161/02 • Condensation polymers of aldehydes or ketones only **[5, 2006.01]**

161/04 • Condensation polymers of aldehydes or ketones with phenols only **[5, 2006.01]**

161/06 • • of aldehydes with phenols **[5, 2006.01]**

161/08 • • • with monohydric phenols **[5, 2006.01]**

161/10 • • • • Phenol-formaldehyde condensates **[5, 2006.01]**

161/12 • • • with polyhydric phenols **[5, 2006.01]**

161/14 • • • Modified phenol-aldehyde condensates **[5, 2006.01]**

161/16 • • of ketones with phenols **[5, 2006.01]**

161/18 • Condensation polymers of aldehydes or ketones with aromatic hydrocarbons or their halogen derivatives only **[5, 2006.01]**

161/20 • Condensation polymers of aldehydes or ketones with only compounds containing hydrogen attached to nitrogen (with amino phenols C09J 161/04) **[5, 2006.01]**

161/22 • • of aldehydes with acyclic or carbocyclic compounds **[5, 2006.01]**

161/24 • • • with urea or thiourea **[5, 2006.01]**

161/26 • • of aldehydes with heterocyclic compounds **[5, 2006.01]**

161/28 • • • with melamine **[5, 2006.01]**

161/30 • • of aldehydes with heterocyclic and acyclic or carbocyclic compounds **[5, 2006.01]**

161/32 • • Modified amine-aldehyde condensates **[5, 2006.01]**

161/34 • Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups C09J 161/04, C09J 161/18 and C09J 161/20 **[5, 2006.01]**

163/00 **Adhesives based on epoxy resins; Adhesives based on derivatives of epoxy resins [5, 2006.01]**

163/02 • Polyglycidyl ethers of bis-phenols **[5, 2006.01]**

163/04 • Epoxynovolacs **[5, 2006.01]**

163/06 • Triglycidylisocyanurates **[5, 2006.01]**

163/08 • Epoxidised polymerised polyenes **[5, 2006.01]**

163/10 • Epoxy resins modified by unsaturated compounds **[5, 2006.01]**

Note(s) [5]

In groups C09J 165/00-C09J 185/00, in the absence of an indication to the contrary, adhesives based on macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess.

165/00 **Adhesives based on macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain** (C09J 107/00-C09J 157/00, C09J 161/00 take precedence)**; Adhesives based on derivatives of such polymers [5, 2006.01]**

165/02 • Polyphenylenes **[5, 2006.01]**

165/04 • Polyxylylenes **[5, 2006.01]**

167/00 **Adhesives based on polyesters obtained by reactions forming a carboxylic ester link in the main chain** (based on polyester-amides C09J 177/12; based on polyester-imides C09J 179/08)**; Adhesives based on derivatives of such polymers [5, 2006.01]**

167/02 • Polyesters derived from dicarboxylic acids and dihydroxy compounds (C09J 167/06 takes precedence) **[5, 2006.01]**

167/03 • • the dicarboxylic acids and dihydroxy compounds having the hydroxy and the carboxyl groups directly linked to aromatic rings **[5, 2006.01]**

167/04 • Polyesters derived from hydroxy carboxylic acids, e.g. lactones (C09J 167/06 takes precedence) **[5, 2006.01]**

167/06 • Unsaturated polyesters having carbon-to-carbon unsaturation **[5, 2006.01]**

167/07 • • having terminal carbon-to-carbon unsaturated bonds **[5, 2006.01]**

167/08 • Polyesters modified with higher fatty oils or their acids, or with natural resins or resin acids **[5, 2006.01]**

169/00 Adhesives based on polycarbonates; Adhesives based on derivatives of polycarbonates [5, 2006.01]

171/00 Adhesives based on polyethers obtained by reactions forming an ether link in the main chain (based on polyacetals C09J 159/00; based on epoxy resins C09J 163/00; based on polythioether-ethers C09J 181/02; based on polyethersulfones C09J 181/06)**; Adhesives based on derivatives of such polymers [5, 2006.01]**

171/02 • Polyalkylene oxides **[5, 2006.01]**

171/03 • • Polyepihalohydrins **[5, 2006.01]**

171/08 • Polyethers derived from hydroxy compounds or from their metallic derivatives (C09J 171/02 takes precedence) **[5, 2006.01]**

171/10 • • from phenols **[5, 2006.01]**

171/12 • • • Polyphenylene oxides **[5, 2006.01]**

171/14 • • Furfuryl alcohol polymers **[5, 2006.01]**

173/00 Adhesives based on macromolecular compounds obtained by reactions forming a linkage containing oxygen or oxygen and carbon in the main chain, not provided for in groups C09J 159/00-C09J 171/00; Adhesives based on derivatives of such polymers [5, 2006.01]

173/02 • Polyanhydrides **[5, 2006.01]**

175/00 Adhesives based on polyureas or polyurethanes; Adhesives based on derivatives of such polymers [5, 2006.01]

175/02 • Polyureas **[5, 2006.01]**

175/04 • Polyurethanes **[5, 2006.01]**

175/06 • • from polyesters **[5, 2006.01]**

175/08 • • from polyethers **[5, 2006.01]**

175/10 • • from polyacetals **[5, 2006.01]**

175/12 • • from compounds containing nitrogen and active hydrogen, the nitrogen atom not being part of an isocyanate group **[5, 2006.01]**

175/14 • • Polyurethanes having carbon-to-carbon unsaturated bonds **[5, 2006.01]**

175/16 • • • having terminal carbon-to-carbon unsaturated bonds **[5, 2006.01]**

177/00 Adhesives based on polyamides obtained by reactions forming a carboxylic amide link in the main chain (based on polyhydrazides C09J 179/06; based on polyamide-imides C09J 179/08)**; Adhesives based on derivatives of such polymers [5, 2006.01]**

177/02 • Polyamides derived from omega-amino carboxylic acids or from lactams thereof (C09J 177/10 takes precedence) **[5, 2006.01]**

177/04 • Polyamides derived from alpha-amino carboxylic acids (C09J 177/10 takes precedence) **[5, 2006.01]**

177/06 • Polyamides derived from polyamines and polycarboxylic acids (C09J 177/10 takes precedence) **[5, 2006.01]**

177/08 • • from polyamines and polymerised unsaturated fatty acids **[5, 2006.01]**

177/10 • Polyamides derived from aromatically bound amino and carboxyl groups of amino carboxylic acids or of polyamines and polycarboxylic acids **[5, 2006.01]**

177/12 • Polyester-amides **[5, 2006.01]**

179/00 Adhesives based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen, with or without oxygen, or carbon only, not provided for in groups C09J 161/00-C09J 177/00 [5, 2006.01]

179/02 • Polyamines **[5, 2006.01]**

179/04 • Polycondensates having nitrogen-containing heterocyclic rings in the main chain; Polyhydrazides; Polyamide acids or similar polyimide precursors **[5, 2006.01]**

179/06 • • Polyhydrazides; Polytriazoles; Polyamino-triazoles; Polyoxadiazoles **[5, 2006.01]**

179/08 • • Polyimides; Polyester-imides; Polyamide-imides; Polyamide acids or similar polyimide precursors **[5, 2006.01]**

181/00 Adhesives based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing sulfur, with or without nitrogen, oxygen, or carbon only; Adhesives based on polysulfones; Adhesives based on derivatives of such polymers [5, 2006.01]

181/02 • Polythioethers; Polythioether-ethers **[5, 2006.01]**

181/04 • Polysulfides **[5, 2006.01]**

181/06 • Polysulfones; Polyethersulfones **[5, 2006.01]**

181/08 • Polysulfonates **[5, 2006.01]**

181/10 • Polysulfonamides; Polysulfonimides **[5, 2006.01]**

183/00 Adhesives based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon, with or without sulfur, nitrogen, oxygen, or carbon only; Adhesives based on derivatives of such polymers [5, 2006.01]

183/02 • Polysilicates **[5, 2006.01]**

183/04 • Polysiloxanes **[5, 2006.01]**

183/05 • • containing silicon bound to hydrogen **[5, 2006.01]**

183/06 • • containing silicon bound to oxygen-containing groups (C09J 183/12 takes precedence) **[5, 2006.01]**

183/07 • • containing silicon bound to unsaturated aliphatic groups **[5, 2006.01]**

183/08 • • containing silicon bound to organic groups containing atoms other than carbon, hydrogen, and oxygen **[5, 2006.01]**

183/10 • Block or graft copolymers containing polysiloxane sequences (obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane C09J 151/08, C09J 153/00) **[5, 2006.01]**

183/12 • • containing polyether sequences **[5, 2006.01]**

183/14 • in which at least two but not all the silicon atoms are connected by linkages other than oxygen atoms (C09J 183/10 takes precedence) **[5, 2006.01]**

183/16 • in which all the silicon atoms are connected by linkages other than oxygen atoms **[5, 2006.01]**

185/00 Adhesives based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing atoms other than silicon, sulfur, nitrogen, oxygen, and carbon; Adhesives based on derivatives of such polymers [5, 2006.01]

185/02 • containing phosphorus **[5, 2006.01]**

185/04 • containing boron **[5, 2006.01]**

187/00 Adhesives based on unspecified macromolecular compounds, obtained otherwise than by polymerisation reactions only involving unsaturated carbon-to-carbon-bonds [5, 2006.01]

Adhesives based on natural macromolecular compounds or on derivatives thereof [5]

189/00 Adhesives based on proteins; Adhesives based on derivatives thereof [5, 2006.01]

189/02 • Casein-aldehyde condensates **[5, 2006.01]**

189/04 • Products derived from waste materials, e.g. horn, hoof or hair **[5, 2006.01]**

189/06 • • derived from leather or skin **[5, 2006.01]**

191/00 Adhesives based on oils, fats or waxes; Adhesives based on derivatives thereof [5, 2006.01]

191/02 • Vulcanised oils, e.g. factice **[5, 2006.01]**

191/04 • Linoxyn **[5, 2006.01]**

191/06 • Waxes **[5, 2006.01]**

191/08 • • Mineral waxes **[5, 2006.01]**

193/00 Adhesives based on natural resins; Adhesives based on derivatives thereof (based on polysaccharides C09J 101/00-C09J 105/00; based on natural rubber C09J 107/00) **[5, 2006.01]**

193/02 • Shellac **[5, 2006.01]**

193/04 • Rosin **[5, 2006.01]**

195/00 Adhesives based on bituminous materials, e.g. asphalt, tar or pitch [5, 2006.01]

197/00 Adhesives based on lignin-containing materials (based on polysaccharides C09J 101/00-C09J 105/00) **[5, 2006.01]**

197/02 • Lignocellulosic material, e.g. wood, straw or bagasse **[5, 2006.01]**

199/00 Adhesives based on natural macromolecular compounds or on derivatives thereof, not provided for in groups C09J 101/00-C09J 107/00 or C09J 189/00-C09J 197/00 [5, 2006.01]

201/00 Adhesives based on unspecified macromolecular compounds [5, 2006.01]

201/02 • characterised by the presence of specified groups **[5, 2006.01]**

201/04 • • containing halogen atoms **[5, 2006.01]**

201/06 • • containing oxygen atoms **[5, 2006.01]**

201/08 • • • Carboxyl groups **[5, 2006.01]**

201/10 • • containing hydrolysable silane groups **[5, 2006.01]**

C09K MATERIALS FOR APPLICATIONS NOT OTHERWISE PROVIDED FOR; APPLICATIONS OF MATERIALS NOT OTHERWISE PROVIDED FOR

Note(s) [4]

1. This subclass covers also the use of specified materials in general or their use for the applications not specifically provided for elsewhere.
2. In this subclass, the following term is used with the meaning indicated:
   - "materials" includes compositions.

3/00 Materials not provided for elsewhere [1, 2, 2006.01]

3/10 • for sealing or packing joints or covers **[1, 2006.01]**

3/12 • for stopping leaks, e.g. in radiators or in tanks **[1, 2006.01]**

3/14 • Anti-slip materials; Abrasives **[1, 4, 2006.01]**

3/16 • Anti-static materials **[1, 4, 2006.01]**

3/18 • for application to surface to minimize adherence of ice, mist or water thereto; Thawing or antifreeze materials for application to surfaces **[1, 4, 2006.01]**

3/20 • as substitutes for glycerol in its non-chemical uses, e.g. as a base in toilet creams or ointments **[1, 2006.01]**

3/22 • for dust-laying or dust-absorbing **[1, 4, 2006.01]**

3/24 • for simulating ice or snow **[1, 4, 2006.01]**

3/30 • for aerosols **[1, 4, 2006.01]**

3/32 • for treating liquid pollutants, e.g. oil, gasoline or fat (processes for making harmful chemical substances harmless or less harmful, by effecting a chemical change in the substances A62D 3/00) **[1, 2006.01]**

5/00 Heat-transfer, heat-exchange or heat-storage materials, e.g. refrigerants; Materials for the production of heat or cold by chemical reactions other than by combustion [2, 2006.01]

5/02 • Materials undergoing a change of physical state when used (C09K 5/16, C09K 5/20 take precedence) **[2, 2006.01]**

5/04 • • the change of state being from liquid to vapour or vice-versa **[2, 2006.01]**

5/06 • • the change of state being from liquid to solid or vice-versa **[2, 2006.01]**

5/08 • Materials not undergoing a change of physical state when used (C09K 5/16, C09K 5/20 take precedence) **[7, 2006.01]**

5/10 • • Liquid materials **[7, 2006.01]**

5/12 • • • Molten materials, i.e. materials solid at room temperature, e.g. metals or salts **[7, 2006.01]**

5/14 • • Solid materials, e.g. powdery or granular **[7, 2006.01]**

5/16 • Materials undergoing chemical reactions when used **[7, 2006.01]**

5/18 • • Non-reversible chemical reactions **[7, 2006.01]**

5/20 • Antifreeze additives therefor, e.g. for radiator liquids **[7, 2006.01]**

8/00 Compositions for drilling of boreholes or wells; Compositions for treating boreholes or wells, e.g. for completion or for remedial operations [2006.01]

8/02 • Well-drilling compositions **[2006.01]**

Note(s) [2006.01]

In groups C09K 8/03-C09K 8/38, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

8/03 • • Specific additives for general use in well-drilling compositions **[2006.01]**
8/035 • • • Organic additives **[2006.01]**
8/04 • • Aqueous well-drilling compositions **[2006.01]**
8/05 • • • containing inorganic compounds only, e.g. mixtures of clay and salt **[2006.01]**
8/06 • • • Clay-free compositions (containing inorganic compounds only C09K 8/05) **[2006.01]**
8/08 • • • • containing natural organic compounds, e.g. polysaccharides, or derivatives thereof **[2006.01]**
8/10 • • • • • Cellulose or derivatives thereof **[2006.01]**
8/12 • • • • containing synthetic organic macromolecular compounds or their precursors **[2006.01]**
8/14 • • • Clay-containing compositions (containing inorganic compounds only C09K 8/05) **[2006.01]**
8/16 • • • • characterised by the inorganic compounds other than clay **[2006.01]**
8/18 • • • • characterised by the organic compounds **[2006.01]**
8/20 • • • • • Natural organic compounds or derivatives thereof, e.g. polysaccharides or lignin derivatives **[2006.01]**
8/22 • • • • • Synthetic organic compounds **[2006.01]**
8/24 • • • • • • Polymers **[2006.01]**
8/26 • • • Oil-in-water emulsions **[2006.01]**
8/28 • • • • containing organic additives **[2006.01]**
8/32 • • Non-aqueous well-drilling compositions, e.g. oil-based **[2006.01]**
8/34 • • • Organic liquids **[2006.01]**
8/36 • • • Water-in-oil emulsions **[2006.01]**
8/38 • • Gaseous or foamed well-drilling compositions **[2006.01]**
8/40 • Spacer compositions, e.g. compositions used to separate well-drilling from cementing masses **[2006.01]**
8/42 • Compositions for cementing, e.g. for cementing casings into boreholes; Compositions for plugging, e.g. for killing wells (compositions for plastering borehole walls C09K 8/50) **[2006.01]**
8/44 • • containing organic binders only **[2006.01]**
8/46 • • containing inorganic binders, e.g. Portland cement **[2006.01]**
8/467 • • • containing additives for specific purposes **[2006.01]**
8/473 • • • • Density reducing additives, e.g. for obtaining foamed cement compositions **[2006.01]**
8/48 • • • • Density increasing or weighting additives **[2006.01]**
8/487 • • • • Fluid loss control additives; Additives for reducing or preventing circulation loss **[2006.01]**
8/493 • • • • Additives for reducing or preventing gas migration **[2006.01]**
8/50 • Compositions for plastering borehole walls, i.e. compositions for temporary consolidation of borehole walls **[2006.01]**
8/502 • • Oil-based compositions **[2006.01]**
8/504 • • Compositions based on water or polar solvents (C09K 8/502 takes precedence) **[2006.01]**
8/506 • • • containing organic compounds **[2006.01]**
8/508 • • • • macromolecular compounds **[2006.01]**
8/512 • • • • • containing cross-linking agents **[2006.01]**
8/514 • • • • • of natural origin, e.g. polysaccharides, cellulose (C09K 8/512 takes precedence) **[2006.01]**
8/516 • • characterised by their form or by the form of their components, e.g. encapsulated material **[2006.01]**
8/518 • • • Foams **[2006.01]**
8/52 • Compositions for preventing, limiting or eliminating depositions, e.g. for cleaning **[2006.01]**
8/524 • • organic depositions, e.g. paraffins or asphaltenes **[2006.01]**
8/528 • • inorganic depositions, e.g. sulfates or carbonates **[2006.01]**
8/532 • • • Sulfur **[2006.01]**
8/536 • • characterised by their form or by the form of their components, e.g. encapsulated material **[2006.01]**
8/54 • Compositions for <u>in situ</u> inhibition of corrosion in boreholes or wells **[2006.01]**
8/56 • Compositions for consolidating loose sand or the like around wells without excessively decreasing the permeability thereof **[2006.01]**
8/565 • • Oil-based compositions **[2006.01]**
8/57 • • Compositions based on water or polar solvents (C09K 8/565 takes precedence) **[2006.01]**
8/575 • • • containing organic compounds **[2006.01]**
8/58 • Compositions for enhanced recovery methods for obtaining hydrocarbons, i.e. for improving the mobility of the oil, e.g. displacing fluids **[2006.01]**
8/582 • • characterised by the use of bacteria **[2006.01]**
8/584 • • characterised by the use of specific surfactants **[2006.01]**
8/588 • • characterised by the use of specific polymers **[2006.01]**
8/592 • • Compositions used in combination with generated heat, e.g. by steam injection **[2006.01]**
8/594 • • Compositions used in combination with injected gas (C09K 8/592 takes precedence) **[2006.01]**
8/60 • Compositions for stimulating production by acting on the underground formation **[2006.01]**
8/62 • • Compositions for forming crevices or fractures **[2006.01]**
8/64 • • • Oil-based compositions **[2006.01]**
8/66 • • • Compositions based on water or polar solvents (C09K 8/64 takes precedence) **[2006.01]**
8/68 • • • • containing organic compounds **[2006.01]**
8/70 • • • characterised by their form or by the form of their components, e.g. foams **[2006.01]**
8/72 • • • Eroding chemicals, e.g. acids **[2006.01]**
8/74 • • • • combined with additives added for specific purposes **[2006.01]**
8/76 • • • • • for preventing or reducing fluid loss **[2006.01]**
8/78 • • • • • for preventing sealing **[2006.01]**
8/80 • • Compositions for reinforcing fractures, e.g. compositions of proppants used to keep the fractures open **[2006.01]**
8/82 • • Oil-based compositions (C09K 8/64 takes precedence) **[2006.01]**
8/84 • • Compositions based on water or polar solvents (C09K 8/66, C09K 8/82 take precedence) **[2006.01]**
8/86 • • • containing organic compounds **[2006.01]**
8/88 • • • • macromolecular compounds **[2006.01]**
8/90 • • • • • of natural origin, e.g. polysaccharides, cellulose **[2006.01]**

8/92 • • characterised by their form or by the form of their components, e.g. encapsulated material (C09K 8/70 takes precedence) **[2006.01]**
8/94 • • • Foams **[2006.01]**

9/00 Tenebrescent materials, i.e. materials for which the range of wavelengths for energy adsorption is changed as a result of excitation by some form of energy [2, 2006.01]
9/02 • Organic tenebrescent materials **[2, 2006.01]**

11/00 Luminescent, e.g. electroluminescent, chemiluminescent, materials [2, 2006.01]
11/01 • Recovery of luminescent materials **[3, 2006.01]**
11/02 • Use of particular materials as binders, particle coatings or suspension media therefor **[2, 2006.01]**
11/04 • containing natural or artificial radioactive elements or unspecified radioactive elements **[2, 2006.01]**
11/06 • containing organic luminescent materials **[2, 2006.01]**
11/07 • • having chemically-interreactive components, e.g. reactive chemiluminescent compositions **[3, 2006.01]**
11/08 • containing inorganic luminescent materials **[2, 2006.01]**

Note(s) [4]

In groups C09K 11/54-C09K 11/89, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, materials are classified in the last appropriate place; however, activating constituents of the luminescent materials are disregarded for classification purposes.

11/54 • • containing zinc or cadmium **[4, 2006.01]**
11/55 • • containing beryllium, magnesium, alkali metals or alkaline earth metals **[4, 2006.01]**
11/56 • • containing sulfur **[4, 2006.01]**
11/57 • • containing manganese or rhenium **[4, 2006.01]**
11/58 • • containing copper, silver or gold **[4, 2006.01]**
11/59 • • containing silicon **[4, 2006.01]**
11/60 • • containing iron, cobalt or nickel **[4, 2006.01]**
11/61 • • containing fluorine, chlorine, bromine, iodine or unspecified halogen elements **[4, 2006.01]**
11/62 • • containing gallium, indium or thallium **[4, 2006.01]**
11/63 • • containing boron **[4, 2006.01]**
11/64 • • containing aluminium **[4, 2006.01]**
11/65 • • containing carbon **[4, 2006.01]**
11/66 • • containing germanium, tin or lead **[4, 2006.01]**
11/67 • • containing refractory metals **[4, 2006.01]**
11/68 • • • containing chromium, molybdenum or tungsten **[4, 2006.01]**
11/69 • • • containing vanadium **[4, 2006.01]**
11/70 • • containing phosphorus **[4, 2006.01]**
11/71 • • • also containing alkaline earth metals **[4, 2006.01]**
11/72 • • • also containing halogen, e.g. halophosphates **[4, 2006.01]**
11/73 • • • • also containing alkaline earth metals **[4, 2006.01]**
11/74 • • containing arsenic, antimony or bismuth **[4, 2006.01]**
11/75 • • • containing antimony **[4, 2006.01]**
11/76 • • • • also containing phosphorus and halogen, e.g. halophosphates **[4, 2006.01]**
11/77 • • containing rare earth metals **[4, 2006.01]**
11/78 • • • containing oxygen **[4, 2006.01]**
11/79 • • • containing silicon **[4, 2006.01]**
11/80 • • • containing aluminium or gallium **[4, 2006.01]**
11/81 • • • containing phosphorus **[4, 2006.01]**
11/82 • • • containing vanadium **[4, 2006.01]**
11/83 • • • containing vanadium and phosphorus **[4, 2006.01]**
11/84 • • • containing sulfur, e.g. oxysulfides **[4, 2006.01]**
11/85 • • • containing halogen **[4, 2006.01]**
11/86 • • • containing oxygen and halogen, e.g. oxyhalides **[4, 2006.01]**
11/87 • • containing platinum group metals **[4, 2006.01]**
11/88 • • containing selenium, tellurium or unspecified chalcogen elements **[4, 2006.01]**
11/89 • • containing mercury **[4, 2006.01]**

13/00 Etching, surface-brightening or pickling compositions [2, 2006.01]

Note(s) [2]

In groups C09K 13/02-C09K 13/12, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a composition is classified in the last appropriate place.

13/02 • containing an alkali metal hydroxide **[2, 2006.01]**
13/04 • containing an inorganic acid **[2, 2006.01]**
13/06 • • with organic material **[2, 2006.01]**
13/08 • • containing a fluorine compound **[2, 2006.01]**
13/10 • • containing a boron compound **[2, 2006.01]**
13/12 • containing heavy metal salts in an amount of at least 50% of the non-solvent components **[2, 2006.01]**

15/00 Anti-oxidant compositions; Compositions inhibiting chemical change [4, 2006.01]

Note(s) [2]

1. In groups C09K 15/02-C09K 15/34, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a composition is classified in the last appropriate place.
2. In groups C09K 15/02-C09K 15/34, a metal salt of an organic compound is classified as that compound.

15/02 • containing inorganic compounds **[2, 2006.01]**
15/04 • containing organic compounds **[2, 2006.01]**
15/06 • • containing oxygen **[2, 2006.01]**
15/08 • • • containing a phenol or quinone moiety **[2, 2006.01]**
15/10 • • containing sulfur **[2, 2006.01]**
15/12 • • containing sulfur and oxygen **[2, 2006.01]**
15/14 • • • containing a phenol or quinone moiety **[2, 2006.01]**
15/16 • • containing nitrogen **[2, 2006.01]**
15/18 • • • containing an amine or imine moiety **[2, 2006.01]**
15/20 • • containing nitrogen and oxygen **[2, 2006.01]**
15/22 • • • containing an amide or imide moiety **[2, 2006.01]**
15/24 • • • containing a phenol or quinone moiety **[2, 2006.01]**
15/26 • • containing nitrogen and sulfur **[2, 2006.01]**
15/28 • • containing nitrogen, oxygen and sulfur **[2, 2006.01]**
15/30 • • containing heterocyclic ring with at least one nitrogen atom as ring member **[2, 2006.01]**
15/32 • • containing boron, silicon, phosphorus, selenium, tellurium or a metal **[2, 2006.01]**

15/34 • containing plant or animal materials of unknown composition **[2, 2006.01]**

17/00 Soil-conditioning materials or soil-stabilising materials [3, 2006.01]

Note(s) [6]

1. This group covers mixtures of soil-conditioning or soil-stabilising materials with fertilisers characterised by their soil-conditioning or soil-stabilising activity.
2. This group does not cover mixtures of soil-conditioning or soil-stabilising materials with fertilisers characterised by their fertilising activity which are covered by subclass C05G.
3. For the purpose of classification in this group, the presence of fertilisers in the composition is not taken into account.
4. In groups C09K 17/02-C09K 17/40, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, materials are classified in the last appropriate place.
5. In this group, it is desirable to add the indexing codes of groups C09K 101/00-C09K 109/00.

17/02 • containing inorganic compounds only **[6, 2006.01]**
17/04 • • applied in a physical form other than a solution or a grout, e.g. as granules or gases **[6, 2006.01]**
17/06 • • Calcium compounds, e.g. lime **[6, 2006.01]**
17/08 • • Aluminium compounds, e.g. aluminium hydroxide **[6, 2006.01]**
17/10 • • Cements, e.g. Portland cement **[6, 2006.01]**
17/12 • • Water-soluble silicates, e.g. waterglass **[6, 2006.01]**
17/14 • containing organic compounds only **[6, 2006.01]**
17/16 • • applied in a physical form other than a solution or a grout, e.g. as platelets or granules **[6, 2006.01]**
17/18 • • Prepolymers; Macromolecular compounds **[6, 2006.01]**
17/20 • • • Vinyl polymers **[6, 2006.01]**
17/22 • • • • Polyacrylates; Polymethacrylates **[6, 2006.01]**
17/24 • • • Condensation polymers of aldehydes or ketones **[6, 2006.01]**
17/26 • • • • Phenol-aldehyde condensation polymers **[6, 2006.01]**
17/28 • • • • Urea-aldehyde condensation polymers **[6, 2006.01]**
17/30 • • • Polyisocyanates; Polyurethanes **[6, 2006.01]**
17/32 • • • of natural origin, e.g. cellulosic materials **[6, 2006.01]**
17/34 • • • Bituminous materials **[6, 2006.01]**
17/36 • • Compounds having one or more carbon-to-silicon linkages **[6, 2006.01]**
17/38 • • • Siloxanes **[6, 2006.01]**
17/40 • containing mixtures of inorganic and organic compounds **[6, 2006.01]**
17/42 • • Inorganic compounds mixed with organic active ingredients, e.g. accelerators **[6, 2006.01]**
17/44 • • • the inorganic compound being cement **[6, 2006.01]**
17/46 • • • the inorganic compound being a water-soluble silicate **[6, 2006.01]**
17/48 • • Organic compounds mixed with inorganic active ingredients, e.g. polymerisation catalysts **[6, 2006.01]**
17/50 • • • the organic compound being of natural origin, e.g. cellulose derivatives **[6, 2006.01]**
17/52 • Mulches **[6, 2006.01]**

19/00 Liquid crystal materials [4, 2006.01]

Note(s) [4]

In groups C09K 19/02-C09K 19/52, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, materials are classified in the last appropriate place.

19/02 • characterised by optical, electrical or physical properties of the components, in general **[4, 2006.01]**
19/04 • characterised by the chemical structure of the liquid crystal components **[4, 2006.01]**
19/06 • • Non-steroidal liquid crystal compounds **[4, 2006.01]**
19/08 • • • containing at least two non-condensed rings **[4, 2006.01]**
19/10 • • • • containing at least two benzene rings **[4, 2006.01]**
19/12 • • • • • at least two benzene rings directly linked, e.g. biphenyls **[4, 2006.01]**
19/14 • • • • • linked by a carbon chain **[4, 2006.01]**
19/16 • • • • • • the chain containing carbon-to-carbon double bonds, e.g. stilbenes **[4, 2006.01]**
19/18 • • • • • • the chain containing carbon-to-carbon triple bonds, e.g. tolans **[4, 2006.01]**
19/20 • • • • • linked by a chain containing carbon and oxygen atoms as chain links, e.g. esters **[4, 2006.01]**
19/22 • • • • • linked by a chain containing carbon and nitrogen atoms as chain links, e.g. Schiff bases **[4, 2006.01]**
19/24 • • • • • linked by a chain containing nitrogen-to-nitrogen bonds **[4, 2006.01]**
19/26 • • • • • • Azoxy compounds **[4, 2006.01]**
19/28 • • • • • linked by a chain containing carbon and sulfur atoms as chain links, e.g. thioesters **[4, 2006.01]**
19/30 • • • • containing saturated or unsaturated non-aromatic rings, e.g. cyclohexane rings **[4, 2006.01]**
19/32 • • • containing condensed ring systems, i.e. fused, bridged or spiro ring systems **[4, 2006.01]**
19/34 • • • containing at least one heterocyclic ring **[4, 2006.01]**
19/36 • • Steroidal liquid crystal compounds **[4, 2006.01]**
19/38 • • Polymers, e.g. polyamides **[4, 2006.01]**
19/40 • • containing elements other than carbon, hydrogen, halogen, oxygen, nitrogen or sulfur, e.g. silicon, metals **[4, 2006.01]**
19/42 • • Mixtures of liquid crystal compounds covered by two or more of the preceding groups C09K 19/06-C09K 19/40 **[4, 2006.01]**

Note(s) [4]

1. This group does not cover mixtures containing two or more liquid crystal compounds covered individually by the same one of groups C09K 19/04-C09K 19/40 which are classified only in that group.
2. If liquid crystal components of the mixtures classified in this group are of interest as such, they are also classified according to the compounds in groups C09K 19/04-C09K 19/40.

19/44 • • • containing compounds with benzene rings directly linked **[4, 2006.01]**
19/46 • • • containing esters **[4, 2006.01]**

19/48 • • • containing Schiff bases **[4, 2006.01]**
19/50 • • • containing steroidal liquid crystal compounds **[4, 2006.01]**
19/52 • characterised by components which are not liquid crystals, e.g. additives **[4, 2006.01]**
19/54 • • Additives having no specific mesophase **[4, 2006.01]**
19/56 • • • Aligning agents **[4, 2006.01]**
19/58 • • Dopants or charge transfer agents **[4, 2006.01]**
19/60 • • Pleochroic dyes **[4, 2006.01]**

21/00 Fireproofing materials [4, 2006.01]

Note(s) [4]

In groups C09K 21/02-C09K 21/14, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, materials are classified in the last appropriate place.

21/02 • Inorganic materials **[4, 2006.01]**
21/04 • • containing phosphorus **[4, 2006.01]**
21/06 • Organic materials **[4, 2006.01]**
21/08 • • containing halogen **[4, 2006.01]**
21/10 • • containing nitrogen **[4, 2006.01]**
21/12 • • containing phosphorus **[4, 2006.01]**
21/14 • Macromolecular materials **[4, 2006.01]**

Indexing scheme associated with group C09K 17/00, relating to the use or the intended effect of the soil-conditioning or soil-stabilising materials. [6]

101/00 Agricultural use [6, 2006.01]

103/00 Civil engineering use [6, 2006.01]

105/00 Erosion prevention [6, 2006.01]

107/00 Impermeabilisation [6, 2006.01]

109/00 pH regulation [6, 2006.01]

C10 PETROLEUM, GAS OR COKE INDUSTRIES; TECHNICAL GASES CONTAINING CARBON MONOXIDE; FUELS; LUBRICANTS; PEAT

C10B DESTRUCTIVE DISTILLATION OF CARBONACEOUS MATERIALS FOR PRODUCTION OF GAS, COKE, TAR, OR SIMILAR MATERIALS (cracking oils C10G; underground gasification of minerals E21B 43/295) [5]

Subclass index

RETORTS; COKE OVENS
Retorts....1/00
Coke ovens....3/00-15/00
Structural features of coke ovens
doors, closures; other features....25/00, 27/00, 29/00
heating....17/00-23/00
charging devices....13/00, 31/00-35/00
safety devices; preventing or removing incrustations....41/00, 43/00
other details....45/00
CARBONISING OR COKING PROCESSES
By destructive distillation....47/00-53/00
Coking mineral oils or the like....55/00
Other processes....57/00
FEATURES OF DESTRUCTIVE DISTILLATION PROCESSES IN GENERAL....7/00, 13/00, 37/00, 39/00, 57/00

Retorts or coke ovens

1/00 Retorts [1, 2006.01]
1/02 • Stationary retorts **[1, 2006.01]**
1/04 • • Vertical retorts **[1, 2006.01]**
1/06 • • Horizontal retorts **[1, 2006.01]**
1/08 • • Inclined retorts **[1, 2006.01]**
1/10 • Rotary retorts **[1, 2006.01]**

3/00 Coke ovens with vertical chambers [1, 2006.01]
3/02 • with heat-exchange devices **[1, 2006.01]**

5/00 Coke ovens with horizontal chambers [1, 2006.01]
5/02 • with vertical heating flues **[1, 2006.01]**
5/04 • • with cross-over inter-connections **[1, 2006.01]**
5/06 • with horizontal heating flues **[1, 2006.01]**
5/08 • with horizontal and vertical heating flues **[1, 2006.01]**
5/10 • with heat-exchange devices **[1, 2006.01]**
5/12 • • with regenerators **[1, 2006.01]**
5/14 • • • situated in the longitudinal direction of the chambers **[1, 2006.01]**
5/16 • • • • with separated flues **[1, 2006.01]**
5/18 • • • situated in the longitudinal direction of the oven battery **[1, 2006.01]**
5/20 • • with recuperators **[1, 2006.01]**

7/00 Coke ovens with mechanical conveying means for the raw material inside the oven [1, 2006.01]
7/02 • with rotary scraping devices **[1, 2006.01]**
7/04 • with shaking or vibrating devices **[1, 2006.01]**
7/06 • with endless conveying devices **[1, 2006.01]**
7/08 • • in vertical direction **[1, 2006.01]**

7/10 • with conveyor-screws **[1, 2006.01]**
7/12 • with tilting or rocking means **[1, 2006.01]**
7/14 • with trucks, containers, or trays **[1, 2006.01]**

9/00 Beehive ovens [1, 2006.01]

11/00 Coke ovens with inclined chambers [1, 2006.01]

13/00 Coke ovens with means for bringing and keeping the charge under mechanical pressure [1, 2006.01]

15/00 Other coke ovens [1, 2006.01]
15/02 • with floor heating **[1, 2006.01]**

Heating of coke ovens

17/00 Preheating of coke ovens [1, 2006.01]

19/00 Heating of coke ovens by electrical means [1, 2006.01]

21/00 Heating of coke ovens with combustible gases [1, 2006.01]
21/02 • with lean gas **[1, 2006.01]**
21/04 • with rich gas **[1, 2006.01]**
21/06 • in coke ovens suitable for the use of lean gas or rich gas **[1, 2006.01]**
21/08 • by applying special heating gases **[1, 2006.01]**
21/10 • Regulating or controlling the combustion **[1, 2006.01]**
21/12 • • Burners **[1, 2006.01]**
21/14 • • Devices for reversing the draught **[1, 2006.01]**
21/16 • • by controlling or varying the openings between the heating flues and the regenerator flues **[1, 2006.01]**
21/18 • • Recirculating the flue gases **[1, 2006.01]**
21/20 • Methods of heating ovens of the chamber oven type **[1, 2006.01]**
21/22 • • by introducing the heating gas and air at various levels **[1, 2006.01]**
21/24 • • • at the top and the bottom of the vertical heating flues **[1, 2006.01]**
21/26 • • by introducing the heating gas and air at the top of the vertical flues only **[1, 2006.01]**

23/00 Other methods of heating coke ovens [1, 2006.01]

25/00 Doors or closures for coke ovens [1, 2006.01]
25/02 • Doors; Door frames **[1, 2006.01]**
25/04 • • for ovens with vertical chambers **[1, 2006.01]**
25/06 • • for ovens with horizontal chambers **[1, 2006.01]**
25/08 • • Closing or opening the doors **[1, 2006.01]**
25/10 • • • for ovens with vertical chambers **[1, 2006.01]**
25/12 • • • for ovens with horizontal chambers **[1, 2006.01]**
25/14 • • • Devices for lifting doors **[1, 2006.01]**
25/16 • • Sealing; Means for sealing **[1, 2006.01]**
25/18 • • Cooling **[1, 2006.01]**
25/20 • Lids or closures for charging holes **[1, 2006.01]**
25/22 • • for ovens with vertical chambers **[1, 2006.01]**
25/24 • • for ovens with horizontal chambers **[1, 2006.01]**

27/00 Arrangements for withdrawal of the distillation gases [1, 2006.01]
27/02 • with outlets arranged at different levels in the chamber **[1, 2006.01]**
27/04 • during the charging operation of the oven **[1, 2006.01]**
27/06 • Conduit details, e.g. valves **[1, 2006.01]**

29/00 Other details of coke ovens [1, 2006.01]
29/02 • Brickwork, e.g. casings, linings, walls **[1, 2006.01]**
29/04 • Controlling or preventing expansion or contraction **[1, 2006.01]**
29/06 • Preventing or repairing leakages of the brickwork **[1, 2006.01]**
29/08 • Bracing or foundation of the ovens **[1, 2006.01]**

Devices for charging or discharging coke ovens; Mechanical treatments of coal charges

31/00 Charging devices for coke ovens [1, 2006.01]
31/02 • for charging vertically **[1, 2006.01]**
31/04 • • coke ovens with horizontal chambers **[1, 2006.01]**
31/06 • for charging horizontally **[1, 2006.01]**
31/08 • • coke ovens with horizontal chambers **[1, 2006.01]**
31/10 • • • with one compact charge **[1, 2006.01]**
31/12 • for liquid materials **[1, 2006.01]**

33/00 Discharging devices for coke ovens; Coke guides [1, 2006.01]
33/02 • Extracting coke with built-in devices, e.g. gears, screws **[1, 2006.01]**
33/04 • Pulling-out devices **[1, 2006.01]**
33/06 • • for horizontal chambers **[1, 2006.01]**
33/08 • Pushers, e.g. rams **[1, 2006.01]**
33/10 • • for horizontal chambers **[1, 2006.01]**
33/12 • Discharge valves **[1, 2006.01]**
33/14 • Coke guides **[1, 2006.01]**

35/00 Combined charging and discharging devices for coke ovens [1, 2006.01]

37/00 Mechanical treatments of coal charges in the oven [1, 2006.01]
37/02 • Levelling charges, e.g. with bars **[1, 2006.01]**
37/04 • Compressing charges (during coking C10B 47/12) **[1, 2006.01]**
37/06 • Forming holes in charges **[1, 2006.01]**

39/00 Cooling or quenching coke [1, 2006.01]
39/02 • Dry cooling outside the oven **[1, 2006.01]**
39/04 • Wet quenching **[1, 2006.01]**
39/06 • • in the oven **[1, 2006.01]**
39/08 • • Coke-quenching towers **[1, 2006.01]**
39/10 • combined with agitating means, e.g. rotating tables or drums **[1, 2006.01]**
39/12 • combined with conveying means **[1, 2006.01]**
39/14 • Cars **[1, 2006.01]**
39/16 • combined with sorting **[1, 2006.01]**
39/18 • Coke ramps **[1, 2006.01]**

41/00 Safety devices, e.g. signalling or controlling devices for use in the discharge of coke [1, 2006.01]
41/02 • for discharging coke **[1, 2006.01]**
41/04 • • by electrical means **[1, 2006.01]**
41/06 • • by pneumatic or hydraulic means **[1, 2006.01]**

41/08 • for the withdrawal of the distillation gases **[1, 2006.01]**

43/00 Preventing or removing incrustations [1, 2006.01]
43/02 • Removing incrustations **[1, 2006.01]**
43/04 • • by mechanical means **[1, 2006.01]**
43/06 • • • from conduits, valves or the like **[1, 2006.01]**
43/08 • • with liquids **[1, 2006.01]**
43/10 • • by burning out **[1, 2006.01]**
43/12 • • • Burners **[1, 2006.01]**
43/14 • Preventing incrustations **[1, 2006.01]**

45/00 Other details [1, 2006.01]
45/02 • Devices for producing compact unified coal charges outside the oven **[1, 2006.01]**

Carbonising or coking processes

47/00 Destructive distillation of solid carbonaceous materials with indirect heating, e.g. by external combustion [1, 2006.01]
47/02 • with stationary charge **[1, 2006.01]**
47/04 • • in shaft furnaces **[1, 2006.01]**
47/06 • • in retorts **[1, 2006.01]**
47/08 • • in beehive ovens **[1, 2006.01]**
47/10 • • in coke ovens of the chamber type **[1, 2006.01]**
47/12 • • in which the charge is subjected to mechanical pressure during coking **[1, 2006.01]**
47/14 • • with the aid of hot liquids, e.g. molten salts **[1, 2006.01]**
47/16 • • with indirect heating means both inside and outside the retorts **[1, 2006.01]**
47/18 • with moving charge **[1, 2006.01]**
47/20 • • according to the "moving bed" technique (C10B 47/26 takes precedence) **[1, 2006.01]**
47/22 • • in dispersed form (C10B 47/26 takes precedence) **[1, 2006.01]**
47/24 • • • according to the "fluidised bed" technique **[1, 2006.01]**
47/26 • • with the aid of hot liquids, e.g. molten salts **[1, 2006.01]**
47/28 • Other processes **[1, 2006.01]**
47/30 • • in rotary ovens or retorts **[1, 2006.01]**
47/32 • • in ovens with mechanical conveying means **[1, 2006.01]**
47/34 • • • with rotary scraping devices **[1, 2006.01]**
47/36 • • • • in multi-stage ovens **[1, 2006.01]**
47/38 • • • with shaking or vibrating devices **[1, 2006.01]**
47/40 • • • with endless conveying devices **[1, 2006.01]**
47/42 • • • • in vertical direction **[1, 2006.01]**
47/44 • • • with conveyor-screws **[1, 2006.01]**
47/46 • • • with trucks, containers, or trays **[1, 2006.01]**
47/48 • • • with tilting or rocking means **[1, 2006.01]**

49/00 Destructive distillation of solid carbonaceous materials by direct heating with heat-carrying agents including the partial combustion of the solid material to be treated [1, 2006.01]
49/02 • with hot gases or vapours, e.g. hot gases obtained by partial combustion of the charge **[1, 2006.01]**
49/04 • • while moving the solid material to be treated **[1, 2006.01]**
49/06 • • • according to the "moving bed" technique **[1, 2006.01]**
49/08 • • • in dispersed form **[1, 2006.01]**
49/10 • • • • according to the "fluidised bed" technique **[1, 2006.01]**
49/12 • • • • by mixing tangentially, e.g. in vortex chambers **[1, 2006.01]**
49/14 • with hot liquids, e.g. molten metals **[1, 2006.01]**
49/16 • with moving solid heat-carriers in divided form **[1, 2006.01]**
49/18 • • according to the "moving bed" technique **[1, 2006.01]**
49/20 • • in dispersed form **[1, 2006.01]**
49/22 • • • according to the "fluidised bed" technique **[1, 2006.01]**

51/00 Destructive distillation of solid carbonaceous materials by combined direct and indirect heating [1, 2006.01]

53/00 Destructive distillation, specially adapted for particular solid raw materials or solid raw materials in special form (wet carbonising of peat C10F) **[1, 2006.01]**
53/02 • of cellulose-containing material (production of pyroligneous acid C10C 5/00) **[1, 2006.01]**
53/04 • of powdered coal **[1, 2006.01]**
53/06 • of oil shale or bituminous rocks **[1, 2006.01]**
53/07 • of synthetic polymeric materials, e.g. tyres (recovery or working-up of waste materials of organic macromolecular compounds or compositions based thereon by dry-heat treatment for obtaining partially depolymerised materials C08J 11/10; production of liquid hydrocarbon mixtures from rubber or rubber waste C10G 1/10) **[2006.01]**
53/08 • in the form of briquettes, lumps or the like **[1, 2006.01]**

55/00 Coking mineral oils, bitumen, tar or the like, or mixtures thereof, with solid carbonaceous materials (cracking oils C10G) **[1, 2006.01]**
55/02 • with solid materials **[1, 2006.01]**
55/04 • • with moving solid materials **[1, 2006.01]**
55/06 • • • according to the "moving bed" technique **[1, 2006.01]**
55/08 • • • in dispersed form **[1, 2006.01]**
55/10 • • • • according to the "fluidised bed" technique **[1, 2006.01]**

57/00 Other carbonising or coking processes; Features of destructive distillation processes in general [1, 2006.01]
57/02 • Multi-step carbonising or coking processes **[1, 2006.01]**
57/04 • using charges of special composition **[1, 2006.01]**
57/06 • • containing additives **[1, 2006.01]**
57/08 • Non-mechanical pretreatment of the charge **[1, 2006.01]**
57/10 • • Drying **[1, 2006.01]**
57/12 • Applying additives during coking **[1, 2006.01]**
57/14 • Features of low-temperature carbonising processes **[1, 2006.01]**
57/16 • Features of high-temperature carbonising processes **[1, 2006.01]**
57/18 • Modifying the properties of the distillation gases in the oven **[1, 2006.01]**

C10C WORKING-UP TAR, PITCH, ASPHALT, BITUMEN; PYROLIGNEOUS ACID

1/00 **Working-up tar** (obtaining hydrocarbon oils C10G) **[1, 4, 2006.01]**
1/02 • Removal of water (by distillation C10C 1/06) **[1, 2006.01]**
1/04 • by distillation **[1, 2006.01]**
1/06 • • Removal of water **[1, 2006.01]**
1/08 • • Winning of aromatic fractions **[1, 2006.01]**
1/10 • • • benzene fraction **[1, 2006.01]**
1/12 • • • naphthalene fraction **[1, 2006.01]**
1/14 • • Winning of tar oils from tar **[1, 2006.01]**
1/16 • • Winning of pitch **[1, 2006.01]**
1/18 • by extraction with selective solvents **[1, 2006.01]**
1/19 • by thermal treatment not involving distillation **[4, 2006.01]**
1/20 • Refining by chemical means **[1, 2006.01]**

3/00 **Working-up pitch, asphalt, bitumen [1, 2006.01]**
3/02 • by chemical means **[1, 2006.01]**
3/04 • • by blowing or oxidising **[1, 2006.01]**
3/06 • by distillation **[1, 2006.01]**
3/08 • by selective extraction **[1, 2006.01]**
3/10 • Melting **[1, 2006.01]**
3/12 • • Devices therefor **[1, 2006.01]**
3/14 • Solidifying; Disintegrating, e.g. granulating **[1, 2006.01]**
3/16 • • by direct contact with liquids **[1, 2006.01]**
3/18 • Removing in solid form from reaction vessels, containers and the like, e.g. by cutting out, by pressing **[1, 2006.01]**

5/00 **Production of pyroligneous acid** (carbonisation of wood C10B) **[1, 2006.01]**

C10F DRYING OR WORKING-UP OF PEAT [5]

5/00 **Drying or de-watering peat [1, 2006.01]**
5/02 • in the field; Auxiliary means therefor **[1, 2006.01]**
5/04 • by using presses, bandpresses, rolls, or centrifuges (moulding C10F 7/04) **[1, 2006.01]**
5/06 • combined with a carbonisation step for producing turfcoal **[1, 2006.01]**

7/00 **Working-up peat** (extracting wax from peat C10G) **[1, 2006.01]**
7/02 • Disintegrating peat (obtaining fibres from peat D01B 1/50) **[1, 2006.01]**
7/04 • by moulding **[1, 2006.01]**
7/06 • • Briquetting **[1, 2006.01]**
7/08 • by extrusion combined with cutting **[1, 2006.01]**

C10G CRACKING HYDROCARBON OILS; PRODUCTION OF LIQUID HYDROCARBON MIXTURES, e.g. BY DESTRUCTIVE HYDROGENATION, OLIGOMERISATION, POLYMERISATION (cracking to hydrogen or synthesis gas C01B; cracking or pyrolysis of hydrocarbon gases to individual hydrocarbons or mixtures thereof of definite or specified constitution C07C; cracking to cokes C10B); RECOVERY OF HYDROCARBON OILS FROM OIL-SHALE, OIL-SAND, OR GASES; REFINING MIXTURES MAINLY CONSISTING OF HYDROCARBONS; REFORMING OF NAPHTHA; MINERAL WAXES [6]

Note(s) [3]

1. In this subclass:
   - groups C10G 9/00-C10G 49/00 are limited to one-step processes;
   - combined or multi-step processes are covered by groups C10G 51/00-C10G 69/00;
   - refining or recovery of mineral waxes is covered by group C10G 73/00.
2. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "in the presence of hydrogen" or "in the absence of hydrogen" mean treatments in which hydrogen, in free form or as hydrogen generating compounds, is added, or not added, respectively;
   - "hydrotreatment" is used for conversion processes as defined in group C10G 45/00 or group C10G 47/00;
   - "hydrocarbon oils" covers mixtures of hydrocarbons such as tar oils or mineral oils.
3. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

Subclass index

PRODUCTION OF LIQUID HYDROCARBON MIXTURES.....1/00-5/00, 50/00
DISTILLATION OF HYDROCARBON OILS.....7/00
CRACKING.....9/00-15/00, 47/00
REFINING HYDROCARBON OILS
by treatment with acids, with alkalis.....17/00, 19/00
by extraction with solvents or adsorptive solids.....21/00, 25/00
by reaction with hydrogen, by oxidation or by other chemical reaction.....27/00, 29/00, 45/00, 49/00
Other processes.....31/00, 32/00, 33/00
REFORMING.....35/00, 59/00-63/00
MULTI-STEP PROCESSES.....51/00-69/00
OTHER PROCESSES.....70/00, 71/00

TREATING MINERAL WAXES.....73/00
INHIBITING CORROSION.....75/00
SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS.....99/00

1/00 Production of liquid hydrocarbon mixtures from oil shale, oil-sand, or non-melting solid carbonaceous or similar materials, e.g. wood, coal (mechanical winning of oil from oil-shales, oil-sand, or the like B03B) **[1, 2006.01]**

1/02 • by distillation **[1, 2006.01]**
1/04 • by extraction **[1, 2006.01]**
1/06 • by destructive hydrogenation **[1, 2006.01]**
1/08 • • with moving catalysts **[1, 2006.01]**
1/10 • from rubber or rubber waste **[1, 2006.01]**

2/00 Production of liquid hydrocarbon mixtures of undefined composition from oxides of carbon [5, 2006.01]

3/00 Production of liquid hydrocarbon mixtures from oxygen-containing organic materials, e.g. fatty oils, fatty acids (production from non-melting solid oxygen-containing carbonaceous materials C10G 1/00) **[1, 2006.01]**

5/00 Recovery of liquid hydrocarbon mixtures from gases, e.g. natural gas [1, 2006.01]

5/02 • with solid adsorbents **[1, 2006.01]**
5/04 • with liquid absorbents **[1, 2006.01]**
5/06 • by cooling or compressing **[1, 2006.01]**

7/00 Distillation of hydrocarbon oils [1, 2006.01]

7/02 • Stabilising gasoline by removing gases by fractioning **[1, 2006.01]**
7/04 • De-watering **[1, 2006.01]**
7/06 • Vacuum distillation **[3, 2006.01]**
7/08 • Azeotropic or extractive distillation (refining of hydrocarbon oils, in the absence of hydrogen, by extraction with selective solvents C10G 21/00) **[3, 2006.01]**
7/10 • Inhibiting corrosion during distillation **[3, 2006.01]**
7/12 • Controlling or regulating **[3, 2006.01]**

Cracking in the absence of hydrogen

9/00 Thermal non-catalytic cracking, in the absence of hydrogen, of hydrocarbon oils [1, 2006.01]

9/02 • in retorts **[1, 2006.01]**
9/04 • • Retorts **[1, 2006.01]**
9/06 • by pressure distillation **[1, 2006.01]**
9/08 • • Apparatus therefor **[1, 2006.01]**
9/12 • • • Removing incrustation **[1, 2006.01]**
9/14 • in pipes or coils with or without auxiliary means, e.g. digesters, soaking drums, expansion means **[1, 2006.01]**
9/16 • • Preventing or removing incrustation **[1, 2006.01]**
9/18 • • Apparatus **[1, 2006.01]**
9/20 • • • Tube furnaces **[1, 2006.01]**
9/24 • by heating with electrical means **[1, 2006.01]**
9/26 • with discontinuously preheated non-moving solid material, e.g. blast and run **[1, 2006.01]**
9/28 • with preheated moving solid material **[1, 2006.01]**
9/30 • • according to the "moving bed" technique **[1, 2006.01]**
9/32 • • according to the "fluidised bed" technique **[1, 2006.01]**
9/34 • by direct contact with inert preheated fluids, e.g. with molten metals or salts **[1, 2006.01]**
9/36 • • with heated gases or vapours **[1, 2006.01]**
9/38 • • • produced by partial combustion of the material to be cracked or by combustion of another hydrocarbon **[1, 2, 2006.01]**
9/40 • by indirect contact with preheated fluid other than hot combustion gases **[1, 2006.01]**
9/42 • by passing the material to be cracked in thin streams or as spray on or near continuously heated surfaces **[1, 2006.01]**

11/00 Catalytic cracking, in the absence of hydrogen, of hydrocarbon oils (cracking in direct contact with molten metals or salts C10G 9/34) **[1, 2006.01]**

11/02 • characterised by the catalyst used **[1, 2006.01]**
11/04 • • Oxides **[1, 2006.01]**
11/05 • • • Crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
11/06 • • Sulfides **[1, 2006.01]**
11/08 • • Halides **[1, 2006.01]**
11/10 • with stationary catalyst bed **[1, 2006.01]**
11/12 • with discontinuously preheated non-moving solid catalysts, e.g. blast and run **[1, 2006.01]**
11/14 • with preheated moving solid catalysts **[1, 2006.01]**
11/16 • • according to the "moving bed" technique **[1, 2006.01]**
11/18 • • according to the "fluidised bed" technique **[1, 2006.01]**
11/20 • by direct contact with inert heated gases or vapours **[1, 2006.01]**
11/22 • • produced by partial combustion of the material to be cracked **[1, 2006.01]**

15/00 Cracking of hydrocarbon oils by electric means, electromagnetic or mechanical vibrations, by particle radiation or with gases superheated in electric arcs [1, 2006.01]

15/08 • by electric means or by electromagnetic or mechanical vibrations **[3, 2006.01]**
15/10 • by particle radiation **[3, 2006.01]**
15/12 • with gases superheated in an electric arc, e.g. plasma **[3, 2006.01]**

Refining in the absence of hydrogen

17/00 Refining of hydrocarbon oils, in the absence of hydrogen, with acids, acid-forming compounds, or acid-containing liquids, e.g. acid sludge [1, 2006.01]

17/02 • with acids or acid-containing liquids, e.g. acid sludge **[1, 2006.01]**
17/04 • • Liquid-liquid treatment forming two immiscible phases **[1, 2006.01]**
17/06 • • • using acids derived from sulfur or acid sludge thereof **[1, 2006.01]**

17/07 • • • using halogen acids or oxyacids of halogen (acids generating halogen C10G 27/02) **[3, 2006.01]**
17/08 • with acid-forming oxides (refining with CO_2 or SO_2 as a selective solvent C10G 21/06) **[1, 2006.01]**
17/085 • • with oleum **[3, 2006.01]**
17/09 • with acid salts **[3, 2006.01]**
17/095 • with "solid acids", e.g. phosphoric acid deposited on a carrier **[3, 2006.01]**
17/10 • Recovery of used refining agent **[1, 2006.01]**

19/00 Refining hydrocarbon oils, in the absence of hydrogen, by alkaline treatment [1, 2006.01]
19/02 • with aqueous alkaline solutions **[1, 2006.01]**
19/04 • • containing solubilisers, e.g. solutisers **[1, 2006.01]**
19/06 • • with plumbites or plumbates **[1, 2006.01]**
19/067 • with molten alkaline material **[3, 2006.01]**
19/073 • with solid alkaline material **[3, 2006.01]**
19/08 • Recovery of used refining agent **[1, 2006.01]**

21/00 Refining of hydrocarbon oils, in the absence of hydrogen, by extraction with selective solvents (C10G 17/00, C10G 19/00 take precedence) **[1, 2006.01]**
21/02 • with two or more solvents, which are introduced or withdrawn separately **[1, 2006.01]**
21/04 • • by introducing simultaneously at least two immiscible solvents counter-current to each other **[1, 2006.01]**
21/06 • characterised by the solvent used **[1, 2006.01]**
21/08 • • Inorganic compounds only **[1, 2006.01]**
21/10 • • • Sulfur dioxide **[1, 2006.01]**
21/12 • • Organic compounds only **[1, 2006.01]**
21/14 • • • Hydrocarbons **[1, 2006.01]**
21/16 • • • Oxygen-containing compounds **[1, 2006.01]**
21/18 • • • Halogen-containing compounds **[1, 2006.01]**
21/20 • • • Nitrogen-containing compounds **[1, 2006.01]**
21/22 • • • Compounds containing sulfur, selenium, or tellurium **[1, 2006.01]**
21/24 • • • Phosphorus-containing compounds **[1, 2006.01]**
21/26 • • • Silicon-containing compounds **[1, 2006.01]**
21/27 • • • Organic compounds not provided for in a single one of groups C10G 21/14-C10G 21/26 **[3, 2006.01]**
21/28 • Recovery of used solvent **[1, 2006.01]**
21/30 • Controlling or regulating **[3, 2006.01]**

25/00 Refining of hydrocarbon oils, in the absence of hydrogen, with solid sorbents [1, 2006.01]

Note(s) [2006.01]

When classifying in this group, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.

25/02 • with ion-exchange material **[1, 2006.01]**
25/03 • • with crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
25/05 • • • Removal of non-hydrocarbon compounds, e.g. sulfur compounds **[3, 2006.01]**
25/06 • with moving sorbents or sorbents dispersed in the oil **[1, 2006.01]**
25/08 • • according to the "moving bed" technique **[1, 2006.01]**
25/09 • • according to the "fluidised bed" technique **[3, 2006.01]**
25/11 • • Distillation in the presence of moving sorbents **[3, 2006.01]**
25/12 • Recovery of used adsorbent **[1, 2006.01]**

27/00 Refining of hydrocarbon oils, in the absence of hydrogen, by oxidation [1, 2006.01]
27/02 • with halogen or compounds generating halogen; Hypochlorous acid or salts thereof **[1, 2006.01]**
27/04 • with oxygen or compounds generating oxygen **[1, 2006.01]**
27/06 • • in the presence of alkaline solutions **[1, 2006.01]**
27/08 • • in the presence of copper chloride **[1, 2006.01]**
27/10 • • in the presence of metal-containing organic complexes, e.g. chelates, or cationic ion-exchange resins **[3, 2006.01]**
27/12 • • with oxygen-generating compounds, e.g. per-compounds, chromic acid, chromates (plumbites or plumbates C10G 19/06) **[3, 2006.01]**
27/14 • • with ozone-containing gases **[3, 2006.01]**

29/00 Refining of hydrocarbon oils, in the absence of hydrogen, with other chemicals [1, 2006.01]
29/02 • Non-metals **[1, 2006.01]**
29/04 • Metals, or metals deposited on a carrier **[1, 2006.01]**
29/06 • Metal salts, or metal salts deposited on a carrier **[1, 2006.01]**
29/08 • • containing the metal in the lower valency **[1, 2006.01]**
29/10 • • Sulfides **[1, 2006.01]**
29/12 • • Halides **[1, 3, 2006.01]**
29/16 • Metal oxides **[1, 2006.01]**
29/20 • Organic compounds not containing metal atoms **[1, 2006.01]**
29/22 • • containing oxygen as the only hetero atom **[1, 2006.01]**
29/24 • • • Aldehydes or ketones **[1, 2006.01]**
29/26 • • Halogenated hydrocarbons **[1, 2006.01]**
29/28 • • containing sulfur as the only hetero atom, e.g. mercaptans, or sulfur and oxygen as the only hetero atoms **[1, 2006.01]**

31/00 Refining of hydrocarbon oils, in the absence of hydrogen, by methods not otherwise provided for (by distillation C10G 7/00) **[1, 2, 2006.01]**
31/06 • by heating, cooling, or pressure treatment **[1, 2006.01]**
31/08 • by treating with water **[1, 2006.01]**
31/09 • by filtration **[3, 2006.01]**
31/10 • with the aid of centrifugal force **[1, 2006.01]**
31/11 • by dialysis **[3, 2006.01]**

32/00 Refining of hydrocarbon oils by electric or magnetic means, by irradiation, or by using microorganisms [3, 2006.01]
32/02 • by electric or magnetic means **[3, 2006.01]**
32/04 • by particle radiation **[3, 2006.01]**

33/00 De-watering or demulsification of hydrocarbon oils (by distillation C10G 7/04) **[1, 2006.01]**
33/02 • with electrical or magnetic means **[1, 2006.01]**
33/04 • with chemical means **[1, 2006.01]**
33/06 • with mechanical means, e.g. by filtration **[1, 2006.01]**
33/08 • Controlling or regulating **[3, 2006.01]**

35/00 Reforming naphtha [1, 2006.01]

Note(s) [3]

In this group, the following term is used with the meaning indicated:

- "reforming" means the treatment of naphtha in order to improve the octane number or its aromatic content.

35/02 • Thermal reforming **[1, 2006.01]**
35/04 • Catalytic reforming **[1, 2006.01]**
35/06 • • characterised by the catalyst used **[1, 2006.01]**
35/085 • • • containing platinum group metals or compounds thereof **[3, 2006.01]**
35/09 • • • • Bimetallic catalysts in which at least one of the metals is a platinum-group metal **[3, 2006.01]**
35/095 • • • containing crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
35/10 • • with moving catalysts **[1, 2006.01]**
35/12 • • • according to the "moving bed" technique **[1, 2006.01]**
35/14 • • • according to the "fluidised bed" technique **[1, 2006.01]**
35/16 • with electric, electromagnetic, or mechanical vibrations; by particle radiation **[1, 2006.01]**
35/22 • Starting-up reforming operations **[3, 2006.01]**
35/24 • Controlling or regulating of reforming operations **[3, 2006.01]**

Hydrotreatment processes

45/00 Refining of hydrocarbon oils using hydrogen or hydrogen-generating compounds [3, 2006.01]

Note(s) [3]

Treatment of hydrocarbon oils in the presence of hydrogen-generating compounds not provided for in a single one of groups C10G 45/02, C10G 45/32, C10G 45/44, or C10G 45/58 is covered by group C10G 49/00.

45/02 • to eliminate hetero atoms without changing the skeleton of the hydrocarbon involved and without cracking into lower boiling hydrocarbons; Hydrofinishing **[3, 2006.01]**
45/04 • • characterised by the catalyst used **[3, 2006.01]**
45/06 • • • containing nickel or cobalt metal, or compounds thereof **[3, 2006.01]**
45/08 • • • • in combination with chromium, molybdenum, or tungsten metals, or compounds thereof **[3, 2006.01]**
45/10 • • • containing platinum group metals or compounds thereof **[3, 2006.01]**
45/12 • • • containing crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
45/14 • • with moving solid particles **[3, 2006.01]**
45/16 • • • suspended in the oil, e.g. slurries **[3, 2006.01]**
45/18 • • • according to the "moving bed" technique **[3, 2006.01]**
45/20 • • • according to the "fluidised bed" technique **[3, 2006.01]**
45/22 • • with hydrogen dissolved or suspended in the oil **[3, 2006.01]**
45/24 • • with hydrogen-generating compounds **[3, 2006.01]**
45/26 • • • Steam or water **[3, 2006.01]**
45/28 • • • Organic compounds; Autofining **[3, 2006.01]**
45/30 • • • • characterised by the catalyst used **[3, 2006.01]**
45/32 • Selective hydrogenation of the diolefin or acetylene compounds **[3, 2006.01]**
45/34 • • characterised by the catalyst used **[3, 2006.01]**
45/36 • • • containing nickel or cobalt metal, or compounds thereof **[3, 2006.01]**
45/38 • • • • in combination with chromium, molybdenum or tungsten metals, or compounds thereof **[3, 2006.01]**
45/40 • • • containing platinum group metals or compounds thereof **[3, 2006.01]**
45/42 • • with moving solid particles **[3, 2006.01]**
45/44 • Hydrogenation of the aromatic hydrocarbons **[3, 2006.01]**
45/46 • • characterised by the catalyst used **[3, 2006.01]**
45/48 • • • containing nickel or cobalt metal, or compounds thereof **[3, 2006.01]**
45/50 • • • • in combination with chromium, molybdenum or tungsten metal, or compounds thereof **[3, 2006.01]**
45/52 • • • containing platinum group metals or compounds thereof **[3, 2006.01]**
45/54 • • • containing crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
45/56 • • with moving solid particles **[3, 2006.01]**
45/58 • to change the structural skeleton of some of the hydrocarbon content without cracking the other hydrocarbons present, e.g. lowering pour point; Selective hydrocracking of normal paraffins (C10G 32/00 takes precedence; improving or increasing the octane number or aromatic content of naphtha C10G 35/00) **[3, 2006.01]**
45/60 • • characterised by the catalyst used **[3, 2006.01]**
45/62 • • • containing platinum group metals or compounds thereof **[3, 2006.01]**
45/64 • • • containing crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
45/66 • • with moving solid particles **[3, 2006.01]**
45/68 • • Aromatisation of hydrocarbon oil fractions **[3, 2006.01]**
45/70 • • • with catalysts containing platinum group metals or compounds thereof **[3, 2006.01]**
45/72 • Controlling or regulating **[3, 2006.01]**

47/00 Cracking of hydrocarbon oils, in the presence of hydrogen or hydrogen-generating compounds, to obtain lower boiling fractions (C10G 15/00 takes precedence; destructive hydrogenation of non-melting solid carbonaceous or similar materials C10G 1/06) **[3, 2006.01]**

47/02 • characterised by the catalyst used **[3, 2006.01]**
47/04 • • Oxides **[3, 2006.01]**
47/06 • • Sulfides **[3, 2006.01]**
47/08 • • Halides **[3, 2006.01]**
47/10 • • with catalysts deposited on a carrier **[3, 2006.01]**
47/12 • • • Inorganic carriers **[3, 2006.01]**
47/14 • • • • the catalyst containing platinum group metals or compounds thereof **[3, 2006.01]**
47/16 • • • • Crystalline alumino-silicate carriers **[3, 2006.01]**
47/18 • • • • • the catalyst containing platinum group metals or compounds thereof **[3, 2006.01]**
47/20 • • • • • the catalyst containing other metals or compounds thereof **[3, 2006.01]**
47/22 • Non-catalytic cracking in the presence of hydrogen **[3, 2006.01]**
47/24 • with moving solid particles **[3, 2006.01]**
47/26 • • suspended in the oil, e.g. slurries **[3, 2006.01]**

47/28 • • according to the "moving bed" technique **[3, 2006.01]**
47/30 • • according to the "fluidised bed" technique **[3, 2006.01]**
47/32 • in the presence of hydrogen-generating compounds **[3, 2006.01]**
47/34 • • Organic compounds, e.g. hydrogenated hydrocarbons **[3, 2006.01]**
47/36 • Controlling or regulating **[3, 2006.01]**

49/00 Treatment of hydrocarbon oils, in the presence of hydrogen or hydrogen-generating compounds, not provided for in a single one of groups C10G 45/02, C10G 45/32, C10G 45/44, C10G 45/58, or C10G 47/00 [3, 2006.01]
49/02 • characterised by the catalyst used **[3, 2006.01]**
49/04 • • containing nickel, cobalt, chromium, molybdenum, or tungsten metals, or compounds thereof **[3, 2006.01]**
49/06 • • containing platinum group metals or compounds thereof **[3, 2006.01]**
49/08 • • containing crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
49/10 • with moving solid particles **[3, 2006.01]**
49/12 • • suspended in the oil, e.g. slurries **[3, 2006.01]**
49/14 • • according to the "moving bed" technique **[3, 2006.01]**
49/16 • • according to the "fluidised bed" technique **[3, 2006.01]**
49/18 • in the presence of hydrogen-generating compounds, e.g. ammonia, water, hydrogen sulfide **[3, 2006.01]**
49/20 • • Organic compounds **[3, 2006.01]**
49/22 • Separation of effluents **[3, 2006.01]**
49/24 • Starting-up hydrotreatment operations **[3, 2006.01]**
49/26 • Controlling or regulating **[3, 2006.01]**

50/00 Production of liquid hydrocarbon mixtures from lower carbon number hydrocarbons, e.g. by oligomerisation [6, 2006.01]
50/02 • of hydrocarbon oils for lubricating purposes **[6, 2006.01]**

Multi-step processes

Note(s) [3]

Groups C10G 51/00-C10G 69/00cover only those combined treating operations where the interest is directed to the relationship between the steps.

51/00 Treatment of hydrocarbon oils, in the absence of hydrogen, by two or more cracking processes only [3, 2006.01]
51/02 • plural serial stages only **[3, 2006.01]**
51/04 • • including only thermal and catalytic cracking steps **[3, 2006.01]**
51/06 • plural parallel stages only **[3, 2006.01]**

53/00 Treatment of hydrocarbon oils, in the absence of hydrogen, by two or more refining processes [3, 2006.01]
53/02 • plural serial stages only **[3, 2006.01]**
53/04 • • including at least one extraction step **[3, 2006.01]**
53/06 • • • including only extraction steps, e.g. deasphalting by solvent treatment followed by extraction of aromatics **[3, 2006.01]**
53/08 • • including at least one sorption step **[3, 2006.01]**
53/10 • • including at least one acid-treatment step **[3, 2006.01]**
53/12 • • including at least one alkaline-treatment step **[3, 2006.01]**
53/14 • • including at least one oxidation step **[3, 2006.01]**
53/16 • plural parallel stages only **[3, 2006.01]**

55/00 Treatment of hydrocarbon oils, in the absence of hydrogen, by at least one refining process and at least one cracking process [3, 2006.01]
55/02 • plural serial stages only **[3, 2006.01]**
55/04 • • including at least one thermal cracking step **[3, 2006.01]**
55/06 • • including at least one catalytic cracking step **[3, 2006.01]**
55/08 • plural parallel stages only **[3, 2006.01]**

57/00 Treatment of hydrocarbon oils, in the absence of hydrogen, by at least one cracking process or refining process and at least one other conversion process [3, 2006.01]
57/02 • with polymerisation **[3, 2006.01]**

59/00 Treatment of naphtha by two or more reforming processes only or by at least one reforming process and at least one process which does not substantially change the boiling range of the naphtha [3, 2006.01]
59/02 • plural serial stages only **[3, 2006.01]**
59/04 • • including at least one catalytic and at least one non-catalytic reforming step **[3, 2006.01]**
59/06 • plural parallel stages only **[3, 2006.01]**

61/00 Treatment of naphtha by at least one reforming process and at least one process of refining in the absence of hydrogen [3, 2006.01]
61/02 • plural serial stages only **[3, 2006.01]**
61/04 • • the refining step being an extraction **[3, 2006.01]**
61/06 • • the refining step being a sorption process **[3, 2006.01]**
61/08 • plural parallel stages only **[3, 2006.01]**
61/10 • processes also including other conversion steps **[3, 2006.01]**

63/00 Treatment of naphtha by at least one reforming process and at least one other conversion process (C10G 59/00, C10G 61/00 take precedence) **[3, 2006.01]**
63/02 • plural serial stages only **[3, 2006.01]**
63/04 • • including at least one cracking step **[3, 2006.01]**
63/06 • plural parallel stages only **[3, 2006.01]**
63/08 • • including at least one cracking step **[3, 2006.01]**

65/00 Treatment of hydrocarbon oils by two or more hydrotreatment processes only [3, 2006.01]
65/02 • plural serial stages only **[3, 2006.01]**
65/04 • • including only refining steps **[3, 2006.01]**
65/06 • • • at least one step being a selective hydrogenation of the diolefins **[3, 2006.01]**
65/08 • • • at least one step being a hydrogenation of the aromatic hydrocarbons **[3, 2006.01]**
65/10 • • including only cracking steps **[3, 2006.01]**
65/12 • • including cracking steps and other hydrotreatment steps **[3, 2006.01]**
65/14 • plural parallel stages only **[3, 2006.01]**
65/16 • • including only refining steps **[3, 2006.01]**
65/18 • • including only cracking steps **[3, 2006.01]**

67/00 Treatment of hydrocarbon oils by at least one hydrotreatment process and at least one process for refining in the absence of hydrogen only [3, 2006.01]
67/02 • plural serial stages only **[3, 2006.01]**
67/04 • • including solvent extraction as the refining step in the absence of hydrogen **[3, 2006.01]**
67/06 • • including a sorption process as the refining step in the absence of hydrogen **[3, 2006.01]**
67/08 • • including acid treatment as the refining step in the absence of hydrogen **[3, 2006.01]**
67/10 • • including alkaline treatment as the refining step in the absence of hydrogen **[3, 2006.01]**
67/12 • • including oxidation as the refining step in the absence of hydrogen **[3, 2006.01]**
67/14 • • including at least two different refining steps in the absence of hydrogen **[3, 2006.01]**
67/16 • plural parallel stages only **[3, 2006.01]**

69/00 Treatment of hydrocarbon oils by at least one hydrotreatment process and at least one other conversion process (C10G 67/00 takes precedence) **[3, 2006.01]**
69/02 • plural serial stages only **[3, 2006.01]**
69/04 • • including at least one step of catalytic cracking in the absence of hydrogen **[3, 2006.01]**
69/06 • • including at least one step of thermal cracking in the absence of hydrogen **[3, 2006.01]**
69/08 • • including at least one step of reforming naphtha **[3, 2006.01]**
69/10 • • • hydrocracking of higher boiling fractions into naphtha and reforming the naphtha obtained **[3, 2006.01]**
69/12 • • including at least one polymerisation or alkylation step **[3, 2006.01]**
69/14 • plural parallel stages only **[3, 2006.01]**

70/00 Working-up undefined normally gaseous mixtures obtained by processes covered by groups C10G 9/00, C10G 11/00, C10G 15/00, C10G 47/00, C10G 51/00 [5, 2006.01]
70/02 • by hydrogenation **[5, 2006.01]**
70/04 • by physical processes **[5, 2006.01]**
70/06 • • by gas-liquid contact **[5, 2006.01]**

71/00 Treatment by methods not otherwise provided for of hydrocarbon oils or fatty oils for lubricating purposes [3, 2006.01]
71/02 • Thickening by voltolising (chemical modification of drying-oils by voltolising C09F 7/04) **[3, 2006.01]**

73/00 Recovery or refining of mineral waxes, e.g. montan wax (compositions essentially based on waxes C08L 91/00) **[3, 2006.01]**
73/02 • Recovery of petroleum waxes from hydrocarbon oils; De-waxing of hydrocarbon oils **[3, 2006.01]**
73/04 • • with the use of filter aids **[3, 2006.01]**
73/06 • • with the use of solvents **[3, 2006.01]**
73/08 • • • Organic compounds **[3, 2006.01]**
73/10 • • • • Hydrocarbons **[3, 2006.01]**
73/12 • • • • Oxygen-containing compounds **[3, 2006.01]**
73/14 • • • • Halogen-containing compounds **[3, 2006.01]**
73/16 • • • • Nitrogen-containing compounds **[3, 2006.01]**
73/18 • • • • containing sulfur, selenium or tellurium **[3, 2006.01]**
73/20 • • • • containing phosphorus **[3, 2006.01]**
73/22 • • • • Mixtures of organic compounds **[3, 2006.01]**
73/23 • • • Recovery of used solvents **[6, 2006.01]**
73/24 • • by formation of adducts **[3, 2006.01]**
73/26 • • by flotation **[3, 2006.01]**
73/28 • • by centrifugal force **[3, 2006.01]**
73/30 • • with electric means **[3, 2006.01]**
73/32 • • Methods of cooling during de-waxing **[3, 2006.01]**
73/34 • • Controlling or regulating **[3, 2006.01]**
73/36 • Recovery of petroleum waxes from other compositions containing oil in minor proportions, from concentrates or from residues; De-oiling, sweating **[3, 2006.01]**
73/38 • Chemical modification of petroleum waxes **[3, 2006.01]**
73/40 • Physical treatment of waxes or modified waxes, e.g. granulation, dispersion, emulsion, irradiation **[3, 2006.01]**
73/42 • Refining of petroleum waxes **[3, 2006.01]**
73/44 • • in the presence of hydrogen or hydrogen-generating compounds **[3, 2006.01]**

75/00 Inhibiting corrosion or fouling in apparatus for treatment or conversion of hydrocarbon oils, in general (C10G 7/10, C10G 9/16 take precedence) **[6, 2006.01]**
75/02 • by addition of corrosion inhibitors **[6, 2006.01]**
75/04 • by addition of antifouling agents **[6, 2006.01]**

99/00 Subject matter not provided for in other groups of this subclass [2006.01]

C10H PRODUCTION OF ACETYLENE BY WET METHODS [5]

Subclass index

GENERATORS
With non-automatic water feed.....1/00
With automatic water feed.....3/00, 5/00
Kipp's or Dobereiner's type.....7/00, 9/00
Other types.....11/00-19/00
Details.....21/00

1/00 Acetylene gas generators with dropwise, gravity, non-automatic water feed [1, 2006.01]
1/02 • Valves **[1, 2006.01]**
1/04 • • Screw valves **[1, 2006.01]**
1/06 • • Cocks **[1, 2006.01]**

1/08 • Other means for controlling the water feed **[1, 2006.01]**
1/10 • Water feed from above through a central or lateral pipe **[1, 2006.01]**
1/12 • Water feed from above through porous materials **[1, 2006.01]**

3/00 Acetylene gas generators with automatic water feed regulation by means independent of the gas-holder [1, 2006.01]
3/02 • with membranes **[1, 2006.01]**
3/04 • with floats **[1, 2006.01]**
3/06 • with pistons **[1, 2006.01]**

5/00 Acetylene gas generators with automatic water feed regulation by the gas-holder [1, 2006.01]
5/02 • with overflow for the water **[1, 2006.01]**
5/04 • by drop-by-drop water valves connected with the gas-holder **[1, 2006.01]**
5/06 • • by drop-by-drop water cocks connected with the gas-holder **[1, 2006.01]**
5/08 • with gas-holder-connected water valves or cocks according to the submersion system **[1, 2006.01]**

7/00 Acetylene gas generators with water feed by Kipp's principle [1, 2006.01]
7/02 • with water feed from below **[1, 2006.01]**
7/04 • with water feed from above **[1, 2006.01]**

9/00 Acetylene gas generators according to Dobereiner's principle with fixed carbide bell [1, 2006.01]
9/02 • with water feed from below through porous materials (by capillary feed) **[1, 2006.01]**
9/04 • with gas cock actuated by the gas-holder **[1, 2006.01]**
9/06 • with the depth of the gas outlet pipe regulated by the gas-holder **[1, 2006.01]**
9/08 • with movable gas-holder **[1, 2006.01]**
9/10 • by wetting the carbide only at the bottom **[1, 2006.01]**

11/00 Acetylene gas generators with submersion of the carbide in water [1, 2006.01]
11/02 • inside the gas-holder **[1, 2006.01]**
11/04 • with sealing and reaction water separated from each other **[1, 2006.01]**

13/00 Acetylene gas generators with combined dipping and drop-by-drop system [1, 2006.01]

15/00 Acetylene gas generators with carbide feed, with or without regulation by the gas pressure [1, 2006.01]
15/02 • with non-automatic carbide feed **[1, 2006.01]**
15/04 • • Closure means at the filling-hopper **[1, 2006.01]**
15/06 • with automatic carbide feed by valves **[1, 2006.01]**
15/08 • • by flap or slide valves **[1, 2006.01]**
15/10 • • by float valves **[1, 2006.01]**
15/12 • • by measuring valves, including pocket-wheels **[1, 2006.01]**
15/14 • with feed worm or feed conveyors **[1, 2006.01]**
15/16 • with feed drums **[1, 2006.01]**
15/18 • with movable feed disc and fixed carbide-receptacle **[1, 2006.01]**
15/20 • with carbide feed by cartridges or other packets **[1, 2006.01]**
15/22 • with carbide feed of pulverous carbide from receptacles or through the gas-holder **[1, 2006.01]**
15/24 • with carbide feed by pistons **[1, 2006.01]**

17/00 High-pressure acetylene gas generators [1, 2006.01]

19/00 Other acetylene gas generators [1, 2006.01]
19/02 • Rotary carbide receptacles **[1, 2006.01]**

21/00 Details of acetylene generators; Accessory equipment for, or features of, the wet production of acetylene [1, 2006.01]
21/02 • Packages of carbide for use in generators, e.g. cartridges **[1, 2006.01]**
21/04 • • Placing packages in the generator **[1, 2006.01]**
21/06 • • • Opening devices for packages in the generator **[1, 2006.01]**
21/08 • Safety devices for acetylene generators **[1, 2006.01]**
21/10 • Carbide compositions **[1, 2006.01]**
21/12 • Gas-tight sealing means, e.g. liquid seals in generators **[1, 2006.01]**
21/14 • Ventilation means; Cooling devices **[1, 2006.01]**
21/16 • Removing sludge from generators **[1, 2006.01]**

C10J PRODUCTION OF GASES CONTAINING CARBON MONOXIDE AND HYDROGEN FROM SOLID CARBONACEOUS MATERIALS BY PARTIAL OXIDATION PROCESSES INVOLVING OXYGEN OR STEAM (underground gasification of minerals E21B 43/295)**; CARBURETTING AIR OR OTHER GASES [5]**

1/00 Production of fuel gases by carburetting air or other gases (for internal-combustion engines F02M) **[1, 2006.01]**
1/02 • Carburetting air **[1, 2006.01]**
1/04 • • Controlling supply of air **[1, 2006.01]**
1/06 • • with materials which are liquid at ordinary temperatures **[1, 2006.01]**
1/08 • • • by passage of air through or over the surface of the liquid **[1, 2006.01]**
1/10 • • • • with the liquid absorbed on carriers **[1, 2006.01]**
1/12 • • • by atomisation of the liquid **[1, 2006.01]**
1/14 • • • Controlling the supply of liquid in accordance with the air supply **[1, 2006.01]**
1/16 • • with solid hydrocarbons (C10J 1/207, C10J 1/213 take precedence) **[1, 2006.01]**
1/18 • • in rotary carburettors **[1, 2006.01]**
1/20 • Carburetting gases other than air **[1, 2006.01]**
1/207 • Carburetting by pyrolysis of solid carbonaceous material in a fuel bed (C10J 3/66 takes precedence) **[2012.01]**
1/213 • Carburetting by pyrolysis of solid carbonaceous material in a carburettor **[2012.01]**
1/22 • Adding materials to prevent vapour deposition **[1, 2006.01]**
1/24 • Controlling humidity of the air or gas to be carburetted **[1, 2006.01]**
1/26 • using raised temperatures or pressures (C10J 1/207, C10J 1/213 take precedence) **[1, 2006.01]**
1/28 • Odorising air gas **[1, 2006.01]**

3/00 Production of gases containing carbon monoxide and hydrogen, e.g. synthesis gas or town gas, from solid carbonaceous materials by partial oxidation processes involving oxygen or steam [1, 2006.01]
3/02 • Fixed-bed gasification of lump fuel **[1, 2006.01]**
3/04 • • Cyclic processes, e.g. alternate blast and run **[1, 2006.01]**
3/06 • • Continuous processes **[1, 2006.01]**
3/08 • • • with ash-removal in liquid state **[1, 2006.01]**
3/10 • • • using external heating **[1, 2006.01]**
3/12 • • • using solid heat-carriers **[1, 2006.01]**
3/14 • • • using gaseous heat-carriers **[1, 2006.01]**
3/16 • • • simultaneously reacting oxygen and water with the carbonaceous material **[1, 2006.01]**
3/18 • • • using electricity **[1, 2006.01]**
3/20 • • Apparatus; Plants **[1, 2006.01]**
3/22 • • • Arrangements or dispositions of valves or flues **[1, 2006.01]**
3/24 • • • • to permit flow of gases or vapours other than upwardly through the fuel bed **[1, 2006.01]**
3/26 • • • • • downwardly **[1, 2006.01]**
3/28 • • • • fully automatic **[1, 2006.01]**
3/30 • • • Fuel charging devices **[1, 2006.01]**
3/32 • • • Devices for distributing fuel evenly over the bed for stirring-up the fuel bed **[1, 2006.01]**
3/34 • • • Grates; Mechanical ash-removing devices **[1, 2006.01]**
3/36 • • • • Fixed grates **[1, 2006.01]**
3/38 • • • • • with stirring beams **[1, 2006.01]**
3/40 • • • • Movable grates **[1, 2006.01]**
3/42 • • • • • Rotary grates **[1, 2006.01]**
3/44 • • • adapted for use on vehicles **[1, 2006.01]**
3/46 • Gasification of granular or pulverulent fuels in suspension **[1, 2006.01]**
3/48 • • Apparatus; Plants **[1, 2006.01]**
3/50 • • • Fuel charging devices **[1, 2006.01]**
3/52 • • • Ash-removing devices **[1, 2006.01]**
3/54 • • Gasification of granular or pulverulent fuels by the Winkler technique, i.e. by fluidisation **[1, 2006.01]**
3/56 • • • Apparatus; Plants **[1, 2006.01]**
3/57 • Gasification using molten salts or metals (C10J 3/02, C10J 3/46 take precedence) **[4, 2006.01]**
3/58 • combined with pre-distillation of the fuel **[1, 2006.01]**
3/60 • • Processes **[1, 2006.01]**
3/62 • • • with separate withdrawal of the distillation products **[1, 2006.01]**
3/64 • • • with decomposition of the distillation products **[1, 2006.01]**
3/66 • • • • by introducing them into the gasification zone **[1, 2006.01]**
3/72 • Other features **[1, 2006.01]**
3/74 • • Construction of shells or jackets **[1, 2006.01]**
3/76 • • • Water jackets; Steam boiler jackets **[1, 2006.01]**
3/78 • • High-pressure apparatus **[1, 2006.01]**
3/80 • • with arrangements for preheating the blast or the water vapour **[1, 2006.01]**
3/82 • • Gas withdrawal means **[1, 2006.01]**
3/84 • • • with means for removing dust or tar from the gas **[1, 2006.01]**
3/86 • • combined with waste-heat boilers **[1, 2006.01]**

C10K PURIFYING OR MODIFYING THE CHEMICAL COMPOSITION OF COMBUSTIBLE GASES CONTAINING CARBON MONOXIDE

1/00 Purifying combustible gases containing carbon monoxide (isolation of hydrogen from mixtures containing hydrogen and carbon monoxide C01B 3/50) **[1, 2006.01]**
1/02 • Dust removal **[1, 2006.01]**
1/04 • by cooling to condense non-gaseous materials **[1, 2006.01]**
1/06 • • combined with spraying with water **[1, 2006.01]**
1/08 • by washing with liquids; Reviving the used wash liquors **[1, 2006.01]**
1/10 • • with aqueous liquids **[1, 2006.01]**
1/12 • • • alkaline-reacting **[1, 2006.01]**
1/14 • • • • organic **[1, 2006.01]**
1/16 • • with non-aqueous liquids **[1, 2006.01]**
1/18 • • • hydrocarbon oils **[1, 2006.01]**
1/20 • by treating with solids; Regenerating spent purifying masses **[1, 2006.01]**
1/22 • • Apparatus, e.g. dry box purifiers **[1, 2006.01]**
1/24 • • • Supporting means for the purifying material **[1, 2006.01]**
1/26 • • Regeneration of the purifying material **[1, 2006.01]**
1/28 • • Controlling the gas flow through the purifiers **[1, 2006.01]**
1/30 • • with moving purifying masses **[1, 2006.01]**
1/32 • with selectively absorptive solids, e.g. active carbon **[1, 2006.01]**
1/34 • by catalytic conversion of impurities to more readily removable materials **[1, 2006.01]**

3/00 Modifying the chemical composition of combustible gases containing carbon monoxide to produce an improved fuel, e.g. one of different calorific value, which may be free from carbon monoxide [1, 2006.01]
3/02 • by catalytic treatment **[1, 2006.01]**
3/04 • • reducing the carbon monoxide content **[1, 2006.01]**
3/06 • by mixing with gases **[1, 2006.01]**

C10L FUELS NOT OTHERWISE PROVIDED FOR; NATURAL GAS; SYNTHETIC NATURAL GAS OBTAINED BY PROCESSES NOT COVERED BY SUBCLASSES C10G OR C10K; LIQUEFIED PETROLEUM GAS; USE OF ADDITIVES TO FUELS OR FIRES; FIRE-LIGHTERS [5]

1/00 Liquid carbonaceous fuels [1, 2006.01]
1/02 • essentially based on components consisting of carbon, hydrogen, and oxygen only **[1, 2006.01]**

1/04 • essentially based on blends of hydrocarbons **[1, 2006.01]**
1/06 • • for spark ignition **[1, 2006.01]**
1/08 • • for compression ignition **[1, 2006.01]**
1/10 • containing additives **[1, 2006.01]**

Note(s) [2006.01]

1. In groups C10L 1/12-C10L 1/14, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a compound is classified in the last appropriate place.
2. If an additive is a mixture of compounds, classification is made for each compound of interest.
3. A metal salt or an ammonium salt of a compound is classified as that compound, e.g. a chromium sulfonate is classified as a sulfonate in group C10L 1/24 and not in group C10L 1/30.

1/12 • • Inorganic compounds **[1, 2006.01]**
1/14 • • Organic compounds **[1, 2006.01]**
1/16 • • • Hydrocarbons **[1, 2006.01]**
1/18 • • • containing oxygen **[1, 2006.01]**
1/182 • • • • containing hydroxy groups; Salts thereof **[2006.01]**
1/183 • • • • • at least one hydroxy group bound to an aromatic carbon atom **[2006.01]**
1/185 • • • • Ethers; Acetals; Ketals; Aldehydes; Ketones **[2006.01]**
1/188 • • • • Carboxylic acids; Salts thereof **[2006.01]**
1/189 • • • • • having at least one carboxyl group bound to an aromatic carbon atom **[2006.01]**
1/19 • • • • Esters **[2006.01]**
1/192 • • • • Macromolecular compounds **[2006.01]**
1/195 • • • • • obtained by reactions involving only carbon-to-carbon unsaturated bonds **[2006.01]**
1/196 • • • • • • derived from monomers containing a carbon-to-carbon unsaturated bond and a carboxyl group or salts, anhydrides or esters thereof **[2006.01]**
1/197 • • • • • • derived from monomers containing a carbon-to-carbon unsaturated bond and an acyloxy group of a saturated carboxylic or carbonic acid **[2006.01]**
1/198 • • • • • obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds **[2006.01]**
1/20 • • • containing halogen **[1, 2006.01]**
1/22 • • • containing nitrogen **[1, 2006.01]**
1/222 • • • • containing at least one carbon-to-nitrogen single bond **[2006.01]**
1/223 • • • • • having at least one amino group bound to an aromatic carbon atom **[2006.01]**
1/224 • • • • • Amides; Imides **[2006.01]**
1/226 • • • • containing at least one nitrogen-to-nitrogen bond, e.g. azo compounds, azides, hydrazines **[2006.01]**
1/228 • • • • containing at least one carbon-to-nitrogen double bond, e.g. guanidines, hydrazones, semicarbazones, imines; containing at least one carbon-to-nitrogen triple bond, e.g. nitriles **[2006.01]**
1/23 • • • • containing at least one nitrogen-to-oxygen bond, e.g. nitro-compounds, nitrates, nitrites **[2006.01]**
1/232 • • • • containing nitrogen in a heterocyclic ring **[2006.01]**
1/233 • • • • • containing nitrogen and oxygen in the ring, e.g. oxazoles **[2006.01]**
1/234 • • • • Macromolecular compounds **[2006.01]**
1/236 • • • • • obtained by reactions involving only carbon-to-carbon unsaturated bonds **[2006.01]**
1/238 • • • • • obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds **[2006.01]**
1/2383 • • • • • • Polyamines or polyimines, or derivatives thereof **[2006.01]**
1/2387 • • • • • • • Polyoxyalkyleneamines **[2006.01]**
1/24 • • • containing sulfur, selenium or tellurium **[1, 2006.01]**
1/26 • • • containing phosphorus **[1, 2006.01]**
1/28 • • • containing silicon **[1, 2006.01]**
1/30 • • • containing elements not mentioned in groups C10L 1/16-C10L 1/28 **[1, 2006.01]**
1/32 • consisting of coal-oil suspensions or aqueous emulsions **[1, 2006.01]**

3/00 Gaseous fuels; Natural gas; Synthetic natural gas obtained by processes not covered by subclasses C10G, C10K; Liquefied petroleum gas [1, 5, 2006.01]
3/02 • Compositions containing acetylene **[1, 2006.01]**
3/04 • • Absorbing compositions, e.g. solvents **[1, 2006.01]**
3/06 • Natural gas; Synthetic natural gas obtained by processes not covered by C10G, C10K 3/02 or C10K 3/04 **[5, 2006.01]**
3/08 • • Production of synthetic natural gas **[5, 2006.01]**
3/10 • • Working-up natural gas or synthetic natural gas **[5, 2006.01]**
3/12 • Liquefied petroleum gas **[5, 2006.01]**

5/00 Solid fuels (produced by solidifying fluid fuels C10L 7/00; peat briquettes C10F 7/06) **[1, 2006.01]**
5/02 • Briquettes consisting mainly of carbonaceous materials of mineral origin (peat briquettes C10F) **[1, 2006.01]**
5/04 • • Raw material to be used; Pretreatment thereof **[1, 2006.01]**
5/06 • • Briquetting processes **[1, 2006.01]**
5/08 • • • without the aid of extraneous binders **[1, 2006.01]**
5/10 • • • with the aid of binders, e.g. pretreated binders **[1, 2006.01]**
5/12 • • • • with inorganic binders **[1, 2006.01]**
5/14 • • • • with organic binders **[1, 2006.01]**
5/16 • • • • • with bituminous binders, e.g. tar, pitch **[1, 2006.01]**
5/18 • • • • • with naphthalene **[1, 2006.01]**
5/20 • • • • • with sulfite lye **[1, 2006.01]**
5/22 • • • • Methods of applying the binder to the other compounding ingredients; Apparatus therefor **[1, 2006.01]**
5/24 • • Combating dust during briquetting; Safety devices against explosion **[1, 2006.01]**
5/26 • • After-treatment of the briquettes **[1, 2006.01]**
5/28 • • • Heating the briquettes; Coking the binders **[1, 2006.01]**
5/30 • • • Cooling the briquettes **[1, 2006.01]**
5/32 • • • Coating **[1, 2006.01]**
5/34 • • Other details of the briquettes **[1, 2006.01]**

5/36 • • • Shape **[1, 2006.01]**
5/38 • • • • Briquettes consisting of different layers **[1, 2006.01]**
5/40 • essentially based on materials of non-mineral origin **[1, 2006.01]**
5/42 • • on animal substances or products obtained therefrom **[1, 2006.01]**
5/44 • • on vegetable substances **[1, 2006.01]**
5/46 • • on sewage, house, or town refuse **[1, 2006.01]**
5/48 • • on industrial residues or waste materials (C10L 5/42, C10L 5/44 take precedence) **[1, 4, 2006.01]**

7/00 Fuels produced by solidifying fluid fuels [1, 2006.01]
7/02 • liquid fuels **[1, 2006.01]**
7/04 • • alcohol **[1, 2006.01]**

8/00 Fuels not provided for in other groups of this subclass [2006.01]

9/00 Treating solid fuels to improve their combustion [1, 2006.01]
9/02 • by chemical means **[1, 2006.01]**
9/04 • • by hydrogenating **[1, 2006.01]**
9/06 • • by oxidation **[1, 2006.01]**
9/08 • by heat treatment, e.g. calcining **[1, 2006.01]**
9/10 • by using additives **[1, 2006.01]**
9/12 • • Oxidation means, e.g. oxygen-generating compounds **[1, 2006.01]**

10/00 Use of additives to fuels or fires for particular purposes (using binders for briquetting solid fuels C10L 5/10; using additives to improve the combustion of solid fuels C10L 9/10) **[1, 2006.01]**
10/02 • for reducing smoke development **[1, 2006.01]**
10/04 • for minimising corrosion or incrustation **[1, 2006.01]**
10/06 • for facilitating soot removal **[1, 2006.01]**
10/08 • for improving lubricity; for reducing wear **[2006.01]**
10/10 • for improving the octane number **[2006.01]**
10/12 • for improving the cetane number **[2006.01]**
10/14 • for improving low temperature properties **[2006.01]**
10/16 • • Pour-point depressants **[2006.01]**
10/18 • use of detergents or dispersants for purposes not provided for in groups C10L 10/02-C10L 10/16 **[2006.01]**

11/00 Fire-lighters [1, 2006.01]
11/02 • based on refractory porous bodies **[1, 2006.01]**
11/04 • consisting of combustible material (matches C06F) **[1, 2006.01]**
11/06 • of a special shape **[1, 2006.01]**
11/08 • Apparatus for the manufacture thereof **[1, 2006.01]**

C10M LUBRICATING COMPOSITIONS (well drilling compositions C09K 8/02)**; USE OF CHEMICAL SUBSTANCES EITHER ALONE OR AS LUBRICATING INGREDIENTS IN A LUBRICATING COMPOSITION** (mould release, i.e. separating, agents for metals B22C 3/00, for plastics or substances in a plastic state, in general B29C 33/56, for glass C03B 40/02; textile lubricating compositions D06M 11/00, D06M 13/00, D06M 15/00; immersion oils for microscopy G02B 21/33) **[4]**

Note(s) [4, 2006.01]

1. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "lubricant" or "lubricating composition" includes cutting oils, hydraulic fluids, metal drawing compositions, flushing oils, slushing oils, or the like;
   - "aliphatic" includes "cycloaliphatic".
2. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place. Thus, a compound having an aromatic ring is classified as aromatic regardless of whether the substituent(s) of interest are on the ring or on an aliphatic part of the molecule.
3. In this subclass:
   a. metal or ammonium salts of a compound are classified as that compound;
   b. salts or adducts formed between two or more organic compounds are classified according to all compounds forming the salt or adduct, if of interest;
   c. a specified compound, e.g. phenols, acids, <u>substituted</u> by a macromolecular hydrocarbon radical is classified as that compound;
   d. base-materials or thickeners or additives consisting of a mixture for which no specific main group is provided are classified in the most indented group covering <u>all essential constituents</u> of the mixture, for example,
      - a base-material mixture of ketone and amide group C10M 105/00;
      - a base-material mixture of ketone and ether group C10M 105/08;
      - an additive mixture of long and short chain esters group C10M 129/00;
      - an additive mixture of short chain aliphatic and aromatic carboxylic acids group C10M 129/26;
   e. except for aqueous lubricating compositions containing more than 10% water, which are classified separately, classification is made according to the type of ingredient or mixture of types of ingredient (base-material, thickener or additive) which characterises the composition.
      Attention is drawn to the fact that a mixture of essential ingredients characterised by <u>only one</u> of its components, rather than by the mixture as a whole, is <u>not</u> classified as a mixture, e.g., a lubricating composition consisting of:
      - a known base-material and a new additive is classified only in the "additive" part of the classification scheme;
      - a known base-material with both a thickener and a further additive as essential ingredients, which may be individually known or not, is classified as a mixture of thickener and additive;
      - a known base-material with a combination of additives as essential ingredients, which may be individually known or not, is classified in the appropriate place for the additive mixture.
4. Any part of a composition which is not identified by the classification according to Notes (2) or (3) above, and which itself is determined to be novel and non-obvious, must also be classified in the last appropriate place. The part can be either a single ingredient or a composition in itself.

5. Any part of a composition which is not identified by the classification according to Notes (2) to (4) above, and which is considered to represent information of interest for search, may also be classified in the last appropriate place. This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".
6. In this subclass, it is desirable to add the indexing codes of subclass C10N.

Subclass index

BASE-MATERIALS
- Mineral or fatty oils 101/00
- Inorganic materials 103/00
- Non-macromolecular organic compounds 105/00
- Macromolecular compounds 107/00
- Compounds of unknown or incompletely defined constitution 109/00
- Mixtures 111/00, 169/00

THICKENERS
- Inorganic materials 113/00
- Non-macromolecular organic compounds 115/00, 117/00
- Macromolecular compounds 119/00
- Compounds of unknown or incompletely defined constitution 121/00
- Mixtures 123/00, 169/00

ADDITIVES
- Inorganic materials 125/00
- Non-macromolecular organic compounds 127/00-139/00
- Macromolecular compounds 143/00-155/00
- Compounds of unknown or incompletely defined constitution 159/00
- Mixtures 141/00, 157/00, 161/00-169/00

COMPOSITIONS CHARACTERISED BY PHYSICAL PROPERTIES 171/00
AQUEOUS COMPOSITIONS 173/00
WORKING-UP 175/00
PREPARATION OR AFTER TREATMENT 177/00

Base-materials [4]

101/00 Lubricating compositions characterised by the base-material being a mineral or fatty oil (containing more than 10% water C10M 173/00) **[4, 2006.01]**

101/02 • Petroleum fractions **[4, 2006.01]**

101/04 • Fatty oil fractions **[4, 2006.01]**

103/00 Lubricating compositions characterised by the base-material being an inorganic material (containing more than 10% water C10M 173/00) **[4, 2006.01]**

103/02 • Carbon; Graphite **[4, 2006.01]**

103/04 • Metals; Alloys **[4, 2006.01]**

103/06 • Metal compounds **[4, 2006.01]**

105/00 Lubricating compositions characterised by the base-material being a non-macromolecular organic compound [4, 2006.01]

105/02 • Well-defined hydrocarbons (petroleum fractions C10M 101/02) **[4, 2006.01]**

105/04 • • aliphatic **[4, 2006.01]**

105/06 • • aromatic **[4, 2006.01]**

105/08 • containing oxygen **[4, 2006.01]**

105/10 • • having hydroxy groups bound to acyclic or cycloaliphatic carbon atoms **[4, 2006.01]**

105/12 • • • monohydroxy **[4, 2006.01]**

105/14 • • • polyhydroxy **[4, 2006.01]**

105/16 • • having hydroxy groups bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**

105/18 • • Ethers, e.g. epoxides **[4, 2006.01]**

105/20 • • Aldehydes; Ketones **[4, 2006.01]**

105/22 • • Carboxylic acids or their salts **[4, 2006.01]**

105/24 • • • having only one carboxyl group bound to an acyclic carbon atom, cycloaliphatic carbon atom or hydrogen **[4, 2006.01]**

105/26 • • • having more than one carboxyl group bound to an acyclic carbon atom or cycloaliphatic carbon atom **[4, 2006.01]**

105/28 • • • having only one carboxyl group bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**

105/30 • • • having more than one carboxyl group bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**

105/32 • • Esters **[4, 2006.01]**

105/34 • • • of monocarboxylic acids **[4, 2006.01]**

105/36 • • • of polycarboxylic acids **[4, 2006.01]**

105/38 • • • of polyhydroxy compounds **[4, 2006.01]**

105/40 • • • containing free hydroxy or carboxyl groups **[4, 2006.01]**

105/42 • • • Complex esters, i.e. compounds containing at least three esterified carboxyl groups and derived from the combination of at least three different types of the following five types of compound: monohydroxy compounds, polyhydroxy compounds, monocarboxylic acids, polycarboxylic acids and hydroxy carboxylic acids **[4, 2006.01]**

105/44 • • • • derived from the combination of monocarboxylic acids, dicarboxylic acids and dihydroxy compounds only and having no free hydroxy or carboxyl groups **[4, 2006.01]**

105/46 • • • • derived from the combination of monohydroxy compounds, dihydroxy compounds and dicarboxylic acids only and having no free hydroxy or carboxyl groups **[4, 2006.01]**
105/48 • • • of carbonic acid **[4, 2006.01]**
105/50 • containing halogen **[4, 2006.01]**
105/52 • • containing carbon, hydrogen and halogen only **[4, 2006.01]**
105/54 • • containing carbon, hydrogen, halogen and oxygen **[4, 2006.01]**
105/56 • containing nitrogen **[4, 2006.01]**
105/58 • • Amines, e.g. polyalkylene polyamines, quaternary amines (polyalkylene polyamines with eleven or more monomer units C10M 107/44) **[4, 2006.01]**
105/60 • • • having amino groups bound to an acyclic or cycloaliphatic carbon atom **[4, 2006.01]**
105/62 • • • • containing hydroxy groups **[4, 2006.01]**
105/64 • • • having amino groups bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**
105/66 • • • • containing hydroxy groups **[4, 2006.01]**
105/68 • • Amides; Imides **[4, 2006.01]**
105/70 • • as ring hetero atom **[4, 2006.01]**
105/72 • containing sulfur, selenium or tellurium **[4, 2006.01]**
105/74 • containing phosphorus **[4, 2006.01]**
105/76 • containing silicon **[4, 2006.01]**
105/78 • containing boron **[4, 2006.01]**
105/80 • containing atoms of elements not provided for in groups C10M 105/02-C10M 105/78 **[4, 2006.01]**

107/00 Lubricating compositions characterised by the base-material being a macromolecular compound [4, 2006.01]
107/02 • Hydrocarbon polymers; Hydrocarbon polymers modified by oxidation **[4, 2006.01]**
107/04 • • Polyethene **[4, 2006.01]**
107/06 • • containing propene **[4, 2006.01]**
107/08 • • containing butene **[4, 2006.01]**
107/10 • • containing aliphatic monomer having more than 4 carbon atoms **[4, 2006.01]**
107/12 • • containing aromatic monomer, e.g. styrene **[4, 2006.01]**
107/14 • • containing conjugated diene **[4, 2006.01]**
107/16 • • containing non-conjugated diene **[4, 2006.01]**
107/18 • • Hydrocarbon polymers modified by oxidation **[4, 2006.01]**
107/20 • containing oxygen (C10M 107/18 takes precedence) **[4, 2006.01]**
107/22 • • Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**
107/24 • • • containing monomers having an unsaturated radical bound to an alcohol, aldehydo, ketonic, ether, ketal or acetal radical **[4, 2006.01]**
107/26 • • • containing monomers having an unsaturated radical bound to an acyloxy radical of a saturated carboxylic or carbonic acid **[4, 2006.01]**
107/28 • • • containing monomers having an unsaturated radical bound to a carboxyl radical, e.g. acrylate **[4, 2006.01]**
107/30 • • Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**
107/32 • • • Condensation polymers of aldehydes or ketones; Polyesters; Polyethers **[4, 2006.01]**
107/34 • • • • Polyoxyalkylenes **[4, 2006.01]**
107/36 • • Polysaccharides, e.g. cellulose **[4, 2006.01]**
107/38 • containing halogen **[4, 2006.01]**
107/40 • containing nitrogen **[4, 2006.01]**
107/42 • • Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**
107/44 • • Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**
107/46 • containing sulfur **[4, 2006.01]**
107/48 • containing phosphorus **[4, 2006.01]**
107/50 • containing silicon **[4, 2006.01]**
107/52 • containing boron **[4, 2006.01]**
107/54 • containing atoms of elements not provided for in groups C10M 107/02-C10M 107/52 **[4, 2006.01]**

109/00 Lubricating compositions characterised by the base-material being a compound of unknown or incompletely defined constitution (C10M 101/00 takes precedence) **[4, 2006.01]**
109/02 • Reaction products **[4, 2006.01]**

Note(s) [2006.01]

When classifying in this group, any reactant of a reaction product which is considered to represent information of interest for search, may also be classified in the last appropriate place in this subclass. This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

111/00 Lubricating compositions characterised by the base-material being a mixture of two or more compounds covered by more than one of the main groups C10M 101/00-C10M 109/00, each of these compounds being essential [4, 2006.01]
111/02 • at least one of them being a non-macromolecular organic compound **[4, 2006.01]**
111/04 • at least one of them being a macromolecular organic compound **[4, 2006.01]**
111/06 • at least one of them being a compound of the type covered by group C10M 109/00 **[4, 2006.01]**

Thickeners [4]

Note(s) [4]

In groups C10M 113/00-C10M 123/00, the following term is used with the meaning indicated:

- "thickener" is an agent which solidifies other liquid components to form a grease (solid lubricants consisting of solid components C10M 101/00-C10M 111/00).

113/00 Lubricating compositions characterised by the thickener being an inorganic material [4, 2006.01]
113/02 • Carbon; Graphite **[4, 2006.01]**
113/04 • Sulfur **[4, 2006.01]**
113/06 • Metals; Alloys **[4, 2006.01]**
113/08 • Metal compounds **[4, 2006.01]**
113/10 • Clays; Micas **[4, 2006.01]**
113/12 • Silica **[4, 2006.01]**
113/14 • Glass **[4, 2006.01]**
113/16 • Inorganic material treated with organic compounds, e.g. coated **[4, 2006.01]**

115/00 Lubricating compositions characterised by the thickener being a non-macromolecular organic compound other than a carboxylic acid or salt thereof [4, 2006.01]

115/02 • Hydrocarbons (petroleum fractions C10M 121/02) **[4, 2006.01]**

115/04 • containing oxygen **[4, 2006.01]**

115/06 • containing halogen **[4, 2006.01]**

115/08 • containing nitrogen **[4, 2006.01]**

115/10 • containing sulfur **[4, 2006.01]**

115/12 • containing phosphorus **[4, 2006.01]**

117/00 Lubricating compositions characterised by the thickener being a non-macromolecular carboxylic acid or salt thereof [4, 2006.01]

117/02 • having only one carboxyl group bound to an acyclic carbon atom, cycloaliphatic carbon atom or hydrogen **[4, 2006.01]**

117/04 • • containing hydroxy groups **[4, 2006.01]**

117/06 • having more than one carboxyl group bound to an acyclic carbon atom or cycloaliphatic carbon atom **[4, 2006.01]**

117/08 • having only one carboxyl group bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**

117/10 • having more than one carboxyl group bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**

119/00 Lubricating compositions characterised by the thickener being a macromolecular compound [4, 2006.01]

119/02 • Hydrocarbons polymers; Hydrocarbon polymers modified by oxidation **[4, 2006.01]**

119/04 • containing oxygen (hydrocarbon polymers modified by oxidation C10M 119/02) **[4, 2006.01]**

119/06 • • Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**

119/08 • • • containing monomers having an unsaturated radical bound to an alcohol, aldehydo, ketonic, ether, ketal or acetal radical **[4, 2006.01]**

119/10 • • • containing monomers having an unsaturated radical bound to an acyloxy radical of a saturated carboxylic or carbonic acid **[4, 2006.01]**

119/12 • • • containing monomers having an unsaturated radical bound to a carboxyl radical, e.g. acrylate **[4, 2006.01]**

119/14 • • Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**

119/16 • • • Condensation polymers of aldehydes or ketones; Polyesters; Polyethers **[4, 2006.01]**

119/18 • • • • Polyoxyalkylenes **[4, 2006.01]**

119/20 • • Polysaccharides, e.g. cellulose **[4, 2006.01]**

119/22 • containing halogen **[4, 2006.01]**

119/24 • containing nitrogen **[4, 2006.01]**

119/26 • containing sulfur **[4, 2006.01]**

119/28 • containing phosphorus **[4, 2006.01]**

119/30 • containing atoms of elements not provided for in groups C10M 119/02-C10M 119/28 **[4, 2006.01]**

121/00 Lubricating compositions characterised by the thickener being a compound of unknown or incompletely defined constitution [4, 2006.01]

121/02 • Petroleum fractions, e.g. tars **[4, 2006.01]**

121/04 • Reaction products **[4, 2006.01]**

Note(s) [2006.01]

When classifying in this group, any reactant of a reaction product which is considered to represent information of interest for search, may also be classified in the last appropriate place in this subclass. This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

123/00 Lubricating compositions characterised by the thickener being a mixture of two or more compounds covered by more than one of the main groups C10M 113/00-C10M 121/00, each of these compounds being essential (inorganic materials coated with organic compounds C10M 113/16) **[4, 2006.01]**

123/02 • at least one of them being a non-macromolecular compound **[4, 2006.01]**

123/04 • at least one of them being a macromolecular compound **[4, 2006.01]**

123/06 • at least one of them being a compound of the type covered by group C10M 121/00 **[4, 2006.01]**

Additives [4]

125/00 Lubricating compositions characterised by the additive being an inorganic material [4, 2006.01]

125/02 • Carbon; Graphite **[4, 2006.01]**

125/04 • Metals; Alloys **[4, 2006.01]**

125/06 • Sulfur **[4, 2006.01]**

125/08 • Metal carbides or hydrides **[4, 2006.01]**

125/10 • Metal oxides, hydroxides, carbonates or bicarbonates **[4, 2006.01]**

125/12 • Metal carbonyls **[4, 2006.01]**

125/14 • Water (aqueous lubricating compositions containing more than 10% water C10M 173/00) **[4, 2006.01]**

125/16 • Hydrogen peroxide; Oxygenated water **[4, 2006.01]**

125/18 • Compounds containing halogen **[4, 2006.01]**

125/20 • Compounds containing nitrogen **[4, 2006.01]**

125/22 • Compounds containing sulfur, selenium or tellurium **[4, 2006.01]**

125/24 • Compounds containing phosphorus, arsenic or antimony **[4, 2006.01]**

125/26 • Compounds containing silicon or boron, e.g. silica, sand **[4, 2006.01]**

125/28 • • Glass **[4, 2006.01]**

125/30 • • Clay **[4, 2006.01]**

127/00 Lubricating compositions characterised by the additive being a non-macromolecular hydrocarbon (petroleum fractions C10M 159/04) **[4, 2006.01]**

127/02 • well-defined aliphatic **[4, 2006.01]**

127/04 • well-defined aromatic **[4, 2006.01]**

127/06 • Alkylated aromatic hydrocarbons **[4, 2006.01]**

129/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing oxygen [4, 2006.01]

129/02 • having a carbon chain of less than 30 atoms **[4, 2006.01]**

129/04 • • Hydroxy compounds **[4, 2006.01]**

129/06 • • • having hydroxy groups bound to acyclic or cycloaliphatic carbon atoms **[4, 2006.01]**

129/08 • • • • containing at least 2 hydroxy groups **[4, 2006.01]**

129/10 • • • having hydroxy groups bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**
129/12 • • • • with condensed rings **[4, 2006.01]**
129/14 • • • • containing at least 2 hydroxy groups **[4, 2006.01]**
129/16 • • Ethers **[4, 2006.01]**
129/18 • • • Epoxides **[4, 2006.01]**
129/20 • • • Cyclic ethers having 4 or more ring atoms, e.g. furans, dioxolanes **[4, 2006.01]**
129/22 • • Peroxides; Ozonides **[4, 2006.01]**
129/24 • • Aldehydes; Ketones **[4, 2006.01]**
129/26 • • Carboxylic acids; Salts thereof **[4, 2006.01]**
129/28 • • • having carboxyl groups bound to acyclic or cycloaliphatic carbon atoms **[4, 2006.01]**
129/30 • • • • having 7 or less carbon atoms **[4, 2006.01]**
129/32 • • • • • monocarboxylic **[4, 2006.01]**
129/34 • • • • • polycarboxylic **[4, 2006.01]**
129/36 • • • • • containing hydroxy groups **[4, 2006.01]**
129/38 • • • • having 8 or more carbon atoms **[4, 2006.01]**
129/40 • • • • • monocarboxylic **[4, 2006.01]**
129/42 • • • • • polycarboxylic **[4, 2006.01]**
129/44 • • • • • containing hydroxy groups **[4, 2006.01]**
129/46 • • • • cycloaliphatic **[4, 2006.01]**
129/48 • • • having carboxyl groups bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**
129/50 • • • • monocarboxylic **[4, 2006.01]**
129/52 • • • • polycarboxylic **[4, 2006.01]**
129/54 • • • • containing hydroxy groups **[4, 2006.01]**
129/56 • • • Acids of unknown or incompletely defined constitution **[4, 2006.01]**
129/58 • • • • Naphthenic acids **[4, 2006.01]**
129/60 • • • • Tall oil acids **[4, 2006.01]**
129/62 • • • • Rosin acids **[4, 2006.01]**
129/64 • • • Acids obtained from polymerised unsaturated acids **[4, 2006.01]**
129/66 • • Epoxidised acids or esters **[4, 2006.01]**
129/68 • • Esters (epoxidised C10M 129/66) **[4, 2006.01]**
129/70 • • • of monocarboxylic acids **[4, 2006.01]**
129/72 • • • of polycarboxylic acids **[4, 2006.01]**
129/74 • • • of polyhydroxy compounds **[4, 2006.01]**
129/76 • • • containing free hydroxy or carboxyl groups **[4, 2006.01]**
129/78 • • • Complex esters, i.e. compounds containing at least three esterified carboxyl groups and derived from the combination of at least three different types of the following five types of compound: monohydroxy compounds, polyhydroxy compounds, monocarboxylic acids, polycarboxylic acids, hydroxy carboxylic acids **[4, 2006.01]**
129/80 • • • • derived from the combination of monocarboxylic acids, dicarboxylic acids and dihydroxy compounds only and having no free hydroxy or carboxyl groups **[4, 2006.01]**
129/82 • • • • derived from the combination of monohydroxy compounds, dihydroxy compounds and dicarboxylic acids only and having no free hydroxy or carboxyl groups **[4, 2006.01]**
129/84 • • • of carbonic acid **[4, 2006.01]**
129/86 • having a carbon chain of 30 or more atoms **[4, 2006.01]**
129/88 • • Hydroxy compounds **[4, 2006.01]**
129/90 • • • having hydroxy groups bound to acyclic or cycloaliphatic carbon atoms **[4, 2006.01]**
129/91 • • • having hydroxy groups bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**
129/92 • • Carboxylic acids **[4, 2006.01]**
129/93 • • • having carboxyl groups bound to acyclic or cycloaliphatic carbon atoms **[4, 2006.01]**
129/94 • • • having carboxyl groups bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**
129/95 • • Esters **[4, 2006.01]**

131/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing halogen [4, 2006.01]
131/02 • containing carbon, hydrogen and halogen only **[4, 2006.01]**
131/04 • • aliphatic **[4, 2006.01]**
131/06 • • aromatic **[4, 2006.01]**
131/08 • containing carbon, hydrogen, halogen and oxygen **[4, 2006.01]**
131/10 • • Alcohols; Ethers; Aldehydes; Ketones **[4, 2006.01]**
131/12 • • Acids; Salts or esters thereof **[4, 2006.01]**
131/14 • Halogenated waxes **[4, 2006.01]**

133/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing nitrogen [4, 2006.01]
133/02 • having a carbon chain of less than 30 atoms **[4, 2006.01]**
133/04 • • Amines, e.g. polyalkylene polyamines; Quaternary amines (polyalkylene polyamines with eleven or more monomer units C10M 149/22) **[4, 2006.01]**
133/06 • • • having amino groups bound to acyclic or cycloaliphatic carbon atoms **[4, 2006.01]**
133/08 • • • • containing hydroxy groups **[4, 2006.01]**
133/10 • • • • cycloaliphatic **[4, 2006.01]**
133/12 • • • having amino groups bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**
133/14 • • • • containing hydroxy groups **[4, 2006.01]**
133/16 • • Amides; Imides **[4, 2006.01]**
133/18 • • • of carbonic or haloformic acids **[4, 2006.01]**
133/20 • • • • Ureas; Semicarbazides; Allophanates **[4, 2006.01]**
133/22 • • containing a carbon-to-nitrogen double bond, e.g. guanidines, hydrazones, semicarbazones **[4, 2006.01]**
133/24 • • Nitriles **[4, 2006.01]**
133/26 • • containing a nitrogen-to-nitrogen double bond **[4, 2006.01]**
133/28 • • • Azo compounds **[4, 2006.01]**
133/30 • • containing a nitrogen-to-oxygen bond **[4, 2006.01]**
133/32 • • • containing a nitro group **[4, 2006.01]**
133/34 • • • containing a nitroso group **[4, 2006.01]**
133/36 • • • Hydroxylamines **[4, 2006.01]**
133/38 • • Heterocyclic nitrogen compounds **[4, 2006.01]**
133/40 • • • Six-membered ring containing nitrogen and carbon only **[4, 2006.01]**
133/42 • • • • Triazines **[4, 2006.01]**
133/44 • • • Five-membered ring containing nitrogen and carbon only **[4, 2006.01]**
133/46 • • • • Imidazoles **[4, 2006.01]**
133/48 • • • the ring containing both nitrogen and oxygen **[4, 2006.01]**
133/50 • • • • Morpholines **[4, 2006.01]**
133/52 • having a carbon chain of 30 or more atoms **[4, 2006.01]**
133/54 • • Amines **[4, 2006.01]**
133/56 • • Amides; Imides **[4, 2006.01]**

133/58 • • Heterocyclic compounds **[4, 2006.01]**

135/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing sulfur, selenium or tellurium [4, 2006.01]

135/02 • Sulfurised compounds **[4, 2006.01]**
135/04 • • Hydrocarbons **[4, 2006.01]**
135/06 • • Esters, e.g. fats **[4, 2006.01]**
135/08 • containing a sulfur-to-oxygen bond **[4, 2006.01]**
135/10 • • Sulfonic acids or derivatives thereof **[4, 2006.01]**
135/12 • Thio-acids; Thiocyanates; Derivatives thereof **[4, 2006.01]**
135/14 • • having a carbon-to-sulfur double bond **[4, 2006.01]**
135/16 • • • thiourea type, i.e. containing the group

[4, 2006.01]

135/18 • • • thiocarbamic type, e.g. containing the groups

[4, 2006.01]

135/20 • Thiols; Sulfides; Polysulfides **[4, 2006.01]**
135/22 • • containing sulfur atoms bound to acyclic or cycloaliphatic carbon atoms **[4, 2006.01]**
135/24 • • • containing hydroxy groups; Derivatives thereof **[4, 2006.01]**
135/26 • • • containing carboxyl groups; Derivatives thereof **[4, 2006.01]**
135/28 • • containing sulfur atoms bound to a carbon atom of a six-membered aromatic ring **[4, 2006.01]**
135/30 • • • containing hydroxy groups; Derivatives thereof **[4, 2006.01]**
135/32 • Heterocyclic sulfur, selenium or tellurium compounds **[4, 2006.01]**
135/34 • • the ring containing sulfur and carbon only **[4, 2006.01]**
135/36 • • the ring containing sulfur and carbon with nitrogen or oxygen **[4, 2006.01]**

137/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing phosphorus [4, 2006.01]

137/02 • having no phosphorus-to-carbon bond **[4, 2006.01]**
137/04 • • Phosphate esters **[4, 2006.01]**
137/06 • • • Metal salts **[4, 2006.01]**
137/08 • • • Ammonium or amine salts **[4, 2006.01]**
137/10 • • • Thio derivatives **[4, 2006.01]**
137/12 • having a phosphorus-to-carbon bond **[4, 2006.01]**
137/14 • • containing sulfur **[4, 2006.01]**
137/16 • having a phosphorus-to-nitrogen bond **[4, 2006.01]**

139/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing atoms of elements not provided for in groups C10M 127/00-C10M 137/00 [4, 2006.01]

139/02 • Esters of silicon acids **[4, 2006.01]**
139/04 • having a silicon-to-carbon bond, e.g. silanes **[4, 2006.01]**
139/06 • having a metal-to-carbon bond (metal complexes of unknown constitution C10M 159/18) **[4, 2006.01]**

141/00 Lubricating compositions characterised by the additive being a mixture of two or more compounds covered by more than one of the main groups C10M 125/00-C10M 139/00, each of these compounds being essential [4, 2006.01]

141/02 • at least one of them being an organic oxygen-containing compound **[4, 2006.01]**
141/04 • at least one of them being an organic halogen-containing compound **[4, 2006.01]**
141/06 • at least one of them being an organic nitrogen-containing compound **[4, 2006.01]**
141/08 • at least one of them being an organic sulfur-, selenium- or tellurium-containing compound **[4, 2006.01]**
141/10 • at least one of them being an organic phosphorus-containing compound **[4, 2006.01]**
141/12 • at least one of them being an organic compound containing atoms of elements not provided for in groups C10M 141/02-C10M 141/10 **[4, 2006.01]**

143/00 Lubricating composition characterised by the additive being a macromolecular hydrocarbon or such hydrocarbon modified by oxidation [4, 2006.01]

143/02 • Polyethene **[4, 2006.01]**
143/04 • containing propene **[4, 2006.01]**
143/06 • containing butene **[4, 2006.01]**
143/08 • containing aliphatic monomer having more than 4 carbon atoms **[4, 2006.01]**
143/10 • containing aromatic monomer, e.g. styrene **[4, 2006.01]**
143/12 • containing conjugated diene **[4, 2006.01]**
143/14 • containing non-conjugated diene **[4, 2006.01]**
143/16 • containing cycloaliphatic monomer **[4, 2006.01]**
143/18 • Oxidised hydrocarbons, i.e. oxidised subsequent to macromolecular formation **[4, 2006.01]**

145/00 Lubricating compositions characterised by the additive being a macromolecular compound containing oxygen (oxidised hydrocarbons C10M 143/18) **[4, 2006.01]**

145/02 • Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**
145/04 • • containing monomers having an unsaturated radical bound to an alcohol, aldehydo, ketonic, ether, ketal or acetal radical **[4, 2006.01]**
145/06 • • containing monomers having an unsaturated radical bound to an acyloxy radical of a saturated carboxylic or carbonic acid **[4, 2006.01]**
145/08 • • • Vinyl esters of a saturated carboxylic or carbonic acid **[4, 2006.01]**
145/10 • • containing monomers having an unsaturated radical bound to a carboxyl radical, e.g. acrylate **[4, 2006.01]**
145/12 • • • monocarboxylic **[4, 2006.01]**
145/14 • • • • Acrylate; Methacrylate **[4, 2006.01]**
145/16 • • • polycarboxylic **[4, 2006.01]**
145/18 • Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**
145/20 • • Condensation polymers of aldehydes or ketones **[4, 2006.01]**
145/22 • • Polyesters **[4, 2006.01]**
145/24 • • Polyethers **[4, 2006.01]**
145/26 • • • Polyoxyalkylenes **[4, 2006.01]**
145/28 • • • • of alkylene oxides containing 2 carbon atoms only **[4, 2006.01]**

145/30 • • • • of alkylene oxides containing 3 carbon atoms only **[4, 2006.01]**
145/32 • • • • of alkylene oxides containing 4 or more carbon atoms **[4, 2006.01]**
145/34 • • • • of two or more specified different types **[4, 2006.01]**
145/36 • • • • etherified **[4, 2006.01]**
145/38 • • • • esterified **[4, 2006.01]**
145/40 • Polysaccharides, e.g. cellulose **[4, 2006.01]**

147/00 Lubricating compositions characterised by the additive being a macromolecular compound containing halogen [4, 2006.01]
147/02 • Monomer containing carbon, hydrogen and halogen only **[4, 2006.01]**
147/04 • Monomer containing carbon, hydrogen, halogen and oxygen **[4, 2006.01]**

149/00 Lubricating compositions characterised by the additive being a macromolecular compound containing nitrogen [4, 2006.01]
149/02 • Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**
149/04 • • containing monomers having an unsaturated radical bound to an amino group **[4, 2006.01]**
149/06 • • containing monomers having an unsaturated radical bound to an amido or imido group **[4, 2006.01]**
149/08 • • containing monomers having an unsaturated radical bound to a nitrile group **[4, 2006.01]**
149/10 • • containing monomers having an unsaturated radical bound to a nitrogen-containing hetero ring **[4, 2006.01]**
149/12 • Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**
149/14 • • a condensation reaction being involved **[4, 2006.01]**
149/16 • • • between the nitrogen-containing monomer and an aldehyde or ketone **[4, 2006.01]**
149/18 • • • Polyamides **[4, 2006.01]**
149/20 • • • Polyureas **[4, 2006.01]**
149/22 • • • Polyamines **[4, 2006.01]**

151/00 Lubricating compositions characterised by the additive being a macromolecular compound containing sulfur, selenium or tellurium [4, 2006.01]
151/02 • Macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds **[4, 2006.01]**
151/04 • Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**

153/00 Lubricating compositions characterised by the additive being a macromolecular compound containing phosphorus [4, 2006.01]
153/02 • Macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds **[4, 2006.01]**
153/04 • Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[4, 2006.01]**

155/00 Lubricating compositions characterised by the additive being a macromolecular compound containing atoms of elements not provided for in groups C10M 143/00-C10M 153/00 [4, 2006.01]
155/02 • Monomer containing silicon **[4, 2006.01]**
155/04 • Monomer containing boron **[4, 2006.01]**

157/00 Lubricating compositions characterised by the additive being a mixture of two or more macromolecular compounds covered by more than one of the main groups C10M 143/00-C10M 155/00, each of these compounds being essential [4, 2006.01]
157/02 • at least one of them being a halogen-containing compound **[4, 2006.01]**
157/04 • at least one of them being a nitrogen-containing compound **[4, 2006.01]**
157/06 • at least one of them being a sulfur-, selenium- or tellurium-containing compound **[4, 2006.01]**
157/08 • at least one of them being a phosphorus-containing compound **[4, 2006.01]**
157/10 • at least one of them being a compound containing atoms of elements not provided for in groups C10M 157/02-C10M 157/08 **[4, 2006.01]**

159/00 Lubricating compositions characterised by the additive being of unknown or incompletely defined constitution (carboxylic acids with less than 30 carbon atoms in the chain, of unknown or incompletely defined constitution C10M 129/56) **[4, 2006.01]**
159/02 • Natural products **[4, 2006.01]**
159/04 • • Petroleum fractions, e.g. tars, solvents **[4, 2006.01]**
159/06 • • Waxes, e.g. ozocerite, ceresine, petrolatum, slack-wax **[4, 2006.01]**
159/08 • • Fatty oils **[4, 2006.01]**
159/10 • • Rubber **[4, 2006.01]**
159/12 • Reaction products **[4, 2006.01]**

Note(s) [2006.01]

When classifying in this group, any reactant of a reaction product which is considered to represent information of interest for search, may also be classified in the last appropriate place in this subclass. This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

159/14 • • obtained by Friedel-Crafts condensation **[4, 2006.01]**
159/16 • • obtained by Mannich reactions **[4, 2006.01]**
159/18 • • Complexes with metals **[4, 2006.01]**
159/20 • • Reaction mixtures having an excess of neutralising base, e.g. so-called overbasic or highly basic products **[4, 2006.01]**
159/22 • • • containing phenol radicals **[4, 2006.01]**
159/24 • • • containing sulfonic radicals **[4, 2006.01]**

161/00 Lubricating compositions characterised by the additive being a mixture of a macromolecular compound and a non-macromolecular compound, each of these compounds being essential [4, 2006.01]

163/00 Lubricating compositions characterised by the additive being a mixture of a compound of unknown or incompletely defined constitution and a non-macromolecular compound, each of these compounds being essential [4, 2006.01]

165/00 Lubricating compositions characterised by the additive being a mixture of a macromolecular compound and a compound of unknown or incompletely defined constitution, each of these compounds being essential [4, 2006.01]

167/00 Lubricating compositions characterised by the additive being a mixture of a macromolecular compound, a non-macromolecular compound and a compound of unknown or incompletely defined constitution, each of these compounds being essential [4, 2006.01]

Mixtures of base-materials, thickeners and additives [4]

169/00 Lubricating compositions characterised by containing as components a mixture of at least two types of ingredient selected from base-materials, thickeners or additives, covered by the preceding groups, each of these compounds being essential [4, 2006.01]

169/02 • Mixtures of base-materials and thickeners **[4, 2006.01]**
169/04 • Mixtures of base-materials and additives **[4, 2006.01]**
169/06 • Mixtures of thickeners and additives **[4, 2006.01]**

Compositions characterised by physical properties [4]

171/00 Lubricating compositions characterised by purely physical criteria, e.g. containing as base-material, thickener or additive, ingredients which are characterised exclusively by their numerically specified physical properties, i.e. containing ingredients which are physically well defined but for which the chemical nature is either unspecified or only very vaguely indicated (chemically defined ingredients C10M 101/00-C10M 169/00; petroleum fractions C10M 101/02, C10M 121/02, C10M 159/04) **[4, 2006.01]**

171/02 • Specified values of viscosity or viscosity index **[4, 2006.01]**
171/04 • Specified molecular weight or molecular weight distribution **[4, 2006.01]**
171/06 • Particles of special shape or size **[4, 2006.01]**

Aqueous lubricating compositions [4]

173/00 Lubricating compositions containing more than 10% water [4, 2006.01]

173/02 • not containing mineral or fatty oils **[4, 2006.01]**

Working-up [4]

175/00 Working-up used lubricants to recover useful products [4, 2006.01]

175/02 • mineral-oil based **[4, 2006.01]**
175/04 • aqueous emulsion based **[4, 2006.01]**
175/06 • by ultrafiltration or osmosis **[4, 2006.01]**

Preparation or after-treatment [4]

177/00 Special methods of preparation of lubricating compositions; Chemical modification by after-treatment of components or of the whole of a lubricating composition, not covered by other classes [4, 2006.01]

C10N INDEXING SCHEME ASSOCIATED WITH SUBCLASS C10M [4]

Note(s) [4]

1. This subclass constitutes an indexing scheme associated with subclass C10M, relating to:
   - metals and the metal of a compound (C10N 10/00);
   - the properties of the lubricant composition or constituents thereof (C10N 20/00, C10N 30/00);
   - the use or application of the lubricant composition (C10N 40/00);
   - the form in which the lubricant composition is applied (C10N 50/00);
   - chemical modification by after-treatment of lubricant constituents (C10N 60/00);
   - special methods of preparation (C10N 70/00);
   - special pretreatment of the material to be lubricated (C10N 80/00).
2. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "lubricant" or "lubricating composition" includes cutting oils, hydraulic fluids, metal drawing compositions, flushing oils, slushing oils, or the like;
   - "aliphatic" includes "cycloaliphatic".

10/00 Metal present as such or in compounds [4, 2006.01]

Note(s) [4, 2010.01]

1. In this group, metals should be indexed according to their group of the Periodic Table.
2. Attention is drawn to Note (3) after the title of section C, which Note indicates to which version of the periodic table of chemical elements the IPC refers.

10/02 • Groups 1 or 11 **[4, 2006.01]**
10/04 • Groups 2 or 12 **[4, 2006.01]**
10/06 • Groups 3 or 13 **[4, 2006.01]**

10/08 • Groups 4 or 14 **[4, 2006.01]**
10/10 • Groups 5 or 15 **[4, 2006.01]**
10/12 • Groups 6 or 16 **[4, 2006.01]**
10/14 • Group 7 **[4, 2006.01]**
10/16 • Groups 8, 9 or 10 **[4, 2006.01]**

20/00 Specified physical properties of component of lubricating compositions [4, 2006.01]

20/02 • Viscosity; Viscosity index **[4, 2006.01]**
20/04 • Molecular weight; Molecular weight distribution **[4, 2006.01]**
20/06 • Particles of special shape or size **[4, 2006.01]**

30/00 Specified physical or chemical property which is improved by the additive characterising the lubricating composition, e.g. multifunctional additives [4, 2006.01]
30/02 • Pour-point; Viscosity index **[4, 2006.01]**
30/04 • Detergent or dispersant property **[4, 2006.01]**
30/06 • Oiliness; Film-strength; Anti-wear; Resistance to extreme pressure **[4, 2006.01]**
30/08 • Resistance to extreme temperature **[4, 2006.01]**
30/10 • Inhibition of oxidation, e.g. anti-oxidants **[4, 2006.01]**
30/12 • Inhibition of corrosion, e.g. anti-rust agents, anti-corrosives **[4, 2006.01]**
30/14 • Metal deactivation **[4, 2006.01]**
30/16 • Antiseptic; Biocidal **[4, 2006.01]**
30/18 • Anti-foaming property **[4, 2006.01]**
30/20 • Colour, e.g. dyes **[4, 2006.01]**

40/00 Specified use or application for which the lubricating composition is intended [4, 2006.01]
40/02 • Bearings **[4, 2006.01]**
40/04 • Oil-bath; Gear-boxes; Automatic transmissions; Traction drives **[4, 2006.01]**
40/06 • Instruments or other precision apparatus, e.g. damping fluids **[4, 2006.01]**
40/08 • Hydraulic fluids, e.g. brake-fluids **[4, 2006.01]**
40/10 • Running-in oil **[4, 2006.01]**
40/12 • Gas-turbines **[4, 2006.01]**
40/13 • • Aircraft turbines **[5, 2006.01]**
40/14 • Electric or magnetic purposes **[4, 2006.01]**
40/16 • • dielectric; Insulating oil **[4, 2006.01]**
40/18 • • in connection with recordings on magnetic tape or disc **[4, 2006.01]**
40/20 • Metal working **[4, 2006.01]**
40/22 • • with essential removal of material **[4, 2006.01]**
40/24 • • without essential removal of material; Punching metal **[4, 2006.01]**
40/25 • Internal-combustion engines **[5, 2006.01]**
40/26 • • Two-stroke **[4, 5, 2006.01]**
40/28 • • Rotary **[4, 5, 2006.01]**
40/30 • Refrigerator lubricant **[5, 2006.01]**
40/32 • Wire, rope or cable lubricants **[5, 2006.01]**
40/34 • Lubricating-sealants **[5, 2006.01]**
40/36 • Release agents **[5, 2006.01]**

50/00 Form in which the lubricant is applied to the material being lubricated [4, 2006.01]
50/02 • dissolved or suspended in a carrier which subsequently evaporates to leave a lubricant coating **[4, 2006.01]**
50/04 • Aerosol **[4, 2006.01]**
50/06 • Gaseous phase, at least during working conditions **[4, 2006.01]**
50/08 • solid **[4, 2006.01]**
50/10 • semi-solid; greasy **[4, 2006.01]**

60/00 Chemical after-treatment of the constituents of the lubricating composition [4, 2006.01]
60/02 • Reduction, e.g. hydrogenation **[4, 2006.01]**
60/04 • Oxidation, e.g. ozonisation **[4, 2006.01]**
60/06 • by epoxides **[4, 2006.01]**
60/08 • Halogenation **[4, 2006.01]**
60/10 • by sulfur or a compound containing sulfur **[4, 2006.01]**
60/12 • by phosphorus or a compound containing phosphorus, e.g. P_xS_y **[4, 2006.01]**
60/14 • by boron or a compound containing boron **[4, 2006.01]**

70/00 Special methods of preparation [4, 2006.01]

80/00 Special pretreatment of the material to be lubricated, e.g. phosphatising or chromatising of a metal [4, 2006.01]

C11 ANIMAL OR VEGETABLE OILS, FATS, FATTY SUBSTANCES OR WAXES; FATTY ACIDS THEREFROM; DETERGENTS; CANDLES

C11B PRODUCING, e.g. BY PRESSING RAW MATERIALS OR BY EXTRACTION FROM WASTE MATERIALS, REFINING OR PRESERVING FATS, FATTY SUBSTANCES, e.g. LANOLIN, FATTY OILS OR WAXES; ESSENTIAL OILS; PERFUMES (drying-oils C09F)

Subclass index

PRODUCTION
of fats or fatty oils.....1/00, 13/00
of other fatty substances.....11/00
REFINING, PRESERVING, SOLIDIFYING.....3/00, 5/00, 7/00, 15/00
ESSENTIAL OILS, PERFUMES.....9/00

1/00 Production of fats or fatty oils from raw materials [1, 2006.01]

1/02 • Pretreatment **[1, 2006.01]**
1/04 • • of vegetable raw material **[1, 2006.01]**
1/06 • by pressing **[1, 2006.01]**
1/08 • • by hot pressing **[1, 2006.01]**
1/10 • by extracting **[1, 2006.01]**
1/12 • by melting out **[1, 2006.01]**
1/14 • • with hot water or aqueous solutions **[1, 2006.01]**
1/16 • • with steam **[1, 2006.01]**

3/00 Refining fats or fatty oils [1, 2006.01]
3/02 • by chemical reaction **[1, 2006.01]**
3/04 • • with acids **[1, 2006.01]**
3/06 • • with bases **[1, 2006.01]**
3/08 • • with oxidising agents **[1, 2006.01]**
3/10 • by adsorption **[1, 2006.01]**

Note(s) [2006.01]

When classifying in this group, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.

3/12 • by distillation **[1, 2006.01]**
3/14 • • with the use of indifferent gases or vapours, e.g. steam **[1, 2006.01]**
3/16 • by mechanical means **[1, 2006.01]**

5/00 Preserving by using additives, e.g. anti-oxidants [1, 2006.01]

7/00 Separation of mixtures of fats or fatty oils into their constituents, e.g. saturated oils from unsaturated oils [1, 2006.01]

9/00 Essential oils; Perfumes (synthesis of chemical substances C07) **[1, 2006.01]**
9/02 • Recovery or refining of essential oils from raw materials **[1, 2006.01]**

11/00 Recovery or refining of other fatty substances, e.g. lanolin, waxes (synthetic waxes C07, C08; mineral waxes C10G) **[1, 2006.01]**

13/00 Recovery of fats, fatty oils, or fatty acids from waste materials (mechanical separation from waste water C02F, E03F) **[1, 2006.01]**
13/02 • from soap stock **[1, 2006.01]**
13/04 • from spent adsorption materials **[1, 2006.01]**

15/00 Solidifying fatty oils, fats, or waxes by physical processes [1, 2006.01]

C11C FATTY ACIDS OBTAINED FROM FATS, OILS OR WAXES; CANDLES; FATS, OILS OR FATTY ACIDS OBTAINED BY CHEMICAL MODIFICATION OF FATS, OILS OR FATTY ACIDS

1/00 Preparation of fatty acids from fats, fatty oils, or waxes; Refining the fatty acids (recovery of fatty acids from waste materials C11B 13/00) **[1, 2006.01]**
1/02 • from fats or fatty oils **[1, 2006.01]**
1/04 • • by hydrolysis **[1, 2006.01]**
1/06 • • • using solid catalysts **[1, 2006.01]**
1/08 • Refining **[1, 2006.01]**
1/10 • • by distillation **[1, 2006.01]**

3/00 Fats, oils or fatty acids obtained by chemical modification of fats, oils or fatty acids, e.g. by ozonolysis (sulfonated fats or oils C07C 309/62; epoxidised fats C07D 303/42; vulcanised oils, e.g. factice C08H 3/00) **[1, 2006.01]**
3/02 • by esterification of fatty acids with glycerol **[1, 2006.01]**
3/04 • by esterification of fats or fatty oils **[1, 2006.01]**
3/06 • • with glycerol **[1, 2006.01]**
3/08 • • with fatty acids **[1, 2006.01]**
3/10 • • Ester interchange **[1, 2006.01]**
3/12 • by hydrogenation **[1, 2006.01]**
3/14 • by isomerisation **[1, 2006.01]**

5/00 Candles [1, 2006.01]
5/02 • Apparatus for preparation thereof **[1, 2006.01]**

C11D DETERGENT COMPOSITIONS; USE OF SINGLE SUBSTANCES AS DETERGENTS; SOAP OR SOAP-MAKING; RESIN SOAPS; RECOVERY OF GLYCEROL

Note(s) [2006.01]

1. When classifying in the mixture groups of this subclass, any individual ingredient of a composition which is not identified by such classification, and which itself is determined to be novel and non-obvious, must also be classified in groups C11D 1/00-C11D 9/00. The individual ingredient can be either a single substance or a composition in itself.
2. Any ingredient of a composition which is not identified by the classification according to Note (1) above, and which is considered to represent information of interest for search, may also be classified in groups C11D 1/00-C11D 9/00. This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

Subclass index

SURFACE-ACTIVE DETERGENTS
Non-soap.....1/00, 3/00
Based on soap.....9/00
NON-SURFACE-ACTIVE DETERGENTS.....7/00
DETERGENT MIXTURES.....10/00, 11/00
SOAP-MAKING; GLYCEROL.....13/00, 15/00, 19/00
SHAPE.....17/00

Surface-active non-soap detergents

1/00 Detergent compositions based essentially on surface-active compounds; Use of these compounds as a detergent [1, 2006.01]

Note(s)

In groups C11D 1/02-C11D 1/88, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a compound is classified in the last appropriate place.

1/02 • Anionic compounds **[1, 2006.01]**
1/04 • • Carboxylic acids or salts thereof (soap C11D 9/00) **[1, 2006.01]**
1/06 • • • Ether- or thioether carboxylic acids **[1, 2006.01]**
1/08 • • • Polycarboxylic acids containing no nitrogen or sulfur **[1, 2006.01]**
1/10 • • • Amino carboxylic acids; Imino carboxylic acids; Fatty acid condensates thereof **[1, 2006.01]**
1/12 • • Sulfonic acids or sulfuric acid esters; Salts thereof (C11D 3/065 takes precedence) **[1, 2006.01]**
1/14 • • • derived from aliphatic hydrocarbons or mono-alcohols **[1, 2006.01]**
1/16 • • • derived from divalent or polyvalent alcohols **[1, 2006.01]**
1/18 • • • derived from amino alcohols **[1, 2006.01]**
1/20 • • • • Fatty acid condensates **[1, 2006.01]**
1/22 • • • derived from aromatic compounds **[1, 2006.01]**
1/24 • • • • containing ester or ether groups directly attached to the nucleus **[1, 2006.01]**
1/26 • • • derived from heterocyclic compounds **[1, 2006.01]**
1/28 • • • Sulfonation products derived from fatty acids or their derivatives, e.g. esters, amides **[1, 2006.01]**
1/29 • • • Sulfates of polyoxyalkylene ethers **[2, 2006.01]**
1/30 • • • Sulfonation products derived from lignin **[1, 2006.01]**
1/32 • • Protein hydrolysates; Fatty acid condensates thereof **[1, 2006.01]**
1/34 • • Derivatives of acids of phosphorus **[1, 2006.01]**
1/36 • • of unknown constitution **[1, 2006.01]**
1/37 • • Mixtures of compounds all of which are anionic **[1, 2006.01]**
1/38 • Cationic compounds **[1, 2006.01]**
1/40 • • Monoamines or polyamines; Salts thereof **[1, 2006.01]**
1/42 • • Amino alcohols or amino ethers **[1, 2006.01]**
1/44 • • • Ethers of polyoxyalkylenes with amino alcohols; Condensation products of epoxyalkanes with amines **[1, 2006.01]**
1/46 • • Esters of carboxylic acids with amino alcohols; Esters of amino carboxylic acids with alcohols **[1, 2006.01]**
1/48 • • N-containing polycondensation products **[1, 2006.01]**
1/50 • • Derivatives of urea, thiourea, cyanamide, guanidine or urethanes **[1, 2006.01]**
1/52 • • Carboxylic amides, alkylolamides or imides (C11D 3/07 takes precedence) **[1, 2006.01]**
1/54 • • Hydrazides of carboxylic acids **[1, 2006.01]**
1/56 • • containing nitro or nitroso groups **[1, 2006.01]**
1/58 • • Heterocyclic compounds **[1, 2006.01]**
1/60 • • Sulfonium or phosphonium compounds **[1, 2006.01]**
1/62 • • Quaternary ammonium compounds **[1, 2006.01]**
1/64 • • of unknown constitution **[1, 2006.01]**
1/645 • • Mixtures of compounds all of which are cationic **[1, 2006.01]**
1/65 • • Mixtures of anionic with cationic compounds **[1, 2006.01]**
1/655 • • • of sulfonated products with alkylolamides of carboxylic acids (C11D 3/066 takes precedence) **[1, 2006.01]**
1/66 • Non-ionic compounds **[1, 2006.01]**
1/68 • • Alcohols; Oxidation products of paraffin wax, other than acids **[1, 2006.01]**
1/70 • • Phenols **[1, 2006.01]**
1/72 • • Ethers of polyoxyalkylene glycols (C11D 3/075 takes precedence) **[1, 2006.01]**
1/722 • • Ethers of polyoxyalkylenes having mixed oxyalkylene groups **[2, 2006.01]**
1/74 • • Carboxylates or sulfonates of polyoxyalkylene glycols **[1, 2006.01]**
1/75 • • Amino oxides **[2, 2006.01]**
1/755 • • Sulfoxides **[2, 2006.01]**
1/76 • • Synthetic resins containing no nitrogen **[1, 2006.01]**
1/78 • • Neutral esters of acids of phosphorus **[1, 2006.01]**
1/79 • • Phosphine oxides **[2, 2006.01]**
1/80 • • Derivatives of lignin containing no sulfo- or sulfate groups **[1, 2006.01]**
1/82 • • Compounds containing silicon **[1, 2006.01]**
1/825 • • Mixtures of compounds all of which are non-anionic **[1, 2006.01]**
1/83 • • Mixtures of non-ionic with anionic compounds **[1, 2006.01]**
1/831 • • • of sulfonates with ethers of polyoxyalkylenes without phosphates **[1, 2006.01]**
1/835 • • Mixtures of non-ionic with cationic compounds **[1, 2006.01]**
1/86 • Mixtures of anionic, cationic, and non-ionic compounds **[1, 2006.01]**
1/88 • Ampholytes; Electroneutral compounds **[2, 2006.01]**
1/90 • • Betaines **[2, 2006.01]**
1/92 • • Sulfobetaines **[2, 2006.01]**
1/94 • • Mixtures with anionic, cationic or non-ionic compounds **[2, 2006.01]**

3/00 Other compounding ingredients of detergent compositions covered in group C11D 1/00 [1, 2006.01]

Note(s) [2]

In groups C11D 3/02-C11D 3/39, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a compound is classified in the last appropriate place.

3/02 • Inorganic compounds **[1, 2006.01]**
3/04 • • Water-soluble compounds **[1, 2006.01]**
3/06 • • • Phosphates, including polyphosphates **[1, 2006.01]**

3/065 • • • • in admixture with sulfonated products **[1, 2006.01]**
3/066 • • • • • and with alkylolamides of carboxylic acids **[1, 2006.01]**
3/07 • • • • in a mixture with alkylolamides of carbocyclic acids **[1, 2006.01]**
3/075 • • • • in admixture with ethers of polyoxyalkylenes **[1, 2006.01]**
3/08 • • • Silicates **[1, 2006.01]**
3/10 • • • Carbonates **[1, 2006.01]**
3/12 • • Water-insoluble compounds **[1, 2006.01]**
3/14 • • • Pigments; Fillers; Abrasives **[1, 2006.01]**
3/16 • Organic compounds **[1, 2006.01]**
3/18 • • Hydrocarbons **[1, 2006.01]**
3/20 • • containing oxygen **[1, 2006.01]**
3/22 • • • Carbohydrates or derivatives thereof **[1, 2006.01]**
3/24 • • containing halogen **[1, 2006.01]**
3/26 • • containing nitrogen **[1, 2006.01]**
3/28 • • • Heterocyclic compounds containing nitrogen in the ring **[1, 2006.01]**
3/30 • • • Amines; Substituted amines **[1, 2006.01]**
3/32 • • • Amides; Substituted amides **[1, 2006.01]**
3/33 • • • Amino carboxylic acids **[2, 2006.01]**
3/34 • • containing sulfur **[1, 2006.01]**
3/36 • • containing phosphorus **[1, 2006.01]**
3/37 • • Polymers **[2, 2006.01]**
3/38 • • Products with no well-defined composition **[1, 2006.01]**
3/382 • • • Vegetable products, e.g. soya meal, wood flour, sawdust **[2, 2006.01]**
3/384 • • • Animal products **[2, 2006.01]**
3/386 • • • Preparations containing enzymes **[2, 2006.01]**
3/39 • Organic or inorganic per-compounds **[2, 2006.01]**
3/395 • Bleaching agents **[2, 2006.01]**
3/40 • Dyes **[1, 2, 2006.01]**
3/42 • • Brightening agents **[1, 2, 2006.01]**
3/43 • Solvents **[2, 2006.01]**
3/44 • • Mixed solvents **[1, 2006.01]**
3/46 • Superfatting agents **[1, 2, 2006.01]**
3/48 • Medicinal or disinfecting agents **[1, 2, 2006.01]**
3/50 • Perfumes **[1, 2, 2006.01]**
3/60 • Mixtures of compounding ingredients **[2, 2006.01]**

7/00 Compositions of detergents based essentially on non-surface-active compounds [1, 2006.01]

Note(s)

In groups C11D 7/02-C11D 7/22, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a compound is classified in the last appropriate place.

7/02 • Inorganic compounds **[1, 2006.01]**
7/04 • • Water-soluble compounds **[1, 2006.01]**
7/06 • • • Hydroxides **[1, 2006.01]**
7/08 • • • Acids **[1, 2006.01]**
7/10 • • • Salts **[1, 2006.01]**
7/12 • • • • Carbonates **[1, 2006.01]**
7/14 • • • • Silicates **[1, 2006.01]**
7/16 • • • • Phosphates including polyphosphates **[1, 2006.01]**
7/18 • • Peroxides; Persalts **[1, 2006.01]**
7/20 • • Water-insoluble oxides **[1, 2006.01]**
7/22 • Organic compounds **[1, 2006.01]**
7/24 • • Hydrocarbons **[1, 2006.01]**
7/26 • • containing oxygen **[1, 2006.01]**
7/28 • • containing halogen **[1, 2006.01]**
7/30 • • • Halogenated hydrocarbons **[1, 2006.01]**
7/32 • • containing nitrogen **[1, 2006.01]**
7/34 • • containing sulfur **[1, 2006.01]**
7/36 • • containing phosphorus **[1, 2006.01]**
7/38 • • Per-compounds **[1, 2006.01]**
7/40 • • Products in which the composition is not well defined **[1, 2006.01]**
7/42 • • • Preparations containing enzymes **[1, 2006.01]**
7/44 • • • Vegetable products (C11D 7/42 takes precedence) **[1, 2006.01]**
7/46 • • • Animal products (C11D 7/42 takes precedence) **[1, 2006.01]**
7/50 • Solvents **[1, 2, 2006.01]**
7/52 • • combined with promoters **[1, 2, 2006.01]**
7/54 • Bleaching agents **[1, 2, 2006.01]**
7/56 • • combined with phosphates **[1, 2, 2006.01]**
7/60 • Mixtures of non-surface-active compounds **[2, 2006.01]**

Soap Detergents

9/00 Compositions of detergents based essentially on soap (compositions containing resin soap C11D 15/04) **[1, 2006.01]**

9/02 • on alkali or ammonium soaps **[1, 2006.01]**
9/04 • containing compounding ingredients other than soaps **[1, 2006.01]**

Note(s)

In groups C11D 9/06-C11D 9/42, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a compound is classified in the last appropriate place.

9/06 • • Inorganic compounds **[1, 2006.01]**
9/08 • • • Water-soluble compounds **[1, 2006.01]**
9/10 • • • • Salts **[1, 2006.01]**
9/12 • • • • • Carbonates **[1, 2006.01]**
9/14 • • • • • Phosphates; Polyphosphates **[1, 2006.01]**
9/16 • • • • • Borates **[1, 2006.01]**
9/18 • • • Water-insoluble compounds **[1, 2006.01]**
9/20 • • • • Pigments; Fillers; Abrasives **[1, 2006.01]**
9/22 • • Organic compounds **[1, 2006.01]**
9/24 • • • Hydrocarbons **[1, 2006.01]**
9/26 • • • containing oxygen **[1, 2006.01]**
9/28 • • • containing halogen **[1, 2006.01]**
9/30 • • • containing nitrogen **[1, 2006.01]**
9/32 • • • containing sulfur **[1, 2006.01]**
9/34 • • • containing phosphorus **[1, 2006.01]**
9/36 • • • containing silicon **[1, 2006.01]**
9/38 • • • Products in which the composition is not well defined **[1, 2006.01]**
9/40 • • • Proteins **[1, 2006.01]**
9/42 • • Per-compounds **[1, 2006.01]**
9/44 • • Perfumes; Colouring materials; Brightening agents **[1, 2006.01]**
9/48 • • Superfatting agents **[1, 2006.01]**
9/50 • • Medicinal or disinfecting agents **[1, 2006.01]**
9/60 • • Mixtures of compounding ingredients **[2, 2006.01]**

10/00 Compositions of detergents, not provided for by any single one of main groups C11D 1/00-C11D 9/00 [2, 2006.01]

10/02 • based on mixtures of surface-active non-soap and non-surface-active compounds **[2, 2006.01]**

10/04 • based on mixtures of surface-active non-soap compounds and soap **[2, 2006.01]**

10/06 • based on mixtures of non-surface-active compounds and soap **[2, 2006.01]**

11/00 Special methods for preparing compositions containing mixtures of detergents [1, 2006.01]

11/02 • Preparation in the form of powder by spray-drying **[1, 2006.01]**

11/04 • by chemical means, e.g. sulfonating in the presence of other compounding ingredients followed by neutralising **[1, 2006.01]**

Soap or soap-making; Resin soaps

13/00 Making of soap or soap solutions in general; Apparatus therefor (resin soap C11D 15/00) **[1, 2006.01]**

13/02 • Boiling soap; Refining **[1, 2006.01]**

13/04 • • Continuous methods therefor **[1, 2006.01]**

13/06 • • Bleaching of soap or soap solutions **[1, 2006.01]**

13/08 • Colouring or perfuming **[1, 2006.01]**

13/10 • Mixing; Kneading **[1, 2006.01]**

13/12 • Cooling (C11D 13/14 takes precedence) **[1, 2006.01]**

13/14 • Shaping **[1, 2006.01]**

13/16 • • in moulds **[1, 2006.01]**

13/18 • • by extrusion or by pressing **[1, 2006.01]**

13/20 • • in the form of small particles, e.g. powder or flakes **[1, 2006.01]**

13/22 • Cutting **[1, 2006.01]**

13/24 • • Slicing soap on the cooling drum **[1, 2006.01]**

13/26 • Drying **[1, 2006.01]**

13/28 • Embossing; Polishing **[1, 2006.01]**

13/30 • Recovery of soap, e.g. from spent solutions **[1, 2006.01]**

15/00 Manufacture of resin soap or soaps derived from naphthenic acids; Compositions [1, 2006.01]

15/02 • Apparatus therefor **[1, 2006.01]**

15/04 • Compositions containing resin soap or soap derived from naphthenic acids **[1, 2006.01]**

17/00 Detergent materials or soaps characterised by their shape or physical properties (shaping soap C11D 13/14) **[1, 2006.01]**

17/02 • Floating bodies of detergents **[1, 2006.01]**

17/04 • combined with or containing other objects **[1, 2006.01]**

17/06 • Powder; Flakes; Free-flowing mixtures; Sheets **[1, 2006.01]**

17/08 • Liquid soap; capsuled **[1, 2006.01]**

19/00 Recovery of glycerol from a saponification liquor [1, 2006.01]

C12 BIOCHEMISTRY; BEER; SPIRITS; WINE; VINEGAR; MICROBIOLOGY; ENZYMOLOGY; MUTATION OR GENETIC ENGINEERING

Note(s) [3, 5]

1. Between subclasses C12M-C12Q, and within each of these subclasses, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place. For example, a fermentation or enzyme-using process involving condition-responsive control is classified in subclass C12Q.
2. In this class, viruses, undifferentiated human, animal or plant cells, protozoa, tissues and unicellular algae are considered as micro-organisms.
3. In this class, unless specifically provided for, undifferentiated human, animal or plant cells, protozoa, tissues and unicellular algae are classified together with micro-organisms. Sub-cellular parts, unless specifically provided for, are classified with the whole cell.
4. The codes of subclass C12R are only for use as indexing codes associated with subclasses C12C-C12Q, so as to provide information concerning the micro-organisms used in the processes classified in these subclasses.

C12C BREWING OF BEER (cleaning of raw materials A23N; pitching or depitching machines, cellar tools C12L; propagating yeasts C12N 1/14)

Note(s) [6]

In this subclass, it is desirable to add the indexing codes of subclass C12R.

Subclass index

RAW MATERIALS FOR PREPARING BEER.....1/00, 3/00, 5/00
PREPARATION AND TREATMENT OF WORT; FERMENTATION PROCESSES FOR BEER.....7/00, 11/00
SPECIAL BEER.....12/00
BREWING DEVICES.....13/00

1/00 Preparation of malt [1, 2006.01]

1/02 • Pretreatment of grains, e.g. washing, steeping **[1, 2006.01]**

1/027 • Germinating **[6, 2006.01]**
1/033 • • in boxes or drums **[6, 2006.01]**
1/047 • • Influencing the germination by chemical or physical means **[6, 2006.01]**
1/053 • • • by irradiation or electric treatment **[6, 2006.01]**
1/067 • Drying **[6, 2006.01]**
1/073 • • Processes or apparatus specially adapted to save or recover energy **[6, 2006.01]**
1/10 • • Drying on fixed supports **[1, 2006.01]**
1/12 • • Drying on moving supports **[1, 2006.01]**
1/125 • Continuous or semi-continuous processes for steeping, germinating or drying **[6, 2006.01]**
1/13 • • with vertical transport of the grains **[6, 2006.01]**
1/135 • • with horizontal transport of the grains **[6, 2006.01]**
1/15 • Grain or malt turning, charging or discharging apparatus **[6, 2006.01]**
1/16 • After-treatment of malt, e.g. malt cleaning, detachment of the germ **[1, 2006.01]**
1/18 • Preparation of malt extract or of special kinds of malt, e.g. caramel, black malt (malt products for use as foodstuffs A23L) **[1, 2006.01]**

3/00 Treatment of hops [1, 2006.01]
3/02 • Drying **[1, 2006.01]**
3/04 • Conserving; Storing; Packing **[1, 2006.01]**
3/06 • • Powder or pellets from hops **[6, 2006.01]**
3/08 • • Solvent extracts from hops **[6, 2006.01]**
3/10 • • • using carbon dioxide **[6, 2006.01]**
3/12 • • Isomerised products from hops **[6, 2006.01]**

5/00 Other raw materials for the preparation of beer [1, 2006.01]
5/02 • Additives for beer **[1, 2006.01]**
5/04 • • Colouring additives **[1, 2006.01]**

7/00 Preparation of wort (malt extract C12C 1/18) **[1, 2006.01]**
7/01 • Pretreatment of malt, e.g. malt grinding **[6, 2006.01]**
7/04 • Preparation or treatment of the mash **[1, 2006.01]**
7/047 • • part of the mash being unmalted cereal mash **[6, 2006.01]**
7/053 • • part of the mash being non-cereal material **[6, 2006.01]**
7/06 • • Mashing apparatus **[1, 2006.01]**
7/14 • Clarifying wort (Läuterung) **[1, 2006.01]**
7/16 • • by straining **[1, 2006.01]**
7/165 • • • in mash filters **[6, 2006.01]**
7/17 • • • in lautertuns **[6, 2006.01]**
7/175 • • by centrifuging **[6, 2006.01]**
7/20 • • Boiling the beerwort (brew kettles C12C 13/02) **[6, 2006.01]**
7/22 • • • Processes or apparatus specially adapted to save or recover energy **[6, 2006.01]**
7/24 • Clarifying beerwort between hop boiling and cooling **[6, 2006.01]**
7/26 • Cooling beerwort; Clarifying beerwort during or after the cooling **[6, 2006.01]**
7/28 • After-treatment **[6, 2006.01]**

11/00 Fermentation processes for beer [1, 2006.01]
11/02 • Pitching yeast **[1, 2006.01]**
11/06 • Acidifying the wort **[1, 2006.01]**
11/07 • Continuous fermentation **[6, 2006.01]**
11/09 • Fermentation with immobilised yeast **[6, 2006.01]**
11/11 • Post fermentation treatments, e.g. carbonation, concentration (C12H takes precedence; containers with means specially adapted for effervescing potable liquids B65D 85/73) **[6, 2006.01]**

12/00 Processes specially adapted for making special kinds of beer [6, 2006.01]
12/02 • Beer with low calorie content (C12C 12/04 takes precedence) **[6, 2006.01]**
12/04 • Beer with low alcohol content (removal of alcohol C12H 3/00) **[6, 2006.01]**

13/00 Brewing devices, not covered by a single group of C12C 1/00-C12C 12/04 [3, 6, 2006.01]
13/02 • Brew kettles **[3, 2006.01]**
13/06 • • heated with fire **[3, 2006.01]**
13/08 • • with internal heating elements **[6, 2006.01]**
13/10 • Home brew equipment **[6, 2006.01]**

C12F RECOVERY OF BY-PRODUCTS OF FERMENTED SOLUTIONS; DENATURING OF, OR DENATURED, ALCOHOL [6]

Note(s) [6]

In this subclass, it is desirable to add the indexing codes of subclass C12R.

3/00 Recovery of by-products [1, 2006.01]
3/02 • of carbon dioxide **[1, 2006.01]**
3/04 • • Recovery of volatile fermentation products from carbon dioxide **[1, 2006.01]**
3/06 • from beer or wine (C12F 3/02 takes precedence; removal of yeast of wine C12G 1/08) **[1, 2006.01]**
3/08 • • Recovery of alcohol from press residues or other waste material (from carbon dioxide C12F 3/04) **[1, 2006.01]**
3/10 • from distillery slops **[1, 2006.01]**

5/00 Preparation of denatured alcohol [1, 2006.01]

C12G WINE; OTHER ALCOHOLIC BEVERAGES; PREPARATION THEREOF (beer C12C)

Note(s) [6]

In this subclass, it is desirable to add the indexing codes of subclass C12R.

1/00 Preparation of wine or sparkling wine [1, 2006.01]
1/02 • Preparation of must from grapes; Must treatment or

fermentation **[1, 2006.01]**
1/022 • • Fermentation; Microbiological or enzymatic treatment **[6, 2006.01]**
1/024 • • • in a horizontally mounted cylindrical vessel (C12G 1/026 takes precedence) **[6, 2006.01]**
1/026 • • • in vessels with movable equipment for mixing the content **[6, 2006.01]**
1/028 • • • with thermal treatment of the grapes or the must **[6, 2006.01]**
1/032 • • • with recirculation of the must for pompage extraction **[6, 2006.01]**
1/036 • • • by use of a home wine making vessel **[6, 2006.01]**
1/04 • • Sulfiting the must; Desulfiting **[1, 2006.01]**
1/06 • Preparation of sparkling wine, e.g. champagne; Impregnating wine with carbon dioxide **[1, 2006.01]**
1/067 • • Continuous processes **[6, 2006.01]**
1/073 • • Fermentation with immobilised yeast **[6, 2006.01]**
1/08 • Removal of yeast ("degorgeage") **[1, 2006.01]**
1/09 • • Agitation, centrifugation or vibration of bottles **[6, 2006.01]**
1/10 • Deacidifying of wine **[6, 2006.01]**
1/12 • Processes for preventing winestone precipitation **[6, 2006.01]**

3/00 Preparation of other alcoholic beverages [1, 2006.01]
3/02 • by straight fermentation **[1, 2006.01]**
3/04 • by mixing, e.g. liqueurs **[1, 2006.01]**
3/06 • • with flavouring ingredients **[1, 2006.01]**
3/07 • • • Flavouring with wood or wood extract; Pretreatment of the wood used therefor **[6, 2006.01]**
3/08 • by other methods for varying the composition of fermented solutions (removal of alcohol from alcoholic beverages to obtain alcohol-free or low-alcohol beverages C12H 3/00) **[1, 2006.01]**
3/10 • • Increasing the alcohol content **[1, 2006.01]**
3/12 • • • by distillation **[1, 2006.01]**
3/14 • • • by freezing **[6, 2006.01]**

C12H PASTEURISATION, STERILISATION, PRESERVATION, PURIFICATION, CLARIFICATION, AGEING OF ALCOHOLIC BEVERAGES OR REMOVAL OF ALCOHOL THEREFROM (deacidifying wine C12G 1/10; preventing winestone precipitation C12G 1/12; simulation ageing by flavouring C12G 3/06) **[6]**

Note(s) [1, 6, 2006.01]

1. When classifying in this subclass, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.
2. In this subclass, it is desirable to add the indexing codes of subclass C12R.

1/00 Pasteurisation, sterilisation, preservation, purification, clarification, or ageing of alcoholic beverages [1, 2006.01]
1/02 • combined with removal of precipitate or added materials, e.g. adsorption material **[1, 2006.01]**
1/04 • • with the aid of ion-exchange material or inert clarification material, e.g. adsorption material **[1, 2006.01]**
1/044 • • • with the aid of inorganic material **[6, 2006.01]**
1/048 • • • • with silicon containing material **[6, 2006.01]**
1/052 • • • with the aid of organic material **[6, 2006.01]**
1/056 • • • • with the aid of polymers **[6, 2006.01]**
1/06 • • Precipitation by physical means, e.g. by irradiation, vibrations **[1, 2006.01]**
1/065 • • • Separation by centrifugation **[6, 2006.01]**
1/07 • • • Separation by filtration **[6, 2006.01]**
1/075 • • • • by cross-flow filtration **[6, 2006.01]**
1/08 • • • by heating **[1, 2006.01]**
1/10 • • Precipitation by chemical means **[1, 2006.01]**
1/12 • without precipitation **[1, 2006.01]**
1/14 • • with non-precipitating compounds, e.g. sulfiting; Sequestration, e.g. with chelate-producing compounds **[1, 2006.01]**
1/15 • • • with enzymes **[6, 2006.01]**
1/16 • • by physical means, e.g. irradiation **[1, 2006.01]**
1/18 • • • by heating **[1, 2006.01]**
1/20 • • • • in containers allowing for expansion of the contents **[1, 2006.01]**
1/22 • Ageing or ripening by storing, e.g. lagering of beer **[1, 2006.01]**

3/00 Removal of alcohol from alcoholic beverages to obtain alcohol-free or low-alcohol beverages (recovery of by-products of wine or beer other than low-alcohol beverages C12F 3/06; preparation of alcoholic beverages other than wine or beer by varying the composition of fermented solutions C12G 3/08) **[6, 2006.01]**
3/02 • by evaporating **[6, 2006.01]**
3/04 • using semi-permeable membranes **[6, 2006.01]**

C12J VINEGAR; ITS PREPARATION

Note(s) [6]

In this subclass, it is desirable to add the indexing codes of subclass C12R.

1/00 Vinegar; Preparation; Purification [1, 2006.01]
1/02 • from wine **[1, 2006.01]**
1/04 • from alcohol **[1, 2006.01]**
1/06 • from milk **[1, 2006.01]**
1/08 • Addition of flavouring ingredients **[1, 2006.01]**
1/10 • Apparatus **[1, 2006.01]**

C12L PITCHING OR DEPITCHING MACHINES; CELLAR TOOLS

Note(s) [6]

In this subclass, it is desirable to add the indexing codes of subclass C12R.

3/00 Pitching or depitching machines [1, 2006.01]

9/00 Venting devices for casks, barrels, or the like [1, 2006.01]

11/00 Cellar tools [1, 2006.01]

C12M APPARATUS FOR ENZYMOLOGY OR MICROBIOLOGY (installations for fermenting manure A01C 3/02; preservation of living parts of humans or animals A01N 1/02; brewing apparatus C12C; fermentation apparatus for wine C12G; apparatus for preparing vinegar C12J 1/10) **[3]**

Note(s) [4, 6]

1. Attention is drawn to Notes (1) to (3) following the title of class C12.
2. In this subclass, it is desirable to add the indexing codes of subclass C12R.

1/00 Apparatus for enzymology or microbiology [3, 2006.01]

Note(s) [3]

This group covers:
- apparatus where micro-organisms or enzymes are produced or isolated;
- apparatus where the characteristics of micro-organisms or enzymes are investigated, e.g. which growth factors are necessary;
- apparatus specially adapted to employ micro-organisms or enzymes as "reactants" or biocatalysts;
- apparatus of both the laboratory and industrial scale.

1/02 • with agitation means; with heat exchange means **[3, 2006.01]**
1/04 • with gas introduction means **[3, 2006.01]**
1/06 • • with agitator, e.g. impeller **[3, 2006.01]**
1/08 • • with draft tube **[3, 2006.01]**
1/09 • • Flotation apparatus **[5, 2006.01]**
1/10 • rotatably mounted **[3, 2006.01]**
1/107 • with means for collecting fermentation gases, e.g. methane (producing methane by anaerobic treatment of sludge C02F 11/04) **[5, 2006.01]**
1/113 • • with transport of the substrate during the fermentation **[5, 2006.01]**
1/12 • with sterilisation, filtration, or dialysis means **[3, 2006.01]**
1/14 • with means providing thin layers or with multi-level trays **[3, 2006.01]**
1/16 • containing, or adapted to contain, solid media **[3, 2006.01]**
1/18 • • Multiple fields or compartments **[3, 2006.01]**
1/20 • • • Horizontal planar fields **[3, 2006.01]**
1/21 • Froth suppressors **[5, 2006.01]**
1/22 • Petri type dish **[3, 2006.01]**
1/24 • tube or bottle type **[3, 2006.01]**
1/26 • Inoculator or sampler **[3, 2006.01]**
1/28 • • being part of container **[3, 2006.01]**
1/30 • • • Sampler being a swab **[3, 2006.01]**
1/32 • • multiple field or continuous type **[3, 2006.01]**
1/33 • Disintegrators **[5, 2006.01]**
1/34 • Measuring or testing with condition measuring or sensing means, e.g. colony counters **[3, 2006.01]**
1/36 • including condition or time responsive control, e.g. automatically controlled fermentors **[3, 2006.01]**
1/38 • • Temperature-responsive control **[3, 2006.01]**
1/40 • Apparatus specially designed for the use of free, immobilised, or carrier-bound enzymes, e.g. apparatus containing a fluidised bed of immobilised enzymes **[3, 2006.01]**
1/42 • Apparatus for the treatment of micro-organisms or enzymes with electrical or wave energy, e.g. magnetism, sonic wave **[5, 2006.01]**

3/00 Tissue, human, animal or plant cell, or virus culture apparatus [3, 2006.01]

3/02 • with means providing suspensions **[3, 2006.01]**
3/04 • with means providing thin layers **[3, 2006.01]**
3/06 • with filtration, ultrafiltration, inverse osmosis or dialysis means **[5, 2006.01]**
3/08 • Apparatus for tissue disaggregation **[5, 2006.01]**
3/10 • for culture in eggs **[5, 2006.01]**

C12N **MICRO-ORGANISMS OR ENZYMES; COMPOSITIONS THEREOF** (biocides, pest repellants or attractants, or plant growth regulators containing micro-organisms, viruses, microbial fungi, enzymes, fermentates, or substances produced by, or extracted from, micro-organisms or animal material A01N 63/00; medicinal preparations A61K; fertilisers C05F)**; PROPAGATING, PRESERVING, OR MAINTAINING MICRO-ORGANISMS; MUTATION OR GENETIC ENGINEERING; CULTURE MEDIA** (microbiological testing media C12Q 1/00) **[3]**

Note(s) [3, 4, 6, 7, 2006.01]

1. Attention is drawn to Notes (1) to (3) following the title of class C12.
2. Biocidal, pest repellant, pest attractant or plant growth regulatory activity of compounds or preparations is further classified in subclass A01P.
3. Therapeutic activity of single-cell proteins or enzymes is further classified in subclass A61P.
4. When classifying in this subclass, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.
5. In this subclass, it is desirable to add the indexing codes of subclass C12R.

Subclass index

MICRO-ORGANISMS; SPORES; UNDIFFERENTIATED CELLS; VIRUSES.....1/00, 3/00, 5/00, 7/00, 11/00
ENZYMES.....9/00, 11/00
TREATMENT WITH ELECTRICAL OR WAVE ENERGY.....13/00
MUTATION OR GENETIC ENGINEERING.....15/00

1/00 **Micro-organisms, e.g. protozoa; Compositions thereof** (medicinal preparations containing material from protozoa, bacteria or viruses A61K 35/66, from algae A61K 36/02, from fungi A61K 36/06; preparing medicinal bacterial antigen or antibody compositions, e.g. bacterial vaccines, A61K 39/00)**; Processes of propagating, maintaining or preserving micro-organisms or compositions thereof; Processes of preparing or isolating a composition containing a micro-organism; Culture media therefor [3, 2006.01]**

1/02 • Separating micro-organisms from their culture media **[3, 2006.01]**

1/04 • Preserving or maintaining viable micro-organisms (immobilised micro-organisms C12N 11/00) **[3, 2006.01]**

1/06 • Lysis of micro-organisms **[3, 2006.01]**

1/08 • Reducing the nucleic acid content **[3, 2006.01]**

1/10 • Protozoa; Culture media therefor **[3, 2006.01]**

1/11 • • modified by introduction of foreign genetic material **[5, 2006.01]**

1/12 • Unicellular algae; Culture media therefor (as new plants A01H 13/00) **[3, 2006.01]**

1/13 • • modified by introduction of foreign genetic material **[5, 2006.01]**

1/14 • Fungi (culture of mushrooms A01G 1/04; as new plants A01H 15/00); Culture media therefor **[3, 2006.01]**

1/15 • • modified by introduction of foreign genetic material **[5, 2006.01]**

1/16 • • Yeasts; Culture media therefor **[3, 2006.01]**

1/18 • • • Baker's yeast; Brewer's yeast **[3, 2006.01]**

1/19 • • • modified by introduction of foreign genetic material **[5, 2006.01]**

1/20 • Bacteria; Culture media therefor **[3, 2006.01]**

1/21 • • modified by introduction of foreign genetic material **[5, 2006.01]**

1/22 • Processes using, or culture media containing, cellulose or hydrolysates thereof **[3, 2006.01]**

1/24 • Processes using, or culture media containing, waste sulfite liquor **[3, 2006.01]**

1/26 • Processes using, or culture media containing, hydrocarbons (refining of hydrocarbon oils by using micro-organisms C10G 32/00) **[3, 2006.01]**

1/28 • • aliphatic **[3, 2006.01]**

1/30 • • • having five or less carbon atoms **[3, 2006.01]**

1/32 • Processes using, or culture media containing, lower alkanols, i.e. C_1 to C_6 **[3, 2006.01]**

1/34 • Processes using foam culture **[3, 2006.01]**

1/36 • Adaptation or attenuation of cells **[3, 2006.01]**

1/38 • Chemical stimulation of growth or activity by addition of chemical compounds which are not essential growth factors; Stimulation of growth by removal of a chemical compound (C12N 1/34 takes precedence) **[3, 2006.01]**

3/00 **Spore-forming or isolating processes [3, 2006.01]**

5/00 **Undifferentiated human, animal or plant cells, e.g. cell lines; Tissues; Cultivation or maintenance thereof; Culture media therefor** (plant reproduction by tissue culture techniques A01H 4/00) **[3, 5, 2006.01]**

5/02 • Propagation of single cells or cells in suspension; Maintenance thereof; Culture media therefor **[3, 2006.01]**

5/04 • Plant cells or tissues **[5, 2006.01]**

5/07 • Animal cells or tissues **[2010.01]**

Note(s) [2010.01]

The last place priority rule does not apply between the subgroups of this group.

5/071 • • Vertebrate cells or tissues, e.g. human cells or tissues **[2010.01]**

5/073 • • • Embryonic cells or tissues; Foetal cells or tissues **[2010.01]**

5/0735 • • • • Embryonic stem cells; Embryonic germ cells **[2010.01]**

5/074 • • • Adult stem cells **[2010.01]**

5/075 • • • Oocytes; Oogonia **[2010.01]**

5/076 • • • Sperm cells; Spermatogonia **[2010.01]**

5/077 • • • Mesenchymal cells, e.g. bone cells, cartilage cells, marrow stromal cells, fat cells or muscle cells **[2010.01]**

5/0775 • • • • Mesenchymal stem cells; Adipose-tissue derived stem cells **[2010.01]**
5/078 • • • Cells from blood or from the immune system **[2010.01]**
5/0781 • • • • B cells; Progenitors thereof **[2010.01]**
5/0783 • • • • T cells; NK cells; Progenitors of T or NK cells **[2010.01]**
5/0784 • • • • Dendritic cells; Progenitors thereof **[2010.01]**
5/0786 • • • • Monocytes; Macrophages **[2010.01]**
5/0787 • • • • Granulocytes, e.g. basophils, eosinophils, neutrophils or mast cells **[2010.01]**
5/0789 • • • • Stem cells; Multipotent progenitor cells **[2010.01]**
5/079 • • • Neural cells **[2010.01]**
5/0793 • • • • Neurons **[2010.01]**
5/0797 • • • • Stem cells; Progenitor cells **[2010.01]**
5/09 • Tumour cells **[2010.01]**
5/095 • • Stem cells; Progenitor cells **[2010.01]**
5/10 • Cells modified by introduction of foreign genetic material, e.g. virus-transformed cells **[5, 2006.01]**
5/12 • • Fused cells, e.g. hybridomas **[5, 2006.01]**
5/14 • • • Plant cells **[5, 2006.01]**
5/16 • • • Animal cells **[5, 2006.01]**
5/18 • • • • Murine cells, e.g. mouse cells **[5, 2006.01]**
5/20 • • • • • one of the fusion partners being a B lymphocyte **[5, 2006.01]**
5/22 • • • Human cells **[5, 2006.01]**
5/24 • • • • one of the fusion partners being a B lymphocyte **[5, 2006.01]**
5/26 • • • Cells resulting from interspecies fusion **[5, 2006.01]**
5/28 • • • • one of the fusion partners being a human cell **[5, 2006.01]**

7/00 Viruses, e.g. bacteriophages; Compositions thereof; Preparation or purification thereof (medicinal preparations containing viruses A61K 35/76; preparing medicinal viral antigen or antibody compositions, e.g. virus vaccines, A61K 39/00) **[3, 2006.01]**
7/01 • Viruses, e.g. bacteriophages, modified by introduction of foreign genetic material (vectors C12N 15/00) **[5, 2006.01]**
7/02 • Recovery or purification **[3, 2006.01]**
7/04 • Inactivation or attenuation; Producing viral sub-units **[3, 2006.01]**
7/06 • • by chemical treatment **[3, 2006.01]**
7/08 • • by serial passage of virus **[3, 2006.01]**

9/00 Enzymes, e.g. ligases (6.); Proenzymes; Compositions thereof (preparations containing enzymes for cleaning teeth A61K 8/66, A61Q 11/00; medicinal preparations containing enzymes or proenzymes A61K 38/43; enzyme containing detergent compositions C11D)**; Processes for preparing, activating, inhibiting, separating, or purifying enzymes [3, 2006.01]**

Note(s) [3, 5]

In this group:
- proenzymes are classified with the corresponding enzymes;
- enzymes are generally categorised according to the "Nomenclature and Classification of Enzymes" of the International Commission on Enzymes. Where appropriate, this designation appears in the subgroups below in parenthesis.

9/02 • Oxidoreductases (1.), e.g. luciferase **[3, 2006.01]**
9/04 • • acting on CHOH groups as donors, e.g. glucose oxidase, lactate dehydrogenase (1.1) **[3, 2006.01]**
9/06 • • acting on nitrogen containing compounds as donors (1.4, 1.5, 1.7) **[3, 2006.01]**
9/08 • • acting on hydrogen peroxide as acceptor (1.11) **[3, 2006.01]**
9/10 • Transferases (2.) (ribonucleases C12N 9/22) **[3, 2006.01]**
9/12 • • transferring phosphorus containing groups, e.g. kinases (2.7) **[3, 2006.01]**
9/14 • Hydrolases (3.) **[3, 2006.01]**
9/16 • • acting on ester bonds (3.1) **[3, 2006.01]**
9/18 • • • Carboxylic ester hydrolases **[3, 2006.01]**
9/20 • • • • Triglyceride splitting, e.g. by means of lipase **[3, 2006.01]**
9/22 • • • Ribonucleases **[3, 2006.01]**
9/24 • • acting on glycosyl compounds (3.2) **[3, 2006.01]**
9/26 • • • acting on alpha-1, 4-glucosidic bonds, e.g. hyaluronidase, invertase, amylase **[3, 2006.01]**
9/28 • • • • Alpha-amylase from microbial source, e.g. bacterial amylase **[3, 2006.01]**
9/30 • • • • • Fungal source **[3, 2006.01]**
9/32 • • • • Alpha-amylase from plant source **[3, 2006.01]**
9/34 • • • • Glucoamylase **[3, 2006.01]**
9/36 • • • acting on beta-1, 4 bonds between N-acetylmuramic acid and 2-acetylamino 2-deoxy-D-glucose, e.g. lysozyme **[3, 2006.01]**
9/38 • • • acting on beta-galactose-glycoside bonds, e.g. beta-galactosidase **[3, 2006.01]**
9/40 • • • acting on alpha-galactose-glycoside bonds, e.g. alpha-galactosidase **[3, 2006.01]**
9/42 • • • acting on beta-1, 4-glucosidic bonds, e.g. cellulase **[3, 2006.01]**
9/44 • • • acting on alpha-1, 6-glucosidic bonds, e.g. isoamylase, pullulanase **[3, 2006.01]**
9/46 • • • • Dextranase **[3, 2006.01]**
9/48 • • acting on peptide bonds, e.g. thromboplastin, leucine aminopeptidase (3.4) **[3, 2006.01]**
9/50 • • • Proteinases **[3, 2006.01]**
9/52 • • • • derived from bacteria **[3, 2006.01]**
9/54 • • • • • bacteria being Bacillus **[3, 2006.01]**
9/56 • • • • • • Bacillus subtilis or Bacillus licheniformis **[3, 2006.01]**
9/58 • • • • derived from fungi **[3, 2006.01]**
9/60 • • • • • from yeast **[3, 2006.01]**
9/62 • • • • • from Aspergillus **[3, 2006.01]**
9/64 • • • • derived from animal tissue, e.g. rennin **[3, 2006.01]**
9/66 • • • Elastase **[3, 2006.01]**
9/68 • • • Plasmin, i.e. fibrinolysin **[3, 2006.01]**
9/70 • • • Streptokinase **[3, 2006.01]**
9/72 • • • Urokinase **[3, 2006.01]**
9/74 • • • Thrombin **[3, 2006.01]**
9/76 • • • Trypsin; Chymotrypsin **[3, 2006.01]**
9/78 • • acting on carbon to nitrogen bonds other than peptide bonds (3.5) **[3, 2006.01]**
9/80 • • • acting on amide bonds in linear amides **[3, 2006.01]**
9/82 • • • • Asparaginase **[3, 2006.01]**
9/84 • • • • Penicillin amidase **[3, 2006.01]**
9/86 • • • acting on amide bonds in cyclic amides, e.g. penicillinase **[3, 2006.01]**
9/88 • Lyases (4.) **[3, 2006.01]**

9/90 • Isomerases (5.) **[3, 2006.01]**
9/92 • • Glucose isomerase **[3, 2006.01]**
9/94 • Pancreatin **[3, 2006.01]**
9/96 • Stabilising an enzyme by forming an adduct or a composition; Forming enzyme conjugates **[3, 2006.01]**
9/98 • Preparation of granular or free-flowing enzyme compositions (C12N 9/96 takes precedence) **[3, 2006.01]**
9/99 • Enzyme inactivation by chemical treatment **[3, 2006.01]**

11/00 Carrier-bound or immobilised enzymes; Carrier-bound or immobilised microbial cells; Preparation thereof [3, 2006.01]

11/02 • Enzymes or microbial cells being immobilised on or in an organic carrier **[3, 2006.01]**
11/04 • • entrapped within the carrier, e.g. gel, hollow fibre **[3, 2006.01]**
11/06 • • attached to the carrier via a bridging agent **[3, 2006.01]**
11/08 • • the carrier being a synthetic polymer **[3, 2006.01]**
11/10 • • the carrier being a carbohydrate **[3, 2006.01]**
11/12 • • • Cellulose or derivatives thereof **[3, 2006.01]**
11/14 • Enzymes or microbial cells being immobilised on or in an inorganic carrier **[3, 2006.01]**
11/16 • Enzymes or microbial cells being immobilised on or in a biological cell **[3, 2006.01]**
11/18 • Multi-enzyme systems **[3, 2006.01]**

13/00 Treatment of micro-organisms or enzymes with electrical or wave energy, e.g. magnetism, sonic waves [3, 2006.01]

15/00 Mutation or genetic engineering; DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification; Use of hosts therefor (mutants or genetically engineered micro-organisms C12N 1/00, C12N 5/00, C12N 7/00; new plants A01H; plant reproduction by tissue culture techniques A01H 4/00; new animals A01K 67/00; use of medicinal preparations containing genetic material which is inserted into cells of the living body to treat genetic diseases, gene therapy A61K 48/00; peptides in general C07K) **[3, 5, 6, 2006.01]**

Note(s) [3]

This group covers processes wherein there is a modification of the genetic material which would not normally occur in nature without intervention of man which produce a change in the gene structure which is passed on to succeeding generations.

15/01 • Preparation of mutants without inserting foreign genetic material therein; Screening processes therefor **[5, 2006.01]**
15/02 • Preparation of hybrid cells by fusion of two or more cells, e.g. protoplast fusion **[5, 2006.01]**
15/03 • • Bacteria **[5, 2006.01]**
15/04 • • Fungi **[5, 2006.01]**
15/05 • • Plant cells **[5, 2006.01]**
15/06 • • Animal cells **[5, 2006.01]**
15/07 • • Human cells **[5, 2006.01]**
15/08 • • Cells resulting from interspecies fusion **[5, 2006.01]**
15/09 • Recombinant DNA-technology **[5, 2006.01]**
15/10 • • Processes for the isolation, preparation or purification of DNA or RNA (chemical preparation of DNA or RNA C07H 21/00; preparation of non-structural polynucleotides from micro-organisms or with enzymes C12P 19/34) **[5, 2006.01]**
15/11 • • DNA or RNA fragments; Modified forms thereof (DNA or RNA not used in recombinant technology C07H 21/00) **[5, 2006.01]**
15/113 • • • Non-coding nucleic acids modulating the expression of genes, e.g. antisense oligonucleotides **[2010.01]**
15/115 • • • Aptamers, i.e. nucleic acids binding a target molecule specifically and with high affinity without hybridising therewith **[2010.01]**
15/117 • • • Nucleic acids having immunomodulatory properties, e.g. containing CpG-motifs **[2010.01]**
15/12 • • • Genes encoding animal proteins **[5, 2006.01]**
15/13 • • • • Immunoglobulins **[5, 2006.01]**
15/14 • • • • Human serum albumins **[5, 2006.01]**
15/15 • • • • Protease inhibitors, e.g. antithrombin, antitrypsin, hirudin **[5, 2006.01]**
15/16 • • • • Hormones **[5, 2006.01]**
15/17 • • • • • Insulins **[5, 2006.01]**
15/18 • • • • • Growth hormones **[5, 2006.01]**
15/19 • • • • Interferons; Lymphokines; Cytokines **[5, 2006.01]**
15/20 • • • • • Interferons **[5, 2006.01]**
15/21 • • • • • • Alpha-interferons **[5, 2006.01]**
15/22 • • • • • • Beta-interferons **[5, 2006.01]**
15/23 • • • • • • Gamma-interferons **[5, 2006.01]**
15/24 • • • • • Interleukins **[5, 2006.01]**
15/25 • • • • • • Interleukin-1 **[5, 2006.01]**
15/26 • • • • • • Interleukin-2 **[5, 2006.01]**
15/27 • • • • • Colony stimulating factors **[5, 2006.01]**
15/28 • • • • • Tumor necrosis factors **[5, 2006.01]**
15/29 • • • Genes encoding plant proteins, e.g. thaumatin **[5, 2006.01]**
15/30 • • • Genes encoding protozoal proteins, e.g. from Plasmodium, Trypanosoma, Eimeria **[5, 2006.01]**
15/31 • • • Genes encoding microbial proteins, e.g. enterotoxins **[5, 2006.01]**
15/32 • • • • Bacillus crystal proteins **[5, 2006.01]**
15/33 • • • • Genes encoding viral proteins **[5, 2006.01]**
15/34 • • • • • Proteins from DNA viruses **[5, 2006.01]**
15/35 • • • • • • Parvoviridae, e.g. feline panleukopenia virus, human parvovirus **[5, 2006.01]**
15/36 • • • • • • Hepadnaviridae **[5, 2006.01]**
15/37 • • • • • • Papovaviridae, e.g. papillomaviruses, polyomavirus, SV40 **[5, 2006.01]**
15/38 • • • • • • Herpetoviridae, e.g. herpes simplex virus, varicella-zoster virus, Epstein-Barr virus, cytomegalovirus, pseudorabies virus **[5, 2006.01]**
15/39 • • • • • • Poxviridae, e.g. vaccinia virus, variola virus **[5, 2006.01]**
15/40 • • • • • Proteins from RNA viruses, e.g. flaviviruses **[5, 2006.01]**
15/41 • • • • • • Picornaviridae, e.g. rhinovirus, coxsackie viruses, echoviruses, enteroviruses **[5, 2006.01]**
15/42 • • • • • • • Foot-and-mouth disease virus **[5, 2006.01]**
15/43 • • • • • • • Poliovirus **[5, 2006.01]**

15/44 • • • • • • Orthomyxoviridae, e.g. influenza virus **[5, 2006.01]**

15/45 • • • • • • Paramyxoviridae, e.g. measles virus, mumps virus, Newcastle disease virus, canine distemper virus, rinderpest virus, respiratory syncytial viruses **[5, 2006.01]**

15/46 • • • • • • Reoviridae, e.g. rotavirus, bluetongue virus, Colorado tick fever virus **[5, 2006.01]**

15/47 • • • • • • Rhabdoviridae, e.g. rabies viruses, vesicular stomatitis virus **[5, 2006.01]**

15/48 • • • • • • Retroviridae, e.g. bovine leukaemia virus, feline leukaemia virus **[5, 2006.01]**

15/49 • • • • • • • Lentiviridae, e.g. immunodeficiency viruses such as HIV, visna-maedi virus, equine infectious anaemia virus **[5, 2006.01]**

15/50 • • • • • • Coronaviridae, e.g. infectious bronchitis virus, transmissible gastroenteritis virus **[5, 2006.01]**

15/51 • • • • • Hepatitis viruses **[5, 2006.01]**

15/52 • • • Genes encoding for enzymes or proenzymes **[5, 2006.01]**

Note(s) [5]

In this group:

- genes encoding for proenzymes are classified with the corresponding genes encoding enzymes;
- enzymes are generally categorised according to the "Nomenclature and Classification of Enzymes" of the International Commission on Enzymes. Where appropriate, this designation appears in the groups below in parenthesis.

15/53 • • • • Oxidoreductases (1) **[5, 2006.01]**

15/54 • • • • Transferases (2) **[5, 2006.01]**

15/55 • • • • Hydrolases (3) **[5, 2006.01]**

15/56 • • • • • acting on glycosyl compounds (3.2), e.g. amylase, galactosidase, lysozyme **[5, 2006.01]**

15/57 • • • • • acting on peptide bonds (3.4) **[5, 2006.01]**

15/58 • • • • • • Plasminogen activators, e.g. urokinase, TPA **[5, 2006.01]**

15/59 • • • • • • Chymosin **[5, 2006.01]**

15/60 • • • • Lyases (4) **[5, 2006.01]**

15/61 • • • • Isomerases (5) **[5, 2006.01]**

15/62 • • • DNA sequences coding for fusion proteins **[5, 2006.01]**

Note(s) [5]

In this group, the following term is used with the meaning indicated:

- "fusion" means the fusion of two different proteins.

15/63 • • Introduction of foreign genetic material using vectors; Vectors; Use of hosts therefor; Regulation of expression **[5, 2006.01]**

15/64 • • • General methods for preparing the vector, for introducing it into the cell or for selecting the vector-containing host **[5, 2006.01]**

15/65 • • • using markers (enzymes used as markers C12N 15/52) **[5, 2006.01]**

15/66 • • • General methods for inserting a gene into a vector to form a recombinant vector using cleavage and ligation; Use of non-functional linkers or adaptors, e.g. linkers containing the sequence for a restriction endonuclease **[5, 2006.01]**

Note(s) [5]

In this group, the following expression is used with the meaning indicated:

- "non-functional linkers" means DNA sequences which are used to link DNA sequences and which have no known function of structural gene or regulating function.

15/67 • • • General methods for enhancing the expression **[5, 2006.01]**

15/68 • • • • Stabilisation of the vector **[5, 2006.01]**

15/69 • • • • Increasing the copy number of the vector **[5, 2006.01]**

15/70 • • • Vectors or expression systems specially adapted for E. coli **[5, 2006.01]**

Note(s) [5]

1. This group covers the use of E. coli as host.
2. Shuttle vectors also replicating in E. coli are classified according to the other host.

15/71 • • • • Expression systems using regulatory sequences derived from the trp-operon **[5, 2006.01]**

15/72 • • • • Expression systems using regulatory sequences derived from the lac-operon **[5, 2006.01]**

15/73 • • • • Expression systems using phage lambda regulatory sequences **[5, 2006.01]**

15/74 • • • Vectors or expression systems specially adapted for prokaryotic hosts other than E. coli, e.g. Lactobacillus, Micromonospora **[5, 2006.01]**

Note(s) [5]

This group covers the use of prokaryotes as hosts.

15/75 • • • • for Bacillus **[5, 2006.01]**

15/76 • • • • for Actinomyces; for Streptomyces **[5, 2006.01]**

15/77 • • • • for Corynebacterium; for Brevibacterium **[5, 2006.01]**

15/78 • • • • for Pseudomonas **[5, 2006.01]**

15/79 • • • Vectors or expression systems specially adapted for eukaryotic hosts **[5, 2006.01]**

Note(s) [5]

This group covers the use of eukaryotes as hosts.

15/80 • • • • for fungi **[5, 2006.01]**

15/81 • • • • • for yeasts **[5, 2006.01]**

15/82 • • • • for plant cells **[5, 2006.01]**

15/83 • • • • • Viral vectors, e.g. cauliflower mosaic virus **[5, 2006.01]**

15/84 • • • • • Ti-plasmids **[5, 2006.01]**

15/85 • • • • for animal cells **[5, 2006.01]**

15/86 • • • • • Viral vectors **[5, 2006.01]**

15/861 • • • • • • Adenoviral vectors **[7, 2006.01]**

15/863 • • • • • • Poxviral vectors, e.g. vaccinia virus **[7, 2006.01]**

15/864 • • • • • • Parvoviral vectors **[7, 2006.01]**

15/866 • • • • • • Baculoviral vectors **[7, 2006.01]**

15/867 • • • • • • Retroviral vectors **[7, 2006.01]**

15/869 • • • • • • Herpesviral vectors **[7, 2006.01]**

15/87 • • Introduction of foreign genetic material using processes not otherwise provided for, e.g. co-transformation **[5, 2006.01]**

15/873 • • • Techniques for producing new embryos, e.g. nuclear transfer, manipulation of totipotent cells or production of chimeric embryos **[2010.01]**

15/877 • • • • Techniques for producing new mammalian cloned embryos **[2010.01]**

15/88 • • • using micro-encapsulation, e.g. using liposome vesicle **[5, 2006.01]**

15/89 • • • using micro-injection **[5, 2006.01]**

15/90 • • • Stable introduction of foreign DNA into chromosome **[5, 2006.01]**

C12P FERMENTATION OR ENZYME-USING PROCESSES TO SYNTHESISE A DESIRED CHEMICAL COMPOUND OR COMPOSITION OR TO SEPARATE OPTICAL ISOMERS FROM A RACEMIC MIXTURE [3]

Note(s) [3, 4, 6]

1. This subclass covers both major and minor chemical modifications.
2. Group C12P 1/00 covers processes for producing organic compounds not sufficiently identified to be classified in groups C12P 3/00-C12P 37/00. Compounds identified only by their empirical formulae are not considered to be sufficiently identified.
3. Attention is drawn to Notes (1) to (3) following the title of class C12.
4. If a particular reaction is considered of interest, it is also classified in the relevant chemical compound class, e.g. C07, C08.
5. In this subclass:
   - metal or ammonium salts of a compound are classified as that compound.
   - compositions are classified in the relevant compound groups.
6. In this subclass, it is desirable to add the indexing codes of subclass C12R.

Subclass index

BIOSYNTHESIS OF CHEMICAL SUBSTANCES
Inorganic compounds....3/00
Acyclic or carbocyclic organic compounds....5/00-15/00
peptides or proteins....21/00
Carotenes....23/00
Tetracyclines....29/00
Prostaglandins....31/00
Steroids....33/00
Heterocyclic organic compounds....17/00
containing saccharide radicals....19/00
Riboflavin....25/00
Giberellin....27/00
Cephalosporin; penicillin....35/00, 37/00
SEPARATION OF OPTICAL ISOMERS....41/00
OTHER PROCESSES FOR BIOSYNTHESIS PREPARATIONS....1/00, 39/00

1/00 Preparation of compounds or compositions, not provided for in groups C12P 3/00-C12P 39/00, by using micro-organisms or enzymes; General processes for the preparation of compounds or compositions by using micro-organisms or enzymes [3, 2006.01]

1/02 • by using fungi **[3, 2006.01]**

1/04 • by using bacteria **[3, 2006.01]**

1/06 • by using actinomycetales **[3, 2006.01]**

3/00 Preparation of elements or inorganic compounds except carbon dioxide [3, 2006.01]

5/00 Preparation of hydrocarbons [3, 2006.01]

5/02 • acyclic **[3, 2006.01]**

7/00 Preparation of oxygen-containing organic compounds [3, 2006.01]

7/02 • containing a hydroxy group **[3, 2006.01]**

7/04 • • acyclic **[3, 2006.01]**

7/06 • • • Ethanol, i.e. non-beverage **[3, 2006.01]**

7/08 • • • • produced as by-product or from waste or cellulosic material substrate **[3, 2006.01]**

7/10 • • • • • substrate containing cellulosic material **[3, 2006.01]**

7/12 • • • • • substrate containing sulfite waste liquor or citrus waste **[3, 2006.01]**

7/14 • • • • Multiple stages of fermentation; Multiple types of micro-organisms or reuse for micro-organisms **[3, 2006.01]**

7/16 • • • Butanols **[3, 2006.01]**

7/18 • • • polyhydric **[3, 2006.01]**

7/20 • • • • Glycerol **[3, 2006.01]**

7/22 • • aromatic **[3, 2006.01]**

7/24 • containing a carbonyl group **[3, 2006.01]**

7/26 • • Ketones **[3, 2006.01]**

7/28 • • • Acetone-containing products **[3, 2006.01]**

7/30 • • • • produced from substrate containing inorganic compounds other than water **[3, 2006.01]**

7/32 • • • • produced from substrate containing inorganic nitrogen source **[3, 2006.01]**

7/34 • • • • produced from substrate containing protein as nitrogen source **[3, 2006.01]**

7/36 • • • • produced from substrate containing grain or cereal material **[3, 2006.01]**

7/38 • • • Cyclopentanone- or cyclopentadione-containing products **[3, 2006.01]**
7/40 • containing a carboxyl group **[3, 2006.01]**
7/42 • • Hydroxy carboxylic acids **[3, 2006.01]**
7/44 • • Polycarboxylic acids **[3, 2006.01]**
7/46 • • • Dicarboxylic acids having four or less carbon atoms, e.g. fumaric acid, maleic acid **[3, 2006.01]**
7/48 • • • Tricarboxylic acids, e.g. citric acid **[3, 2006.01]**
7/50 • • • having keto groups, e.g. 2-ketoglutaric acid **[3, 2006.01]**
7/52 • • Propionic acid; Butyric acids **[3, 2006.01]**
7/54 • • Acetic acid **[3, 2006.01]**
7/56 • • Lactic acid **[3, 2006.01]**
7/58 • • Aldonic, ketoaldonic or saccharic acids (uronic acids C12P 19/00) **[3, 2006.01]**
7/60 • • • 2-Ketogulonic acid **[3, 2006.01]**
7/62 • Carboxylic acid esters **[3, 2006.01]**
7/64 • Fats; Fatty oils; Ester-type waxes; Higher fatty acids, i.e. having at least seven carbon atoms in an unbroken chain bound to a carboxyl group; Oxidised oils or fats **[3, 2006.01]**
7/66 • containing the quinoid structure **[3, 2006.01]**

9/00 Preparation of organic compounds containing a metal or atom other than H, N, C, O, S, or halogen [3, 2006.01]

11/00 Preparation of sulfur-containing organic compounds [3, 2006.01]

13/00 Preparation of nitrogen-containing organic compounds [3, 2006.01]
13/02 • Amides, e.g. chloramphenicol **[3, 2006.01]**
13/04 • Alpha- or beta-amino acids **[3, 2006.01]**
13/06 • • Alanine; Leucine; Isoleucine; Serine; Homoserine **[3, 2006.01]**
13/08 • • Lysine; Diaminopimelic acid; Threonine; Valine **[3, 2006.01]**
13/10 • • Citrulline; Arginine; Ornithine **[3, 2006.01]**
13/12 • • Methionine; Cysteine; Cystine **[3, 2006.01]**
13/14 • • Glutamic acid; Glutamine **[3, 2006.01]**
13/16 • • • using surfactants, fatty acids or fatty acid esters, i.e. having at least seven carbon atoms in an unbroken chain bound to a carboxyl group or a carboxyl ester group **[3, 2006.01]**
13/18 • • • using biotin or its derivatives **[3, 2006.01]**
13/20 • • Aspartic acid; Asparagine **[3, 2006.01]**
13/22 • • Tryptophan; Tyrosine; Phenylalanine; 3,4-Dihydroxyphenylalanine **[3, 2006.01]**
13/24 • • Proline; Hydroxyproline; Histidine **[3, 2006.01]**

15/00 Preparation of compounds containing at least three condensed carbocyclic rings [3, 2006.01]

17/00 Preparation of heterocyclic carbon compounds with only O, N, S, Se, or Te as ring hetero atoms (C12P 13/04-C12P 13/24 take precedence) **[3, 2006.01]**
17/02 • Oxygen as only ring hetero atoms **[3, 2006.01]**
17/04 • • containing a five-membered hetero ring, e.g. griseofulvin **[3, 2006.01]**
17/06 • • containing a six-membered hetero ring, e.g. fluorescein **[3, 2006.01]**
17/08 • • containing a hetero ring of at least seven ring members, e.g. zearalenone, macrolide aglycons **[3, 2006.01]**
17/10 • Nitrogen as only ring hetero atom **[3, 2006.01]**
17/12 • • containing a six-membered hetero ring **[3, 2006.01]**
17/14 • Nitrogen or oxygen as hetero atom and at least one other diverse hetero ring atom in the same ring **[3, 2006.01]**
17/16 • containing two or more hetero rings **[3, 2006.01]**
17/18 • containing at least two hetero rings condensed among themselves or condensed with a common carbocyclic ring system, e.g. rifamycin **[3, 2006.01]**

19/00 Preparation of compounds containing saccharide radicals (ketoaldonic acids C12P 7/58) **[3, 2006.01]**

Note(s) [3]

Attention is drawn to Note (3) following the title of subclass C07H, which defines the expression "saccharide radical".

19/02 • Monosaccharides **[3, 2006.01]**
19/04 • Polysaccharides, i.e. compounds containing more than five saccharide radicals attached to each other by glycosidic bonds **[3, 2006.01]**
19/06 • • Xanthan, i.e. Xanthomonas-type heteropolysaccharides **[3, 2006.01]**
19/08 • • Dextran **[3, 2006.01]**
19/10 • • Pullulan **[3, 2006.01]**
19/12 • Disaccharides **[3, 2006.01]**
19/14 • produced by the action of a carbohydrase, e.g. by alpha-amylase **[3, 2006.01]**
19/16 • produced by the action of an alpha-1, 6-glucosidase, e.g. amylose, debranched amylopectin **[3, 2006.01]**
19/18 • produced by the action of a glycosyl transferase, e.g. alpha-, beta- or gamma-cyclodextrins **[3, 2006.01]**
19/20 • produced by the action of an exo-1, 4 alpha-glucosidase, e.g. dextrose **[3, 2006.01]**
19/22 • produced by the action of a beta-amylase, e.g. maltose **[3, 2006.01]**
19/24 • produced by the action of an isomerase, e.g. fructose **[3, 2006.01]**
19/26 • Preparation of nitrogen-containing carbohydrates **[3, 2006.01]**
19/28 • • N-glycosides **[3, 2006.01]**
19/30 • • • Nucleotides **[3, 2006.01]**
19/32 • • • • having a condensed ring system containing a six-membered ring having two nitrogen atoms in the same-ring, e.g. purine nucleotides, nicotineamide-adenine dinucleotide **[3, 2006.01]**
19/34 • • • • Polynucleotides, e.g. nucleic acids, oligoribonucleotides **[3, 2006.01]**
19/36 • • • • Dinucleotides, e.g. nicotineamide-adenine dinucleotide phosphate **[3, 2006.01]**
19/38 • • • Nucleosides **[3, 2006.01]**
19/40 • • • • having a condensed ring system containing a six-membered ring having two nitrogen atoms in the same ring, e.g. purine nucleosides **[3, 2006.01]**
19/42 • • • Cobalamins, i.e. vitamin B_{12}, LLD factor **[3, 2006.01]**
19/44 • Preparation of O-glycosides, e.g. glucosides **[3, 2006.01]**
19/46 • • having an oxygen atom of the saccharide radical bound to a cyclohexyl radical, e.g. kasugamycin **[3, 2006.01]**
19/48 • • • the cyclohexyl radical being substituted by two or more nitrogen atoms, e.g. destomycin, neamin **[3, 2006.01]**

19/50 • • • • having two saccharide radicals bound through only oxygen to adjacent ring carbon atoms of the cyclohexyl radical, e.g. ambutyrosin, ribostamycin **[3, 2006.01]**

19/52 • • • • • containing three or more saccharide radicals, e.g. neomycin, lividomycin **[3, 2006.01]**

19/54 • • • the cyclohexyl radical being bound directly to a nitrogen atom of two or more radicals, e.g. streptomycin **[3, 2006.01]**

19/56 • • having an oxygen atom of the saccharide radical directly bound to a condensed ring system having three or more carbocyclic rings, e.g. daunomycin, adriamycin **[3, 2006.01]**

19/58 • • having an oxygen atom of the saccharide radical directly bound through only acyclic carbon atoms to a non-saccharide heterocyclic ring, e.g. bleomycin, phleomycin **[3, 2006.01]**

19/60 • • having an oxygen of the saccharide radical directly bound to a non-saccharide heterocyclic ring or a condensed ring system containing a non-saccharide heterocyclic ring, e.g. coumermycin, novobiocin **[3, 2006.01]**

19/62 • • • the hetero ring having eight or more ring members and only oxygen as ring hetero atoms, e.g. erythromycin, spiramycin, nystatin **[3, 2006.01]**

19/64 • Preparation of S-glycosides, e.g. lincomycin **[3, 2006.01]**

21/00 Preparation of peptides or proteins (single-cell protein C12N 1/00) **[3, 2006.01]**

21/02 • having a known sequence of two or more amino acids, e.g. glutathione **[3, 2006.01]**

21/04 • • Cyclic or bridged peptides or polypeptides, e.g. bacitracin (cyclised by —S—S— bonds only C12P 21/02) **[3, 2006.01]**

21/06 • produced by the hydrolysis of a peptide bond, e.g. hydrolysate products **[3, 2006.01]**

21/08 • Monoclonal antibodies **[5, 2006.01]**

23/00 Preparation of compounds containing a cyclohexene ring having an unsaturated side chain containing at least ten carbon atoms bound by conjugated double bonds, e.g. carotenes (containing hetero-rings C12P 17/00) **[3, 2006.01]**

25/00 Preparation of compounds containing alloxazine or isoalloxazine nucleus, e.g. riboflavin [3, 2006.01]

27/00 Preparation of compounds containing a gibbane ring system, e.g. gibberellin [3, 2006.01]

29/00 Preparation of compounds containing a naphthacene ring system, e.g. tetracycline (C12P 19/00 takes precedence) **[3, 2006.01]**

31/00 Preparation of compounds containing a five-membered ring having two side-chains in ortho position to each other, and having at least one oxygen atom directly bound to the ring in ortho position to one of the side-chains, one side-chain containing, not directly bound to the ring, a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, and the other side-chain having at least one oxygen atom bound in gamma-position to the ring, e.g. prostaglandins [3, 2006.01]

33/00 Preparation of steroids [3, 2006.01]

Note(s) [3]

Attention is drawn to Note (1) following the title of subclass C07J, which explains what is covered by the term "steroids".

Note(s) [3]

In groups C12P 33/02-C12P 33/20, the following terms are used with the meaning indicated:

- "acting", "forming", "hydroxylating", "dehydroxylating" or "dehydrogenating" means the action of a micro-organism or enzyme rather than other chemical action.

33/02 • Dehydrogenating; Dehydroxylating **[3, 2006.01]**

33/04 • • Forming an aryl ring from A ring **[3, 2006.01]**

33/06 • Hydroxylating **[3, 2006.01]**

33/08 • • at 11 position **[3, 2006.01]**

33/10 • • • at 11alpha-position **[3, 2006.01]**

33/12 • Acting on D ring **[3, 2006.01]**

33/14 • • Hydroxylating at 16 position **[3, 2006.01]**

33/16 • • Acting at 17 position **[3, 2006.01]**

33/18 • • • Hydroxylating at 17 position **[3, 2006.01]**

33/20 • containing heterocyclic rings **[3, 2006.01]**

35/00 Preparation of compounds having a 5-thia-1-azabicyclo [4.2.0] octane ring system, e.g. cephalosporin [3, 2006.01]

35/02 • by desacylation of the substituent in the 7 position **[3, 2006.01]**

35/04 • by acylation of the substituent in the 7 position **[3, 2006.01]**

35/06 • Cephalosporin C; Derivatives thereof **[3, 2006.01]**

35/08 • disubstituted in the 7 position **[3, 2006.01]**

37/00 Preparation of compounds having a 4-thia-1-azabicyclo [3.2.0] heptane ring system, e.g. penicillin [3, 2006.01]

37/02 • in presence of phenylacetic acid or phenylacetamide or their derivatives **[3, 2006.01]**

37/04 • by acylation of the substituent in the 6 position **[3, 2006.01]**

37/06 • by desacylation of the substituent in the 6 position **[3, 2006.01]**

39/00 Processes involving micro-organisms of different genera in the same process, simultaneously [3, 2006.01]

41/00 Processes using enzymes or micro-organisms to separate optical isomers from a racemic mixture [4, 2006.01]

C12Q MEASURING OR TESTING PROCESSES INVOLVING ENZYMES OR MICRO-ORGANISMS (immunoassay G01N 33/53)**; COMPOSITIONS OR TEST PAPERS THEREFOR; PROCESSES OF PREPARING SUCH COMPOSITIONS; CONDITION-RESPONSIVE CONTROL IN MICROBIOLOGICAL OR ENZYMOLOGICAL PROCESSES [3]**

Note(s) [3, 4, 6]

1. This subclass does not cover the observation of the progress or of the result of processes specified in this subclass by any of the methods specified in groups G01N 3/00-G01N 29/00, which is covered by subclass G01N.
2. In this subclass, the following expression is used with the meaning indicated:
   - "involving", when used in relation to a substance, includes the testing for the substance as well as employing the substance as a determinant or reactant in a test for a different substance.
3. Attention is drawn to Notes (1) to (3) following the title of class C12.
4. In this subclass, test media are classified in the appropriate group for the relevant test process.
5. In this subclass, it is desirable to add the indexing codes of subclass C12R.

1/00 Measuring or testing processes involving enzymes or micro-organisms (measuring or testing apparatus with condition measuring or sensing means, e.g. colony counters, C12M 1/34)**; Compositions therefor; Processes of preparing such compositions [3, 2006.01]**
1/02 • involving viable micro-organisms **[3, 2006.01]**
1/04 • • Determining presence or kind of micro-organism; Use of selective media for testing antibiotics or bacteriocides; Compositions containing a chemical indicator therefor **[3, 2006.01]**
1/06 • • • Quantitative determination **[3, 2006.01]**
1/08 • • • • using multifield media **[3, 2006.01]**
1/10 • • • Enterobacteria **[3, 2006.01]**
1/12 • • • Nitrate to nitrite reducing bacteria **[3, 2006.01]**
1/14 • • • Streptococcus; Staphylococcus **[3, 2006.01]**
1/16 • • • using radioactive material **[3, 2006.01]**
1/18 • • Testing for antimicrobial activity of a material **[3, 2006.01]**
1/20 • • • using multifield media **[3, 2006.01]**
1/22 • • Testing for sterility conditions **[3, 2006.01]**
1/24 • • Methods of sampling, or inoculating or spreading a sample; Methods of physically isolating an intact micro-organism **[3, 2006.01]**
1/25 • involving enzymes not classifiable in groups C12Q 1/26-C12Q 1/70 **[5, 2006.01]**
1/26 • involving oxidoreductase **[3, 2006.01]**
1/28 • • involving peroxidase **[3, 2006.01]**
1/30 • • involving catalase **[3, 2006.01]**
1/32 • • involving dehydrogenase **[3, 2006.01]**
1/34 • involving hydrolase **[3, 2006.01]**
1/37 • • involving peptidase or proteinase **[5, 2006.01]**
1/40 • • involving amylase **[3, 2006.01]**
1/42 • • involving phosphatase **[3, 2006.01]**
1/44 • • involving esterase **[3, 2006.01]**
1/46 • • • involving cholinesterase **[3, 2006.01]**
1/48 • involving transferase **[3, 2006.01]**
1/50 • • involving creatine phosphokinase **[3, 2006.01]**
1/52 • • involving transaminase **[3, 2006.01]**
1/527 • involving lyase **[5, 2006.01]**
1/533 • involving isomerase **[5, 2006.01]**
1/54 • involving glucose or galactose **[3, 2006.01]**
1/56 • involving blood clotting factors, e.g. involving thrombin, thromboplastin, fibrinogen **[3, 2006.01]**
1/58 • involving urea or urease **[3, 2006.01]**
1/60 • involving cholesterol **[3, 2006.01]**
1/61 • involving triglycerides **[5, 2006.01]**
1/62 • involving uric acid **[3, 2006.01]**
1/64 • Geomicrobiological testing, e.g. for petroleum **[3, 2006.01]**
1/66 • involving luciferase **[3, 2006.01]**
1/68 • involving nucleic acids **[3, 2006.01]**
1/70 • involving virus or bacteriophage **[3, 2006.01]**

3/00 Condition-responsive control processes (apparatus therefor C12M 1/36) **[3, 2006.01]**

C12R INDEXING SCHEME ASSOCIATED WITH SUBCLASSES C12C-C12Q, RELATING TO MICRO-ORGANISMS [3]

Note(s) [3]

1. This subclass constitutes an indexing scheme associated with the other subclasses of class C12, relating to micro-organisms used in the processes classified in subclasses C12C-C12Q.
2. The bacteria terminology is based on "Bergey's Manual of Determinative Bacteriology", Eighth Edition, 1975.

1/00 Micro-organisms [3, 2006.01]
1/01 • Bacteria or actinomycetales **[3, 2006.01]**
1/02 • • Acetobacter **[3, 2006.01]**
1/025 • • Achromobacter **[3, 2006.01]**
1/03 • • Actinomadura **[3, 2006.01]**
1/04 • • Actinomyces **[3, 2006.01]**
1/045 • • Actinoplanes **[3, 2006.01]**
1/05 • • Alcaligenes **[3, 2006.01]**
1/06 • • Arthrobacter **[3, 2006.01]**
1/065 • • Azotobacter **[3, 2006.01]**
1/07 • • Bacillus **[3, 2006.01]**
1/08 • • • Bacillus brevis **[3, 2006.01]**
1/085 • • • Bacillus cereus **[3, 2006.01]**
1/09 • • • Bacillus circulans **[3, 2006.01]**
1/10 • • • Bacillus licheniformis **[3, 2006.01]**
1/11 • • • Bacillus megaterium **[3, 2006.01]**
1/12 • • • Bacillus polymyxa **[3, 2006.01]**
1/125 • • • Bacillus subtilis **[3, 2006.01]**

1/13 • • Brevibacterium **[3, 2006.01]**
1/14 • • Chainia **[3, 2006.01]**
1/145 • • Clostridium **[3, 2006.01]**
1/15 • • Corynebacterium **[3, 2006.01]**
1/16 • • • Corynebacterium diphtheriae **[3, 2006.01]**
1/165 • • • Corynebacterium poinsettiae **[3, 2006.01]**
1/17 • • • Corynebacterium pyogenes **[3, 2006.01]**
1/18 • • Erwinia **[3, 2006.01]**
1/185 • • Escherichia **[3, 2006.01]**
1/19 • • • Escherichia coli **[3, 2006.01]**
1/20 • • Flavobacterium **[3, 2006.01]**
1/21 • • Haemophilus **[3, 2006.01]**
1/22 • • Klebsiella **[3, 2006.01]**
1/225 • • Lactobacillus **[3, 2006.01]**
1/23 • • • Lactobacillus acidophilus **[3, 2006.01]**
1/24 • • • Lactobacillus brevis **[3, 2006.01]**
1/245 • • • Lactobacillus casei **[3, 2006.01]**
1/25 • • • Lactobacillus plantarum **[3, 2006.01]**
1/26 • • Methylomonas **[3, 2006.01]**
1/265 • • Micrococcus **[3, 2006.01]**
1/27 • • • Micrococcus flavus **[3, 2006.01]**
1/28 • • • Micrococcus glutamicus **[3, 2006.01]**
1/285 • • • Micrococcus lysodeikticus **[3, 2006.01]**
1/29 • • Micromonospora **[3, 2006.01]**
1/30 • • • Micromonospora chalcea **[3, 2006.01]**
1/31 • • • Micromonospora purpurea **[3, 2006.01]**
1/32 • • Mycobacterium **[3, 2006.01]**
1/325 • • • Mycobacterium avium **[3, 2006.01]**
1/33 • • • Mycobacterium fortuitum **[3, 2006.01]**
1/34 • • • Mycobacterium smegmatis **[3, 2006.01]**
1/35 • • Mycoplasma **[3, 2006.01]**
1/36 • • Neisseria **[3, 2006.01]**
1/365 • • Nocardia **[3, 2006.01]**
1/37 • • Proteus **[3, 2006.01]**
1/38 • • Pseudomonas **[3, 2006.01]**
1/385 • • • Pseudomonas aeruginosa **[3, 2006.01]**
1/39 • • • Pseudomonas fluorescens **[3, 2006.01]**
1/40 • • • Pseudomonas putida **[3, 2006.01]**
1/41 • • Rhizobium **[3, 2006.01]**
1/42 • • Salmonella **[3, 2006.01]**
1/425 • • Serratia **[3, 2006.01]**
1/43 • • • Serratia marcescens **[3, 2006.01]**
1/44 • • Staphylococcus **[3, 2006.01]**
1/445 • • • Staphylococcus aureus **[3, 2006.01]**
1/45 • • • Staphylococcus epidermidis **[3, 2006.01]**
1/46 • • Streptococcus **[3, 2006.01]**
1/465 • • Streptomyces **[3, 2006.01]**
1/47 • • • Streptomyces albus **[3, 2006.01]**
1/48 • • • Streptomyces antibioticus **[3, 2006.01]**
1/485 • • • Streptomyces aureofaciens **[3, 2006.01]**
1/49 • • • Streptomyces aureus **[3, 2006.01]**
1/50 • • • Streptomyces bikiniensis **[3, 2006.01]**
1/51 • • • Streptomyces candidus **[3, 2006.01]**
1/52 • • • Streptomyces chartreusis **[3, 2006.01]**
1/525 • • • Streptomyces diastatochromogenes **[3, 2006.01]**
1/53 • • • Streptomyces filipinensis **[3, 2006.01]**
1/54 • • • Streptomyces fradiae **[3, 2006.01]**
1/545 • • • Streptomyces griseus **[3, 2006.01]**
1/55 • • • Streptomyces hygroscopicus **[3, 2006.01]**
1/56 • • • Streptomyces lavendulae **[3, 2006.01]**
1/565 • • • Streptomyces lincolnensis **[3, 2006.01]**
1/57 • • • Streptomyces noursei **[3, 2006.01]**
1/58 • • • Streptomyces olivaceus **[3, 2006.01]**
1/585 • • • Streptomyces platensis **[3, 2006.01]**
1/59 • • • Streptomyces rimosus **[3, 2006.01]**
1/60 • • • Streptomyces sparsogenes **[3, 2006.01]**
1/61 • • • Streptomyces venezuelae **[3, 2006.01]**
1/62 • • Streptosporangium **[3, 2006.01]**
1/625 • • Streptoverticillium **[3, 2006.01]**
1/63 • • Vibrio **[3, 2006.01]**
1/64 • • Xanthomonas **[3, 2006.01]**
1/645 • Fungi **[3, 2006.01]**
1/65 • • Absidia **[3, 2006.01]**
1/66 • • Aspergillus **[3, 2006.01]**
1/665 • • • Aspergillus awamori **[3, 2006.01]**
1/67 • • • Aspergillus flavus **[3, 2006.01]**
1/68 • • • Aspergillus fumigatus **[3, 2006.01]**
1/685 • • • Aspergillus niger **[3, 2006.01]**
1/69 • • • Aspergillus oryzae **[3, 2006.01]**
1/70 • • • Aspergillus ustus **[3, 2006.01]**
1/71 • • • Aspergillus wentii **[3, 2006.01]**
1/72 • • Candida **[3, 2006.01]**
1/725 • • • Candida albicans **[3, 2006.01]**
1/73 • • • Candida lipolytica **[3, 2006.01]**
1/74 • • • Candida tropicalis **[3, 2006.01]**
1/745 • • Cephalosporium **[3, 2006.01]**
1/75 • • • Cephalosporium acremonium **[3, 2006.01]**
1/76 • • • Cephalosporium coerulescens **[3, 2006.01]**
1/765 • • • Cephalosporium crotocinigenum **[3, 2006.01]**
1/77 • • Fusarium **[3, 2006.01]**
1/78 • • Hansenula **[3, 2006.01]**
1/785 • • Mucor **[3, 2006.01]**
1/79 • • Paecilomyces **[3, 2006.01]**
1/80 • • Penicillium **[3, 2006.01]**
1/81 • • • Penicillium brevi **[3, 2006.01]**
1/82 • • • Penicillium chrysogenum **[3, 2006.01]**
1/825 • • • Penicillium notatum **[3, 2006.01]**
1/83 • • • Penicillium patulum **[3, 2006.01]**
1/84 • • Pichia **[3, 2006.01]**
1/845 • • Rhizopus **[3, 2006.01]**
1/85 • • Saccharomyces **[3, 2006.01]**
1/86 • • • Saccharomyces carlsbergensis **[3, 2006.01]**
1/865 • • • Saccharomyces cerevisiae **[3, 2006.01]**
1/87 • • • Saccharomyces lactis **[3, 2006.01]**
1/88 • • Torulopsis **[3, 2006.01]**
1/885 • • Trichoderma **[3, 2006.01]**
1/89 • Algae **[3, 2006.01]**
1/90 • Protozoa **[3, 2006.01]**
1/91 • Cell lines **[3, 7, 2006.01]**
1/92 • Viruses **[5, 7, 2006.01]**
1/93 • • Animal viruses **[7, 2006.01]**
1/94 • • Plant viruses **[7, 2006.01]**

C13 SUGAR INDUSTRY

Note(s) [2011.01]

In class C13, the following terms or expressions are used with the meanings indicated:

- "sugars" are a class of edible, water-soluble crystalline carbohydrates, having a characteristic sweet taste, including mono-, di- and oligosaccharides, e.g. sucrose, lactose and fructose. A more specific meaning of the term "sugar" is defined in the note of subclass C13B.

C13B PRODUCTION OF SUCROSE; APPARATUS SPECIALLY ADAPTED THEREFOR (chemically synthesised sugars or sugar derivatives C07H; fermentation or enzyme-using processes for preparing compounds containing saccharide radicals C12P 19/00) **[2011.01]**

Note(s) [2011.01]

In subclass C13B, the following terms or expressions are used with the meanings indicated:

- “sugar” is used in its non-scientific meaning and refers to sucrose, also called “table sugar” or “saccharose”, a white crystalline disaccharide;
- "sugar juices" are solutions of sugar, essentially comprising sucrose, which are derived from different plants, e.g. beet, cane or maple;
- "syrups" are highly concentrated sugar juices.

5/00 Reducing the size of material from which sugar is to be extracted (for extraction of starch C08B 30/02) **[2011.01]**
5/02 • Cutting sugar cane **[2011.01]**
5/04 • • Shredding sugar cane **[2011.01]**
5/06 • Slicing sugar beet **[2011.01]**
5/08 • Knives; Adjustment or maintenance thereof **[2011.01]**

10/00 Production of sugar juices (tapping of tree-juices A01G 23/10; tapping-spouts, receptacles for juices A01G 23/14) **[2011.01]**
10/02 • Expressing juice from sugar cane or similar material, e.g. sorghum saccharatum **[2011.01]**
10/04 • • combined with imbibition **[2011.01]**
10/06 • • Sugar-cane crushers **[2011.01]**
10/08 • Extraction of sugar from sugar beet with water **[2011.01]**
10/10 • • Continuous processes **[2011.01]**
10/12 • • Details of extraction apparatus, e.g. arrangements of pipes or valves **[2011.01]**
10/14 • using extracting agents other than water, e.g. alcohol or salt solutions **[2011.01]**

15/00 Expressing water from material from which sugar has been extracted (from starch-extracted material C08B 30/10) **[2011.01]**
15/02 • between perforated moving belts **[2011.01]**

20/00 Purification of sugar juices [2011.01]

Note(s) [2011.01]

When classifying in this group, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.

20/02 • using alkaline earth metal compounds **[2011.01]**
20/04 • • followed by saturation **[2011.01]**
20/06 • • • with carbon dioxide or sulfur dioxide **[2011.01]**
20/08 • by oxidation or reduction **[2011.01]**
20/10 • • using sulfur dioxide or sulfites **[2011.01]**
20/12 • using adsorption agents, e.g. active carbon **[2011.01]**
20/14 • using ion-exchange materials **[2011.01]**
20/16 • by physical means, e.g. osmosis or filtration **[2011.01]**
20/18 • by electrical means **[2011.01]**

25/00 Evaporators or boiling pans specially adapted for sugar juices; Evaporating or boiling sugar juices [2011.01]
25/02 • Details, e.g. for preventing foaming or for catching juice **[2011.01]**
25/04 • • Heating equipment **[2011.01]**
25/06 • combined with measuring instruments for effecting control of the process **[2011.01]**

30/00 Crystallisation; Crystallising apparatus; Separating crystals from mother liquors [2011.01]
30/02 • Crystallisation; Crystallising apparatus **[2011.01]**
30/04 • Separating crystals from mother liquor **[2011.01]**
30/06 • • by centrifugal force **[2011.01]**
30/08 • • Washing residual mother liquor from crystals **[2011.01]**
30/10 • • • in centrifuges **[2011.01]**
30/12 • • Recycling mother liquor or wash liquors **[2011.01]**
30/14 • • Dissolving or refining raw sugar **[2011.01]**

35/00 Extraction of sucrose from molasses [2011.01]
35/02 • by chemical means **[2011.01]**
35/04 • • by precipitation as alkaline earth metal saccharates **[2011.01]**
35/06 • • using ion exchange **[2011.01]**
35/08 • by physical means, e.g. osmosis **[2011.01]**

40/00 Drying sugar [2011.01]

45/00 Cutting machines specially adapted for sugar [2011.01]
45/02 • in combination with sorting and packing machines **[2011.01]**

50/00 Sugar products, e.g. powdered, lump or liquid sugar; Working-up of sugar (C13B 40/00, C13B 45/00 take precedence; confectionery A23G 3/00) **[2011.01]**
50/02 • formed by moulding sugar **[2011.01]**

99/00 Subject matter not provided for in other groups of this subclass [2011.01]

C13K SACCHARIDES, OTHER THAN SUCROSE, OBTAINED FROM NATURAL SOURCES OR BY HYDROLYSIS OF NATURALLY OCCURRING DI-, OLIGO- OR POLYSACCHARIDES (chemically synthesised sugars or sugar derivatives C07H; polysaccharides, e.g. starch, derivatives thereof C08B; malt C12C; fermentation or enzyme-using processes for preparing compounds containing saccharide radicals C12P 19/00)

1/00 Glucose (separation from invert sugar C13K 3/00)**; Glucose-containing syrups [1, 2, 2006.01]**
1/02 • obtained by saccharification of cellulosic materials (manufacture of fodder A23K 10/32) **[1, 2006.01]**
1/04 • • Purifying **[1, 2006.01]**
1/06 • obtained by saccharification of starch or raw materials containing starch **[1, 2006.01]**
1/08 • • Purifying **[1, 2006.01]**
1/10 • Crystallisation **[1, 2006.01]**

3/00 Invert sugar; Separation of glucose or fructose from invert sugar [1, 2006.01]

5/00 Lactose [1, 2006.01]

7/00 Maltose [1, 2006.01]

11/00 Fructose (separation from invert sugar C13K 3/00) **[2, 2006.01]**

13/00 Sugars not otherwise provided for in this class [2, 2006.01]

C14 SKINS; HIDES; PELTS; LEATHER

C14B MECHANICAL TREATMENT OR PROCESSING OF SKINS, HIDES, OR LEATHER IN GENERAL; PELT-SHEARING MACHINES; INTESTINE-SPLITTING MACHINES (mechanical cleaning of hides or the like D06G)

Subclass index

LEATHER
Manufacture....1/00, 7/00
Treatments
milling; cutting....3/00, 5/00
finishing....11/00, 13/00
making belts....9/00
Apparatus, tools....17/00, 19/00
FURS
Treatments....15/00
Apparatus, tools....17/00, 19/00
INTESTINES
Splitting, cutting....21/00
SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS....99/00

1/00 Manufacture of leather; Machines or devices therefor [1, 2006.01]
1/02 • Fleshing, unhairing, samming, stretching-out, setting-out, shaving, splitting, or skiving skins, hides, or leather **[1, 2006.01]**
1/04 • • using slicking, scraping, or smoothing-out cylinders or blades fixed on supports, e.g. cylinders, in a plane substantially at right angles to the working surface **[1, 2006.01]**
1/06 • • • in machines in which the working piece is maintained in contact with the working tools solely by means of rolls **[1, 2006.01]**
1/08 • • • in machines with flexible bands as bed supporting or counter-pressure elements **[1, 2006.01]**
1/10 • • • in machines with drums with cylindrical, conical, or similar surfaces for supporting the whole working piece **[1, 2006.01]**
1/12 • • • in machines with plane supporting bed-plates **[1, 2006.01]**
1/14 • • using tools cutting the skin in a plane substantially parallel to its surface **[1, 2006.01]**
1/16 • • • using fixed or reciprocating or oscillating knives **[1, 2006.01]**
1/18 • • • using band knives **[1, 2006.01]**
1/20 • • • using circular dished or coned knives **[1, 2006.01]**
1/22 • • • using cylindrical knives **[1, 2006.01]**
1/24 • • Cutting or shearing hairs without cutting the skin (shearing furs or plucking hairs for fur manufacturing purposes C14B 15/02) **[1, 2006.01]**
1/26 • Leather tensioning or stretching frames; Stretching-machines; Setting-out boards; Pasting boards (fastening devices C14B 17/08) **[1, 2006.01]**
1/28 • Machines for treating leather combined with devices for measuring and printing **[1, 2006.01]**
1/30 • Pressing or rolling leather **[1, 2006.01]**
1/32 • • by linear movement of the pressing elements **[1, 2006.01]**

1/34 • • by rotating movement of the pressing or rolling elements **[1, 2006.01]**
1/36 • • • Bridge leather-rolling machines **[1, 2006.01]**
1/38 • Hammering leather **[1, 2006.01]**
1/40 • Softening or making skins or leather supple, e.g. by staking, boarding, or crippling machines, by dry mills **[1, 2006.01]**
1/42 • • by means of a rotatable drum with radial blades **[1, 2006.01]**
1/44 • Mechanical treatment of leather surfaces **[1, 2006.01]**
1/46 • • Fluffing, buffing or sanding **[1, 2006.01]**
1/48 • • Roughening (by sanding C14B 1/46) **[1, 2006.01]**
1/50 • • Glazing **[1, 2006.01]**
1/52 • • Brushing or plush-wheeling **[1, 2006.01]**
1/54 • • Ironing (pressing or rolling C14B 1/30) **[1, 2006.01]**
1/56 • • Ornamenting, producing designs, embossing **[1, 2006.01]**
1/58 • Drying **[1, 2006.01]**
1/60 • • Pasting processes (chemical aspects C14C 7/00) **[1, 2006.01]**
1/62 • Winding or stacking hides or leather **[1, 2006.01]**

3/00 Milling leather [1, 2006.01]

5/00 Clicking, perforating, or cutting leather (for shoe parts, e.g. soles, A43D) **[1, 2006.01]**
5/02 • Stamps or dies for leather articles **[1, 2006.01]**
5/04 • for making leather belts or strips **[1, 2006.01]**
5/06 • • Machines for cutting strips spirally from discs of leather **[1, 2006.01]**

7/00 Special leathers or their manufacture [1, 2006.01]
7/02 • Composite leathers (with one or more laminae of plastics material B32B 9/02) **[1, 2006.01]**
7/04 • • by cementing or pressing together leather pieces, strips, or layers; Reinforcing or stiffening leather by means of reinforcing layers **[1, 2006.01]**
7/06 • Leather webs built up of interengaged strips or pieces, e.g. by braiding **[1, 2006.01]**

9/00 Making driving belts or other leather belts or strips [1, 2006.01]

11/00 Finishing the edges of leather pieces, e.g. by folding, by burning [1, 2006.01]

13/00 Shredding hides or leather [1, 2006.01]

15/00 Mechanical treatment of furs [1, 2006.01]
15/02 • Shearing; Removing dead or coarse hairs or bristles by shearing or plucking **[1, 2006.01]**
15/04 • Fur dressing **[1, 2006.01]**
15/06 • • Fur-stretching devices **[1, 2006.01]**
15/08 • Application of reinforcing or stiffening layers to fur skins **[1, 2006.01]**
15/10 • Cutting furs; Making fur plates or strips **[1, 2006.01]**
15/12 • Finishing, e.g. pointing furs; Producing designs or patterns **[1, 2006.01]**

17/00 Details of apparatus or machines for manufacturing or treating skins, hides, leather, or furs [1, 2006.01]
17/02 • Blading cylinders or other working cylinders, e.g. slicking or scraping cylinders **[1, 2006.01]**
17/04 • Work-supports or other counter-pressing elements; Bed rolls or counter-pressing rolls **[1, 2006.01]**
17/06 • Work feeding or clamping devices **[1, 2006.01]**
17/08 • • Fastening devices, e.g. clips for leather-stretching **[1, 2006.01]**
17/10 • Arrangements for driving parts of leather-working machines **[1, 2006.01]**
17/12 • Safety devices specially adapted for leather-working machines **[1, 2006.01]**
17/14 • Auxiliary devices for leather-working machines, e.g. grinding devices for blading cylinders or dust-removal devices combined with the working machines **[1, 2006.01]**

19/00 Hand tools specially adapted for the treatment of hides, skins, or leather in the manufacture of leather or furs (equipment or tools for saddlery B68C) **[1, 2006.01]**

21/00 Splitting intestines; Cutting intestines longitudinally (cleaning or cutting intestines during processing of meat A22C 17/00) **[1, 2006.01]**

99/00 Subject matter not provided for in other groups of this subclass [2006.01]

C14C TREATING SKINS, HIDES OR LEATHER WITH CHEMICALS, ENZYMES OR MICRO-ORGANISMS, e.g. TANNING, IMPREGNATING OR FINISHING; APPARATUS THEREFOR; COMPOSITIONS FOR TANNING (bleaching of leather or furs D06L; dyeing of leather or furs D06P)

Subclass index

PRETREATMENT.....1/00
TANNING; PASTING; IMPREGNATING.....3/00, 7/00, 9/00
DEGREASING.....5/00
FINISHING; SPECIAL LEATHERS.....11/00, 13/00
APPARATUS.....15/00
SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS.....99/00

1/00 Treating skins or hides with chemicals, enzymes or micro-organisms prior to tanning [1, 2006.01]
1/02 • Curing raw hides **[1, 2006.01]**
1/04 • Soaking **[1, 2006.01]**
1/06 • Facilitating unhairing, e.g. by painting, by liming **[1, 2006.01]**
1/08 • Deliming; Bating; Pickling; Degreasing **[1, 2006.01]**

3/00 Tanning; Compositions for tanning [1, 2006.01]
3/02 • Chemical tanning **[1, 2006.01]**
3/04 • • Mineral tanning **[1, 2006.01]**
3/06 • • • using chromium compounds **[1, 2006.01]**

3/08 • • by organic agents **[1, 2006.01]**
3/10 • • • Vegetable tanning **[1, 2006.01]**
3/12 • • • • using purified or modified vegetable tanning agents **[1, 2006.01]**
3/14 • • • Fat tanning; Oil tanning **[1, 2006.01]**
3/16 • • • using aliphatic aldehydes **[1, 2006.01]**
3/18 • • • using polycondensation products or precursors thereof **[1, 2006.01]**
3/20 • • • • sulfonated **[1, 2006.01]**
3/22 • • • using polymerisation products **[1, 2006.01]**
3/24 • • • using lignin derivatives, e.g. sulfate liquor **[1, 2006.01]**
3/26 • • • using other organic substances, containing halogen **[1, 2006.01]**
3/28 • • Multi-step processes **[1, 2006.01]**
3/30 • • using physical means combined with chemical means **[1, 2006.01]**
3/32 • Recovering tanning agents from leather **[1, 2006.01]**

5/00 Degreasing leather [1, 2006.01]

7/00 Chemical aspects of pasting processes [1, 2006.01]

9/00 Impregnating leather for preserving, waterproofing, making resistant to heat or similar purposes [1, 2006.01]
9/02 • using fatty or oily materials, e.g. fat liquoring **[1, 2006.01]**
9/04 • Fixing tanning agents in the leather **[1, 2006.01]**

11/00 Surface finishing of leather [1, 2006.01]

13/00 Manufacture of special kinds of leather, e.g. vellum [1, 2006.01]
13/02 • Manufacture of technical leather **[1, 2006.01]**

15/00 Apparatus for chemical treatment or washing of hides, skins, or leather [1, 2006.01]

99/00 Subject matter not provided for in other groups of this subclass [2006.01]

METALLURGY

C21 METALLURGY OF IRON

C21B MANUFACTURE OF IRON OR STEEL (preliminary treatment of ferrous ores or scrap C22B 1/00)

Note(s)

This subclass covers :
- the production of iron or steel from source materials, e.g. the production of pig-iron;
- apparatus specially adapted therefor, e.g. blast furnaces, air heaters (furnaces in general F27).

Subclass index

MAKING PIG-IRON
In blast furnaces.....5/00, 7/00, 9/00
Other processes.....11/00
General features.....3/00
MAKING IRON.....13/00, 15/00
MAKING LIQUID STEEL BY DIRECT PROCESSES.....13/00

3/00 General features in the manufacture of pig-iron (mixers for pig-iron C21C 1/06) **[1, 2006.01]**
3/02 • by applying additives, e.g. fluxing agents **[1, 2006.01]**
3/04 • Recovery of by-products, e.g. slag **[1, 2006.01]**
3/06 • • Treatment of liquid slag **[1, 2006.01]**
3/08 • • • Cooling slag **[1, 2006.01]**
3/10 • • • Slag pots; Slag cars **[1, 2006.01]**

5/00 Making pig-iron in the blast furnace [1, 2006.01]
5/02 • Making special pig-iron, e.g. by applying additives, e.g. oxides of other metals **[1, 2006.01]**
5/04 • Making slag of special composition **[1, 2006.01]**
5/06 • using top gas in the blast furnace process **[1, 2006.01]**

7/00 Blast furnaces [1, 2006.01]
7/02 • Internal forms **[1, 2006.01]**
7/04 • with special refractories **[1, 2006.01]**
7/06 • • Linings for furnaces **[1, 2006.01]**
7/08 • Top armourings **[1, 2006.01]**
7/10 • Cooling; Devices therefor **[1, 2006.01]**
7/12 • Opening or sealing the tap holes **[1, 2006.01]**
7/14 • Discharging devices, e.g. for slag **[1, 2006.01]**
7/16 • Tuyères **[1, 2006.01]**
7/18 • Bell-and-hopper arrangements **[1, 2006.01]**
7/20 • • with appliances for distributing the burden **[1, 2006.01]**
7/22 • Dust arresters **[1, 2006.01]**
7/24 • Test rods or other checking devices **[1, 2006.01]**

9/00 Stoves for heating the blast in blast furnaces [1, 2006.01]
9/02 • Brick hot-blast stoves **[1, 2006.01]**
9/04 • • with combustion shaft **[1, 2006.01]**
9/06 • • Linings **[1, 2006.01]**
9/08 • Iron hot-blast stoves **[1, 2006.01]**
9/10 • Other details, e.g. blast mains **[1, 2006.01]**
9/12 • • Hot-blast valves or slides for blast furnaces **[1, 2006.01]**
9/14 • Preheating the combustion air **[1, 2006.01]**
9/16 • Cooling or drying the hot-blast **[1, 2006.01]**

11/00 Making pig-iron other than in blast furnaces [1, 2006.01]
11/02 • in low shaft furnaces **[1, 2006.01]**
11/06 • in rotary kilns **[1, 2006.01]**
11/08 • in hearth-type furnaces **[1, 2006.01]**
11/10 • in electric furnaces **[1, 2006.01]**

13/00 Making spongy iron or liquid steel, by direct processes [1, 2006.01]
13/02 • in shaft furnaces **[1, 2006.01]**
13/04 • in retorts **[1, 2006.01]**
13/06 • in multi-storied furnaces **[1, 2006.01]**
13/08 • in rotary furnaces **[1, 2006.01]**
13/10 • in hearth-type furnaces **[1, 2006.01]**
13/12 • in electric furnaces **[1, 2006.01]**
13/14 • Multi-stage processes **[1, 2006.01]**

15/00 Other processes for the manufacture of iron from iron compounds (by electrolysis C25C 1/06) **[1, 2006.01]**
15/02 • Metallothermic processes, e.g. thermit reduction **[1, 2006.01]**
15/04 • from iron carbonyl **[1, 2006.01]**

C21C PROCESSING OF PIG-IRON, e.g. REFINING, MANUFACTURE OF WROUGHT-IRON OR STEEL; TREATMENT IN MOLTEN STATE OF FERROUS ALLOYS

1/00 Refining of pig-iron; Cast iron [1, 2006.01]
1/02 • Dephosphorising or desulfurising **[1, 2006.01]**
1/04 • Removing impurities other than carbon, phosphorus, or sulfur **[1, 2006.01]**
1/06 • Constructional features of mixers for pig-iron **[1, 2006.01]**
1/08 • Manufacture of cast-iron **[1, 2006.01]**
1/10 • Making spheroidal graphite cast-iron **[1, 2006.01]**

3/00 Manufacture of wrought-iron or wrought-steel [1, 2006.01]

5/00 Manufacture of carbon steel, e.g. plain mild steel, medium carbon steel, or cast-steel [1, 2006.01]
5/02 • Crucible furnace processes **[1, 2006.01]**
5/04 • Manufacture of hearth-furnace steel, e.g. Siemens-Martin steel **[1, 2006.01]**
5/06 • • Processes yielding slags of special composition **[1, 2006.01]**
5/28 • Manufacture of steel in the converter **[1, 2006.01]**
5/30 • • Regulating or controlling the blowing **[1, 2006.01]**
5/32 • • • Blowing from above (C21C 5/35 takes precedence) **[1, 5, 2006.01]**
5/34 • • • Blowing through the bath (C21C 5/35 takes precedence) **[1, 5, 2006.01]**
5/35 • • • Blowing from above and through the bath **[5, 2006.01]**
5/36 • • Processes yielding slags of special composition **[1, 2006.01]**
5/38 • • Removal of waste gases or dust **[1, 2006.01]**
5/40 • • • Offtakes or separating apparatus for converter waste gases or dust **[1, 2006.01]**
5/42 • • Constructional features of converters **[1, 2006.01]**
5/44 • • • Refractory linings **[1, 2006.01]**
5/46 • • • Details or accessories **[1, 2006.01]**
5/48 • • • • Bottoms or tuyères of converters **[1, 2006.01]**
5/50 • • • • Tilting mechanisms for converters **[1, 2006.01]**
5/52 • Manufacture of steel in electric furnaces **[1, 2006.01]**
5/54 • • Processes yielding slags of special composition **[1, 2006.01]**
5/56 • Manufacture of steel by other methods (making liquid steel by direct processes C21B 13/00) **[1, 2006.01]**

7/00 Treating molten ferrous alloys, e.g. steel, not covered by groups C21C 1/00-C21C 5/00 (treating molten metals during moulding B22D 1/00, B22D 27/00) **[1, 2006.01]**
7/04 • Removing impurities by adding a treating agent **[1, 2006.01]**
7/06 • • Deoxidising, e.g. killing **[1, 2, 2006.01]**
7/064 • • Dephosphorising; Desulfurising **[3, 2006.01]**
7/068 • • Decarburising **[3, 2006.01]**
7/072 • • Treatment with gases (C21C 7/06, C21C 7/064, C21C 7/068 take precedence) **[3, 2006.01]**
7/076 • • Use of slags or fluxes as treating agents (C21C 7/06, C21C 7/064, C21C 7/068 take precedence) **[3, 2006.01]**
7/10 • Handling in vacuum **[1, 2006.01]**

C21D MODIFYING THE PHYSICAL STRUCTURE OF FERROUS METALS; GENERAL DEVICES FOR HEAT TREATMENT OF FERROUS OR NON-FERROUS METALS OR ALLOYS; MAKING METAL MALLEABLE BY DECARBURISATION, TEMPERING, OR OTHER TREATMENTS (cementation by diffusion processes C23C; surface treatment of metallic material involving at least one process provided for in class C23 and at least one process covered by this subclass C23F 17/00; unidirectional solidification of eutectic materials or unidirectional demixing of eutectoid materials C30B)

Note(s) [2012.01]

1. Cementation by diffusion processes is classified in C23C.
2. Surface treatments of metallic material involving at least one process provided for in class C23 and at least one process covered by this subclass are classified in group C23F 17/00.

Subclass index

HEAT TREATMENT
General methods or devices.....1/00, 11/00
of cast-iron, of iron alloys.....5/00, 6/00
adapted for particular articles.....9/00
MECHANICAL TREATMENT.....7/00
COMBINED MECHANICAL AND THERMAL TREATMENTS.....8/00
OTHER TREATMENTS.....10/00
DIFFUSION PROCESSES FOR EXTRACTION OF NON-METALS.....3/00

1/00 General methods or devices for heat treatment, e.g. annealing, hardening, quenching or tempering [1, 2006.01]
1/02 • Hardening articles or materials formed by forging or rolling, with no further heating beyond that required for the formation **[1, 2006.01]**
1/04 • with simultaneous application of supersonic waves, magnetic or electric fields **[1, 2006.01]**
1/06 • Surface hardening **[1, 2006.01]**
1/08 • • with flames **[1, 2006.01]**
1/09 • • by direct application of electrical or wave energy; by particle radiation **[3, 2006.01]**
1/10 • • • by electric induction **[1, 3, 2006.01]**
1/18 • Hardening (C21D 1/02 takes precedence); Quenching with or without subsequent tempering (quenching devices C21D 1/62) **[1, 3, 2006.01]**
1/19 • • by interrupted quenching **[3, 2006.01]**

1/20 • • • Isothermal quenching, e.g. bainitic hardening **[1, 3, 2006.01]**
1/22 • • • Martempering **[1, 3, 2006.01]**
1/25 • • Hardening, combined with annealing between 300 °C and 600 °C, i.e. heat refining ("Vergüten") **[3, 2006.01]**
1/26 • Methods of annealing **[1, 2006.01]**
1/28 • • Normalising **[1, 2006.01]**
1/30 • • Stress-relieving **[1, 2006.01]**
1/32 • • Soft annealing, e.g. spheroidising **[1, 2006.01]**
1/34 • Methods of heating (C21D 1/06 takes precedence) **[1, 2006.01]**
1/38 • • Heating by cathodic discharges **[1, 2006.01]**
1/40 • • Direct resistance heating **[1, 2006.01]**
1/42 • • Induction heating **[1, 2006.01]**
1/44 • • in heat-treatment baths **[1, 2006.01]**
1/46 • • • Salt baths **[1, 2006.01]**
1/48 • • • Metal baths **[1, 2006.01]**
1/50 • • • Oil baths **[1, 2006.01]**
1/52 • • with flames **[1, 2006.01]**
1/53 • • Heating in fluidised beds **[3, 2006.01]**
1/54 • Determining when the hardening temperature has been reached by measurement of magnetic or electrical properties **[1, 2006.01]**
1/55 • Hardenability tests, e.g. end-quench tests **[3, 2006.01]**
1/56 • characterised by the quenching agents **[1, 2006.01]**
1/58 • • Oils **[1, 2006.01]**
1/60 • • Aqueous agents **[1, 2006.01]**
1/607 • • Molten salts **[3, 2006.01]**
1/613 • • Gases; Liquefied or solidified normally gaseous material **[3, 2006.01]**
1/62 • Quenching devices **[1, 2006.01]**
1/63 • • for bath quenching **[3, 2006.01]**
1/64 • • • with circulating liquids **[1, 3, 2006.01]**
1/667 • • for spray quenching **[3, 2006.01]**
1/673 • • for die quenching **[3, 2006.01]**
1/68 • Temporary coatings or embedding materials applied before or during heat treatment **[1, 2006.01]**
1/70 • • while heating or quenching **[1, 2006.01]**
1/72 • • during chemical change of surfaces **[1, 2006.01]**
1/74 • Methods of treatment in inert gas, controlled atmosphere, vacuum or pulverulent material **[1, 2006.01]**
1/76 • • Adjusting the composition of the atmosphere **[1, 2006.01]**
1/767 • • with forced gas circulation; Reheating thereof **[3, 2006.01]**
1/773 • • under reduced pressure or vacuum **[3, 2006.01]**
1/78 • Combined heat-treatments not provided for above **[1, 2006.01]**
1/82 • Descaling by thermal stresses (mechanically B21, B23; chemically C23; electrolytically C25F 1/00) **[1, 2006.01]**
1/84 • Controlled slow cooling (cooling-beds for metal rolling B21B 43/00) **[3, 2006.01]**

3/00 Diffusion processes for extraction of non-metals; Furnaces therefor (local protective coatings C21D 1/72) **[1, 2006.01]**
3/02 • Extraction of non-metals **[1, 2006.01]**
3/04 • • Decarburising **[1, 2006.01]**
3/06 • • Extraction of hydrogen **[1, 2006.01]**
3/08 • • Extraction of nitrogen **[1, 2006.01]**
3/10 • Furnaces therefor **[1, 2006.01]**

5/00 Heat treatment of cast-iron [1, 2006.01]
5/02 • improving the malleability of grey cast-iron **[1, 2006.01]**
5/04 • of white cast-iron **[1, 2006.01]**
5/06 • • Malleabilising **[1, 2006.01]**
5/08 • • • with oxidation of carbon **[1, 2006.01]**
5/10 • • • • in gaseous agents **[1, 2006.01]**
5/12 • • • • in solid agents **[1, 2006.01]**
5/14 • • • Graphitising **[1, 2006.01]**
5/16 • • • • Packing agents **[1, 2006.01]**

6/00 Heat treatment of ferrous alloys [2, 2006.01]

Note(s) [2006.01]

1. When classifying in group C21D 6/00, any aspect of the method for the heat treatment of ferrous alloys which is considered to represent information of interest for search may also be classified in groups C21D 1/02-C21D 1/84. This can, for example, be the case when it is considered of interest to enable searching of heat treatment methods of ferrous alloys using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".
2. When classifying in group C21D 6/00, any alloying constituent which is considered to represent information of interest for search may also be classified in groups C22C 38/02-C22C 38/60. This can, for example, be the case when it is considered of interest to enable searching of heat treatment of specific ferrous alloys using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".

6/02 • Hardening by precipitation **[2, 2006.01]**
6/04 • Hardening by cooling below 0° C **[2, 2006.01]**

7/00 Modifying the physical properties of iron or steel by deformation (apparatus for mechanical working of metal B21, B23, B24) **[1, 2006.01]**
7/02 • by cold working **[1, 2006.01]**
7/04 • • of the surface **[1, 2006.01]**
7/06 • • • by shot-peening or the like **[1, 2006.01]**
7/08 • • • by burnishing or the like **[1, 2006.01]**
7/10 • • of the whole cross-section, e.g. of concrete reinforcing bars **[1, 2006.01]**
7/12 • • • by expanding tubular bodies **[1, 2006.01]**
7/13 • by hot working **[1, 2006.01]**

8/00 Modifying the physical properties by deformation combined with, or followed by, heat treatment (hardening articles or materials formed by forging or rolling with no further heating beyond that required for the formation C21D 1/02) **[3, 2006.01]**
8/02 • during manufacturing of plates or strips (C21D 8/12 takes precedence) **[3, 2006.01]**
8/04 • • to produce plates or strips for deep-drawing **[3, 2006.01]**
8/06 • during manufacturing of rods or wires **[3, 2006.01]**
8/08 • • for concrete reinforcement **[3, 2006.01]**
8/10 • during manufacturing of tubular bodies **[3, 2006.01]**
8/12 • during manufacturing of articles with special electromagnetic properties **[3, 2006.01]**

9/00 Heat treatment, e.g. annealing, hardening, quenching or tempering, adapted for particular articles; Furnaces therefor [1, 2006.01]

9/02 • for springs **[1, 2006.01]**
9/04 • for rails **[1, 2006.01]**
9/06 • • with diminished tendency to become wavy **[1, 2006.01]**
9/08 • for tubular bodies or pipes **[1, 2006.01]**
9/10 • • shotgun barrels **[1, 2006.01]**
9/12 • • barrels for ordnance **[1, 2006.01]**
9/14 • • wear-resistant or pressure-resistant pipes **[1, 2006.01]**
9/16 • for explosive shells **[1, 2006.01]**
9/18 • for knives, scythes, scissors, or like hand cutting tools **[1, 2006.01]**
9/20 • for blades for skates **[1, 2006.01]**
9/22 • for drills; for milling cutters; for machine cutting tools **[1, 2006.01]**
9/24 • for saw blades **[1, 2006.01]**
9/26 • for needles; for teeth for card-clothing **[1, 2006.01]**
9/28 • for plain shafts **[1, 2006.01]**
9/30 • for crankshafts; for camshafts **[1, 2006.01]**
9/32 • for gear wheels, worm wheels, or the like **[1, 2006.01]**
9/34 • for tyres; for rims **[1, 2006.01]**
9/36 • for balls; for rollers **[1, 2006.01]**
9/38 • for roll bodies **[1, 2006.01]**
9/40 • for rings; for bearing races **[1, 2006.01]**
9/42 • for armour plate **[1, 2006.01]**
9/44 • for equipment for lining mine shafts, e.g. segments, rings or props **[1, 2006.01]**
9/46 • for sheet metals **[1, 2006.01]**
9/48 • • deep-drawing sheets **[1, 2006.01]**
9/50 • for welded joints **[1, 2006.01]**
9/52 • for wires; for strips **[1, 2006.01]**
9/54 • • Furnaces for treating strips or wire **[1, 2006.01]**
9/56 • • • Continuous furnaces for strip or wire **[1, 2006.01]**
9/567 • • • • with heating in fluidised beds **[3, 2006.01]**
9/573 • • • • with cooling **[3, 2006.01]**
9/58 • • • • with heating by baths **[1, 2006.01]**
9/60 • • • • with induction heating **[1, 2006.01]**
9/62 • • • • with direct resistance heating **[1, 2006.01]**
9/63 • • • • the strip being supported by a cushion of gas **[3, 2006.01]**
9/64 • • • Patenting furnaces **[1, 2006.01]**
9/66 • • • Tower-type furnaces **[1, 2006.01]**
9/663 • • • Bell-type furnaces **[3, 2006.01]**
9/665 • • • • inverted or side-facing **[3, 2006.01]**
9/667 • • • • Multi-station furnaces **[3, 2006.01]**
9/67 • • • • • adapted for treating the charge in vacuum or special atmosphere **[3, 2006.01]**
9/673 • • • • Details, accessories, or equipment peculiar to bell-type furnaces **[3, 2006.01]**
9/675 • • • • Arrangements of charging or discharging devices **[3, 2006.01]**
9/677 • • • • Arrangements of heating devices **[3, 2006.01]**
9/68 • • • Furnace coilers; Hot coilers (cold coilers B21C 47/00) **[1, 2006.01]**
9/70 • Furnaces for ingots, i.e. soaking pits **[1, 2006.01]**

10/00 Modifying the physical properties by methods other than heat treatment or deformation [3, 2006.01]

11/00 Process control or regulation for heat treatments [2, 2006.01]

C22 METALLURGY; FERROUS OR NON-FERROUS ALLOYS; TREATMENT OF ALLOYS OR NON-FERROUS METALS

Note(s) [2012.01]

1. Processes or devices specific to the transformation of iron ore or iron carbonyl into iron, either solid or molten, are classified in subclass C21B.
2. Processes or devices specific to:
   - processing of pig-iron or cast iron;
   - manufacture of wrought-iron, wrought-steel or carbon steel;
   - treatment in molten state of ferrous alloys;

are classified in subclass C21C.
3. The following processes or devices are classified in subclass C21D:
   - processes specific to heat treatment of ferrous alloys or steels;
   - devices for heat treatment of metals or alloys.

C22B PRODUCTION OR REFINING OF METALS (making metallic powder or suspensions thereof B22F 9/00; production of metals by electrolysis or electrophoresis C25)**; PRETREATMENT OF RAW MATERIALS**

Note(s)

In this subclass, groups for obtaining metals include obtaining the metals by non-metallurgical processes, and obtaining metal compounds by metallurgical processes. Thus, for example, group C22B 11/00 covers the production of silver by reduction of ammoniacal silver oxide in solution, and group C22B 17/00 covers the production of cadmium oxide by a metallurgical process. Furthermore, although compounds of arsenic and antimony are classified in C01G, production of the elements themselves is covered by C22B, as well as the production of their compounds by metallurgical processes.

Subclass index

PRETREATMENT OF RAW MATERIALS.....1/00, 4/00, 7/00

PROCESSES FOR OBTAINING METALS.....3/00, 4/00, 5/00
REFINING OR REMELTING METALS.....9/00
OBTAINING SPECIFIC METALS.....11/00-61/00

1/00 Preliminary treatment of ores or scrap [1, 2006.01]
1/02 • Roasting processes (C22B 1/16 takes precedence) **[1, 2006.01]**
1/04 • • Blast roasting **[1, 2006.01]**
1/06 • • Sulfating roasting **[1, 2006.01]**
1/08 • • Chloridising roasting **[1, 2006.01]**
1/10 • • in fluidised form **[1, 2006.01]**
1/11 • Removing sulfur, phosphorus or arsenic, other than by roasting **[2, 2006.01]**
1/14 • Agglomerating; Briquetting; Binding; Granulating **[1, 2006.01]**
1/16 • • Sintering; Agglomerating **[1, 2006.01]**
1/18 • • • in sinter pots **[1, 2006.01]**
1/20 • • • in sintering machines with movable grates **[1, 2006.01]**
1/212 • • • in tunnel furnaces **[2, 2006.01]**
1/214 • • • in shaft furnaces **[2, 2006.01]**
1/216 • • • in rotary furnaces **[2, 2006.01]**
1/22 • • • in other sintering apparatus **[1, 2006.01]**
1/24 • • Binding; Briquetting **[1, 2006.01]**
1/242 • • • with binders **[2, 2006.01]**
1/243 • • • • inorganic **[2, 2006.01]**
1/244 • • • • organic **[2, 2006.01]**
1/245 • • • • • with carbonaceous material for the production of coked agglomerates **[2, 2006.01]**
1/248 • • • of metal scrap or alloys **[2, 2006.01]**
1/26 • Cooling of roasted, sintered, or agglomerated ores **[1, 2006.01]**

3/00 Extraction of metal compounds from ores or concentrates by wet processes [1, 5, 2006.01]

Note(s) [1, 2006.01]

When classifying in this group, the nature of any metal which is considered to represent information of interest for search may also be classified in the main groups only of C22B 11/00-C22B 25/00, in group C22B 19/34 or in any of groups C22B 26/00-C22B 61/00. This can, for example, be the case when it is considered of interest to enable searching for extraction of specific metals or their compounds. Such non-obligatory classification should be given as "additional information".

3/02 • Apparatus therefor **[1, 2006.01]**
3/04 • by leaching (C22B 3/18 takes precedence) **[5, 2006.01]**
3/06 • • in inorganic acid solutions **[5, 2006.01]**
3/08 • • • Sulfuric acid **[5, 2006.01]**
3/10 • • • Hydrochloric acid **[5, 2006.01]**
3/12 • • in inorganic alkaline solutions **[5, 2006.01]**
3/14 • • • containing ammonia or ammonium salts **[5, 2006.01]**
3/16 • • in organic solutions **[5, 2006.01]**
3/18 • with the aid of micro-organisms or enzymes, e.g. bacteria or algae **[5, 2006.01]**
3/20 • Treatment or purification of solutions, e.g. obtained by leaching (C22B 3/18 takes precedence) **[5, 2006.01]**
3/22 • • by physical processes, e.g. by filtration, by magnetic means (C22B 3/26 takes precedence) **[5, 2006.01]**
3/24 • • • by adsorption on solid substances, e.g. by extraction with solid resins **[5, 2006.01]**
3/26 • • by liquid-liquid extraction using organic compounds **[5, 2006.01]**

Note(s) [5]

In groups C22B 3/28-C22B 3/40:
a. the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, compounds are classified in the last appropriate place;
b. when two or more compounds are used successively, each compound is classified as such;
c. mixtures containing two or more compounds covered individually by the same one of groups C22B 3/28-C22B 3/38, are classified only in that group.

3/28 • • • Amines **[5, 2006.01]**
3/30 • • • Oximes **[5, 2006.01]**
3/32 • • • Carboxylic acids **[5, 2006.01]**
3/34 • • • containing sulfur **[5, 2006.01]**
3/36 • • • Heterocyclic compounds (C22B 3/34 takes precedence) **[5, 2006.01]**
3/38 • • • containing phosphorus **[5, 2006.01]**
3/40 • • • Mixtures **[5, 2006.01]**
3/42 • • by ion-exchange extraction **[5, 2006.01]**
3/44 • • by chemical processes (C22B 3/26, C22B 3/42 take precedence) **[5, 2006.01]**
3/46 • • • by substitution, e.g. by cementation **[5, 2006.01]**

4/00 Electrothermal treatment of ores or metallurgical products for obtaining metals or alloys (general methods of refining or remelting metals C22B 9/00; obtaining iron or steel C21B, C21C) **[2, 2006.01]**
4/02 • Light metals **[2, 2006.01]**
4/04 • Heavy metals **[2, 2006.01]**
4/06 • Alloys **[2, 2006.01]**
4/08 • Apparatus **[2, 2006.01]**

5/00 General processes of reducing to metals [1, 2006.01]
5/02 • Dry processes **[1, 2006.01]**
5/04 • • by aluminium, other metals, or silicon **[1, 2006.01]**
5/06 • • by carbides or the like **[1, 2006.01]**
5/08 • • by sulfides; Roasting reaction processes **[1, 2006.01]**
5/10 • • by solid carbonaceous reducing agents **[1, 2006.01]**
5/12 • • by gases **[1, 2006.01]**
5/14 • • • fluidised material **[1, 2006.01]**
5/16 • • with volatilisation or condensation of the metal being produced **[1, 2006.01]**
5/18 • • Reducing step-by-step **[1, 2006.01]**
5/20 • • from metal carbonyls **[1, 2006.01]**

7/00 Working-up raw materials other than ores, e.g. scrap, to produce non-ferrous metals or compounds thereof [1, 2006.01]
7/02 • Working-up flue dust **[1, 2006.01]**
7/04 • Working-up slag **[1, 2006.01]**

9/00 General processes of refining or remelting of metals; Apparatus for electroslag or arc remelting of metals [1, 2006.01]
9/02 • Refining by liquating, filtering, centrifuging, distilling or supersonic wave action **[1, 2006.01]**
9/04 • Refining by applying a vacuum **[1, 3, 2006.01]**
9/05 • Refining by treating with gases, e.g. gas flushing **[3, 2006.01]**
9/10 • with refining or fluxing agents; Use of materials therefor (C22B 9/18 takes precedence) **[1, 3, 2006.01]**
9/14 • Refining in the solid state **[1, 2006.01]**
9/16 • Remelting metals (liquating C22B 9/02) **[3, 2006.01]**
9/18 • • Electroslag remelting **[3, 2006.01]**
9/187 • • • Apparatus therefor, e.g. furnaces **[5, 2006.01]**
9/193 • • • • Moulds, bottom plates or starter plates **[5, 2006.01]**
9/20 • • Arc remelting **[3, 2006.01]**
9/21 • • • Apparatus therefor **[5, 2006.01]**
9/22 • • with heating by wave energy or particle radiation **[3, 2006.01]**

11/00 Obtaining noble metals [1, 2006.01]
11/02 • by dry processes **[1, 2006.01]**
11/06 • Chloridising **[1, 2006.01]**
11/08 • by cyaniding **[1, 2006.01]**
11/10 • by amalgamating **[1, 2006.01]**
11/12 • • Apparatus therefor **[1, 2006.01]**

13/00 Obtaining lead [1, 2006.01]
13/02 • by dry processes **[1, 2006.01]**
13/06 • Refining **[1, 2006.01]**
13/08 • • Separating metals from lead by precipitating, e.g. by Parkes process **[1, 2006.01]**
13/10 • • Separating metals from lead by crystallising, e.g. by Pattison process **[1, 2006.01]**

15/00 Obtaining copper [1, 2006.01]
15/02 • in blast furnaces **[1, 2006.01]**
15/04 • in reverberatory furnaces **[1, 2006.01]**
15/06 • in converters **[1, 2006.01]**
15/14 • Refining **[1, 2006.01]**

17/00 Obtaining cadmium [1, 2006.01]
17/02 • by dry processes **[1, 2006.01]**
17/06 • Refining **[1, 2006.01]**

19/00 Obtaining zinc or zinc oxide [1, 2006.01]
19/02 • Preliminary treatment of ores; Preliminary refining of zinc oxide **[1, 2006.01]**
19/04 • Obtaining zinc by distilling **[1, 2006.01]**
19/06 • • in muffle furnaces **[1, 2006.01]**
19/08 • • in blast furnaces **[1, 2006.01]**
19/10 • • in reverberatory furnaces **[1, 2006.01]**
19/12 • • in crucible furnaces **[1, 2006.01]**
19/14 • • in vertical retorts **[1, 2006.01]**
19/16 • • Distilling vessels **[1, 2006.01]**
19/18 • • • Condensers; Receiving vessels **[1, 2006.01]**
19/20 • Obtaining zinc otherwise than by distilling **[1, 2006.01]**
19/28 • from muffle furnace residues **[1, 2006.01]**
19/30 • from metallic residues or scraps **[1, 2006.01]**
19/32 • Refining zinc **[1, 2006.01]**
19/34 • Obtaining zinc oxide (purifying zinc oxide C01G 9/02) **[1, 2006.01]**
19/36 • • in blast or reverberatory furnaces **[1, 2006.01]**
19/38 • • in rotary furnaces **[1, 2006.01]**

21/00 Obtaining aluminium [1, 2006.01]
21/02 • with reducing **[1, 2006.01]**
21/04 • with alkali metals **[1, 2006.01]**
21/06 • Refining **[1, 2006.01]**

23/00 Obtaining nickel or cobalt [1, 2006.01]
23/02 • by dry processes **[1, 2006.01]**
23/06 • Refining **[1, 2006.01]**

25/00 Obtaining tin [1, 2006.01]
25/02 • by dry processes **[1, 2006.01]**
25/06 • from scrap, especially tin scrap (by electrolytic process C25C 1/14) **[1, 2006.01]**
25/08 • Refining **[1, 2006.01]**

26/00 Obtaining alkali, alkaline earth metals or magnesium [2, 2006.01]
26/10 • Obtaining alkali metals **[2, 2006.01]**
26/12 • • Obtaining lithium **[2, 2006.01]**
26/20 • Obtaining alkaline earth metals or magnesium **[2, 2006.01]**
26/22 • • Obtaining magnesium **[2, 2006.01]**

30/00 Obtaining antimony, arsenic or bismuth [2, 2006.01]
30/02 • Obtaining antimony **[2, 2006.01]**
30/04 • Obtaining arsenic **[2, 2006.01]**
30/06 • Obtaining bismuth **[2, 2006.01]**

34/00 Obtaining refractory metals [2, 2006.01]
34/10 • Obtaining titanium, zirconium or hafnium **[2, 2006.01]**
34/12 • • Obtaining titanium **[2, 2006.01]**
34/14 • • Obtaining zirconium or hafnium **[2, 2006.01]**
34/20 • Obtaining niobium, tantalum or vanadium **[2, 2006.01]**
34/22 • • Obtaining vanadium **[2, 2006.01]**
34/24 • • Obtaining niobium or tantalum **[2, 2006.01]**
34/30 • Obtaining chromium, molybdenum or tungsten **[2, 2006.01]**
34/32 • • Obtaining chromium **[2, 2006.01]**
34/34 • • Obtaining molybdenum **[2, 2006.01]**
34/36 • • Obtaining tungsten **[2, 2006.01]**

35/00 Obtaining beryllium [1, 2006.01]

41/00 Obtaining germanium [1, 2006.01]

43/00 Obtaining mercury [1, 2006.01]

47/00 Obtaining manganese [1, 2006.01]

58/00 Obtaining gallium or indium [2, 2006.01]

59/00 Obtaining rare earth metals [1, 2006.01]

60/00 Obtaining metals of atomic number 87 or higher, i.e. radioactive metals [2, 2006.01]
60/02 • Obtaining thorium, uranium or other actinides **[2, 2006.01]**
60/04 • • Obtaining plutonium **[2, 2006.01]**

61/00 Obtaining metals not elsewhere provided for in this subclass (iron C21) **[1, 2, 2006.01]**

C22C ALLOYS (treatment of alloys C21D, C22F)

Note(s) [2, 4]

In this subclass, the following terms or expressions are used with the meanings indicated:

- "alloys" includes also:
  a. metallic composite materials containing a substantial proportion of fibres or other somewhat larger particles;
  b. ceramic compositions containing free metal bonded to carbides, diamond, oxides, borides, nitrides or silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides, other than as macroscopic reinforcing agents.
- "based on" requires at least 50% by weight of the specified constituent or of the specified group of constituents.

Subclass index

NON-FERROUS ALLOYS
Manufacture....1/00, 3/00
Based on or containing particular metals....5/00-32/00
FERROUS ALLOYS
Manufacture....33/00
Master alloys....35/00
Cast-iron alloys....37/00
Iron alloys....38/00
RADIOACTIVE ALLOYS....43/00
AMORPHOUS ALLOYS....45/00
ALLOYS CONTAINING FIBRES OR FILAMENTS....47/00, 49/00

Non-ferrous alloys, i.e. alloys based essentially on metals other than iron [2, 5]

Note(s) [2009.01]

Groups C22C 43/00-C22C 49/00 take precedence over groups C22C 1/00-C22C 38/00.

1/00 Making non-ferrous alloys (by electrothermic methods C22B 4/00; by electrolysis C25C) **[1, 2006.01]**
1/02 • by melting **[1, 2006.01]**
1/03 • • using master alloys **[2, 2006.01]**
1/04 • by powder metallurgy (C22C 1/08 takes precedence) **[1, 2, 2006.01]**
1/05 • • Mixtures of metal powder with non-metallic powder (C22C 1/08 takes precedence) **[1, 2, 2006.01]**
1/06 • with the use of special agents for refining or deoxidising **[1, 2006.01]**
1/08 • Alloys with open or closed pores **[1, 2006.01]**
1/10 • Alloys containing non-metals (C22C 1/08 takes precedence) **[1, 2, 2006.01]**

3/00 Removing material from non-ferrous alloys to produce alloys of different constitution [1, 2006.01]

5/00 Alloys based on noble metals [1, 2006.01]
5/02 • Alloys based on gold **[2, 2006.01]**
5/04 • Alloys based on a platinum group metal **[2, 2006.01]**
5/06 • Alloys based on silver **[2, 2006.01]**
5/08 • • with copper as the next major constituent **[2, 2006.01]**
5/10 • • with cadmium as the next major constituent **[2, 2006.01]**

7/00 Alloys based on mercury [1, 2006.01]

9/00 Alloys based on copper [1, 2006.01]
9/01 • with aluminium as the next major constituent **[2, 2006.01]**
9/02 • with tin as the next major constituent **[1, 2, 2006.01]**
9/04 • with zinc as the next major constituent **[1, 2, 2006.01]**
9/05 • with manganese as the next major constituent **[2, 2006.01]**
9/06 • with nickel or cobalt as the next major constituent **[1, 2, 2006.01]**
9/08 • with lead as the next major constituent **[1, 2, 2006.01]**
9/10 • with silicon as the next major constituent **[1, 2006.01]**

11/00 Alloys based on lead [1, 2006.01]
11/02 • with an alkali or an alkaline earth metal as the next major constituent **[1, 2, 2006.01]**
11/04 • with copper as the next major constituent **[2, 2006.01]**
11/06 • with tin as the next major constituent **[2, 2006.01]**
11/08 • with antimony or bismuth as the next major constituent **[2, 2006.01]**
11/10 • • with tin **[2, 2006.01]**

12/00 Alloys based on antimony or bismuth [2, 2006.01]

13/00 Alloys based on tin [1, 2006.01]
13/02 • with antimony or bismuth as the next major constituent **[2, 2006.01]**

14/00 Alloys based on titanium [2, 2006.01]

16/00 Alloys based on zirconium [2, 2006.01]

18/00 Alloys based on zinc [2, 2006.01]
18/02 • with copper as the next major constituent **[2, 2006.01]**

18/04 • with aluminium as the next major constituent **[2, 2006.01]**

19/00 Alloys based on nickel or cobalt [1, 2006.01]
19/03 • based on nickel **[2, 2006.01]**
19/05 • • with chromium **[2, 2006.01]**
19/07 • based on cobalt **[2, 2006.01]**

20/00 Alloys based on cadmium [2, 2006.01]

21/00 Alloys based on aluminium [1, 2006.01]
21/02 • with silicon as the next major constituent **[1, 2, 2006.01]**
21/04 • • Modified aluminium-silicon alloys **[1, 2006.01]**
21/06 • with magnesium as the next major constituent **[2, 2006.01]**
21/08 • • with silicon **[2, 2006.01]**
21/10 • with zinc as the next major constituent **[2, 2006.01]**
21/12 • with copper as the next major constituent **[2, 2006.01]**

Note(s) [4]

In groups C22C 21/14-C22C 21/18, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, an alloy is classified in the last appropriate place.

21/14 • • with silicon **[2, 2006.01]**
21/16 • • with magnesium **[2, 2006.01]**
21/18 • • with zinc **[2, 2006.01]**

22/00 Alloys based on manganese [2, 2006.01]

23/00 Alloys based on magnesium [1, 2006.01]
23/02 • with aluminium as the next major constituent **[2, 2006.01]**
23/04 • with zinc or cadmium as the next major constituent **[2, 2006.01]**
23/06 • with a rare earth metal as the next major constituent **[2, 2006.01]**

24/00 Alloys based on an alkali or an alkaline earth metal [2, 2006.01]

25/00 Alloys based on beryllium [1, 2006.01]

26/00 Alloys containing diamond [4, 2006.01]

27/00 Alloys based on rhenium or a refractory metal not mentioned in groups C22C 14/00 or C22C 16/00 [1, 2, 2006.01]
27/02 • Alloys based on vanadium, niobium or tantalum **[2, 2006.01]**
27/04 • Alloys based on tungsten or molybdenum **[2, 2006.01]**
27/06 • Alloys based on chromium **[2, 2006.01]**

28/00 Alloys based on a metal not provided for in groups C22C 5/00-C22C 27/00 [2, 2006.01]

29/00 Alloys based on carbides, oxides, borides, nitrides or silicides, e.g. cermets, or other metal compounds, e. g. oxynitrides, sulfides [1, 4, 2006.01]
29/02 • based on carbides or carbonitrides **[4, 2006.01]**
29/04 • • based on carbonitrides **[4, 2006.01]**
29/06 • • based on carbides, but not containing other metal compounds **[4, 2006.01]**
29/08 • • • based on tungsten carbide **[4, 2006.01]**
29/10 • • • based on titanium carbide **[4, 2006.01]**
29/12 • based on oxides **[4, 2006.01]**
29/14 • based on borides **[4, 2006.01]**
29/16 • based on nitrides **[4, 2006.01]**
29/18 • based on silicides **[4, 2006.01]**

30/00 Alloys containing less than 50% by weight of each constituent [2, 2006.01]

Note(s) [4]

In groups C22C 30/02-C22C 30/06, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, an alloy is classified in the last appropriate place.

30/02 • containing copper **[2, 2006.01]**
30/04 • containing tin or lead **[2, 2006.01]**
30/06 • containing zinc **[2, 2006.01]**

32/00 Non-ferrous alloys containing at least 5% by weight but less than 50% by weight of oxides, carbides, borides, nitrides, silicides or other metal compounds, e.g. oxynitrides, sulfides, whether added as such or formed in situ [2, 2006.01]

Ferrous alloys, i.e. alloys based on iron [2, 5]

33/00 Making ferrous alloys (heat treatment thereof C21D 5/00, C21D 6/00) **[1, 2006.01]**
33/02 • by powder metallurgy **[1, 2006.01]**
33/04 • by melting **[2, 2006.01]**
33/06 • • using master alloys **[2, 2006.01]**
33/08 • Making cast-iron alloys **[2, 2006.01]**
33/10 • • including procedures for adding magnesium **[2, 2006.01]**
33/12 • • • by fluidised injection **[2, 2006.01]**

35/00 Master alloys for iron or steel [1, 2006.01]

Note(s) [2]

In groups C22C 37/00 and C22C 38/00, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, an alloy is classified in the last appropriate place that provides for one of the alloying components.

37/00 Cast-iron alloys [1, 2, 2006.01]
37/04 • containing spheroidal graphite **[1, 2006.01]**
37/06 • containing chromium **[1, 2, 2006.01]**
37/08 • • with nickel **[1, 2006.01]**
37/10 • containing aluminium or silicon **[1, 2006.01]**

38/00 Ferrous alloys, e.g. steel alloys (cast-iron alloys C22C 37/00) **[2, 2006.01]**
38/02 • containing silicon **[2, 2006.01]**
38/04 • containing manganese **[2, 2006.01]**
38/06 • containing aluminium **[2, 2006.01]**
38/08 • containing nickel **[2, 2006.01]**
38/10 • containing cobalt **[2, 2006.01]**
38/12 • containing tungsten, tantalum, molybdenum, vanadium or niobium **[2, 2006.01]**
38/14 • containing titanium or zirconium **[2, 2006.01]**
38/16 • containing copper **[2, 2006.01]**
38/18 • containing chromium **[2, 2006.01]**
38/20 • • with copper **[2, 2006.01]**
38/22 • • with molybdenum or tungsten **[2, 2006.01]**
38/24 • • with vanadium **[2, 2006.01]**
38/26 • • with niobium or tantalum **[2, 2006.01]**
38/28 • • with titanium or zirconium **[2, 2006.01]**

38/30 • • with cobalt **[2, 2006.01]**
38/32 • • with boron **[2, 2006.01]**
38/34 • • with more than 1.5% by weight of silicon **[2, 2006.01]**
38/36 • • with more than 1.7% by weight of carbon **[2, 2006.01]**
38/38 • • with more than 1.5% by weight of manganese **[2, 2006.01]**
38/40 • • with nickel **[2, 2006.01]**
38/42 • • • with copper **[2, 2006.01]**
38/44 • • • with molybdenum or tungsten **[2, 2006.01]**
38/46 • • • with vanadium **[2, 2006.01]**
38/48 • • • with niobium or tantalum **[2, 2006.01]**
38/50 • • • with titanium or zirconium **[2, 2006.01]**
38/52 • • • with cobalt **[2, 2006.01]**
38/54 • • • with boron **[2, 2006.01]**
38/56 • • • with more than 1.7% by weight of carbon **[2, 2006.01]**
38/58 • • • with more than 1.5% by weight of manganese **[2, 2006.01]**
38/60 • containing lead, selenium, tellurium or antimony, or more than 0.04% by weight of sulfur **[2, 2006.01]**

43/00 Alloys containing radioactive materials [2, 2006.01]

45/00 Amorphous alloys [5, 2006.01]
45/02 • with iron as the major constituent **[5, 2006.01]**
45/04 • with nickel or cobalt as the major constituent **[5, 2006.01]**
45/06 • with beryllium as the major constituent **[5, 2006.01]**
45/08 • with aluminium as the major constituent **[5, 2006.01]**
45/10 • with molybdenum, tungsten, niobium, tantalum, titanium, or zirconium as the major constituent **[5, 2006.01]**

Alloys containing fibres or filaments [7]

Note(s) [7]

In groups C22C 47/00 and C22C 49/00, it is desirable to add the indexing codes of groups C22C 101/00, C22C 111/00 and C22C 121/00.

47/00 Making alloys containing metallic or non-metallic fibres or filaments [7, 2006.01]
47/02 • Pretreatment of the fibres or filaments **[7, 2006.01]**
47/04 • • by coating, e.g. with a protective or activated covering **[7, 2006.01]**
47/06 • • by forming the fibres or filaments into a preformed structure, e.g. using a temporary binder to form a mat-like element **[7, 2006.01]**
47/08 • by contacting the fibres or filaments with molten metal, e.g. by infiltrating the fibres or filaments placed in a mould **[7, 2006.01]**
47/10 • • Infiltration in the presence of a reactive atmosphere; Reactive infiltration **[7, 2006.01]**
47/12 • • Infiltration or casting under mechanical pressure **[7, 2006.01]**
47/14 • by powder metallurgy, i.e. by processing mixtures of metal powder and fibres or filaments **[7, 2006.01]**
47/16 • by thermal spraying of the metal, e.g. plasma spraying **[7, 2006.01]**
47/18 • • using a preformed structure of fibres or filaments **[7, 2006.01]**
47/20 • by subjecting to pressure and heat an assembly comprising at least one metal layer or sheet and one layer of fibres or filaments **[7, 2006.01]**

49/00 Alloys containing metallic or non-metallic fibres or filaments [7, 2006.01]
49/02 • characterised by the matrix material **[7, 2006.01]**
49/04 • • Light metals **[7, 2006.01]**
49/06 • • • Aluminium **[7, 2006.01]**
49/08 • • Iron group metals **[7, 2006.01]**
49/10 • • Refractory metals **[7, 2006.01]**
49/11 • • • Titanium **[7, 2006.01]**
49/12 • • Intermetallic matrix material **[7, 2006.01]**
49/14 • characterised by the fibres or filaments **[7, 2006.01]**

Indexing scheme associated with groups C22C 47/00 and C22C 49/00, relating to the nature of the fibrous materials contained in metal-fibrous composites. [7]

101/00 Non-metallic fibres or filaments [7, 2006.01]
101/02 • based on oxides, e.g. oxide ceramic fibres **[7, 2006.01]**
101/04 • • Aluminium oxide **[7, 2006.01]**
101/06 • • Mixed oxides, e.g. aluminium silicate or glass **[7, 2006.01]**
101/08 • based on non-oxides, e.g. non-oxide ceramic fibres **[7, 2006.01]**
101/10 • • Carbon **[7, 2006.01]**
101/12 • • Carbides **[7, 2006.01]**
101/14 • • • Silicon carbide **[7, 2006.01]**
101/16 • • Nitrides **[7, 2006.01]**
101/18 • • • Silicon nitride **[7, 2006.01]**
101/20 • • Boron **[7, 2006.01]**
101/22 • • Borides **[7, 2006.01]**

111/00 Metallic fibres or filaments [7, 2006.01]
111/02 • Refractory metal fibres or filaments, e.g. tungsten fibres **[7, 2006.01]**

121/00 Pretreated fibres or filaments [7, 2006.01]
121/02 • Coated fibres or filaments, e.g. ceramic fibres with protective coatings **[7, 2006.01]**

C22F CHANGING THE PHYSICAL STRUCTURE OF NON-FERROUS METALS OR NON-FERROUS ALLOYS (processes specific to heat treatment of ferrous alloys or steels and devices for heat treatment of metals or alloys C21D)

Note(s) [2012.01]

Surface treatments of metallic material involving at least one process provided for in class C23 and at least one process covered by this subclass are classified in group C23F 17/00.

1/00 Changing the physical structure of non-ferrous metals or alloys by heat treatment or by hot or cold working [1, 2006.01]

1/02 • in inert or controlled atmosphere or vacuum **[1, 2006.01]**

1/04 • of aluminium or alloys based thereon **[1, 2006.01]**

1/043 • • of alloys with silicon as the next major constituent **[4, 2006.01]**

1/047 • • of alloys with magnesium as the next major constituent **[4, 2006.01]**

1/05 • • of alloys of the Al-Si-Mg type, i.e. containing silicon and magnesium in approximately equal proportions **[4, 2006.01]**

1/053 • • of alloys with zinc as the next major constituent **[4, 2006.01]**

1/057 • • of alloys with copper as the next major constituent **[4, 2006.01]**

1/06 • of magnesium or alloys based thereon **[1, 2006.01]**

1/08 • of copper or alloys based thereon **[1, 2006.01]**

1/10 • of nickel or cobalt or alloys based thereon **[1, 2006.01]**

1/11 • of chromium or alloys based thereon **[1, 2006.01]**

1/12 • of lead or alloys based thereon **[1, 2006.01]**

1/14 • of noble metals or alloys based thereon **[1, 2006.01]**

1/16 • of other metals or alloys based thereon **[1, 2006.01]**

1/18 • • High-melting or refractory metals or alloys based thereon **[1, 2006.01]**

3/00 Changing the physical structure of non-ferrous metals or alloys by special physical methods, e.g. treatment with neutrons [1, 2006.01]

3/02 • by solidifying a melt controlled by supersonic waves or electric or magnetic fields **[1, 2006.01]**

C23 COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL; CHEMICAL SURFACE TREATMENT; DIFFUSION TREATMENT OF METALLIC MATERIAL; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL; INHIBITING CORROSION OF METALLIC MATERIAL OR INCRUSTATION IN GENERAL

Note(s) [4]

In this class, the following expression is used with the meaning indicated:

- "metallic material" covers:
  a. metals;
  b. alloys (attention is drawn to the Note following the title of subclass C22C).

C23C COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL; SURFACE TREATMENT OF METALLIC MATERIAL BY DIFFUSION INTO THE SURFACE, BY CHEMICAL CONVERSION OR SUBSTITUTION; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL (applying liquids or other fluent materials to surfaces in general B05; making metal-coated products by extrusion B21C 23/22; covering with metal by connecting pre-existing layers to articles, see the relevant places, e.g. B21D 39/00, B23K; working of metal by the action of a high concentration of electric current on a workpiece using an electrode B23H; metallising of glass C03C; metallising mortars, concrete, artificial stone, ceramics or natural stone C04B 41/00; paints, varnishes, lacquers C09D; enamelling of, or applying a vitreous layer to, metals C23D; inhibiting corrosion of metallic material or incrustation in general C23F; treating metal surfaces or coating of metals by electrolysis or electrophoresis C25D, C25F; single-crystal film growth C30B; by metallising textiles D06M 11/83; decorating textiles by locally metallising D06Q 1/04; details of scanning-probe apparatus, in general G01Q; manufacture of semiconductor devices H01L; manufacture of printed circuits H05K) **[4]**

Note(s) [4]

In this subclass, an operation is considered as pretreatment or after-treatment when it is specially adapted for, but quite distinct from, the coating process concerned and constitutes an independent operation. If an operation results in the formation of a permanent sub- or upper layer, it is not considered as pretreatment or after-treatment and is classified as a multi-coating process.

Subclass index

COATING USING MOLTEN COATING MATERIAL.....2/00-6/00
SOLID STATE DIFFUSION COATING.....8/00-12/00
COATING BY VACUUM EVAPORATION, SPUTTERING OR ION-IMPLANTATION.....14/00
CHEMICAL COATING.....16/00-20/00
CONTACT PLATING.....18/00
CHEMICAL SURFACE TREATMENT.....22/00
COATING USING INORGANIC POWDER.....24/00
OTHER COATING, MULTI-LAYER COATING.....26/00, 28/00
COMPOSITION OF METALLIC COATING MATERIAL.....30/00

Coating by applying the coating material in the molten state [4]

2/00 Hot-dipping or immersion processes for applying the coating material in the molten state without affecting the shape; Apparatus therefor [4, 2006.01]

2/02 • Pretreatment of the material to be coated, e.g. for coating on selected surface areas (C23C 2/30 takes precedence) **[4, 2006.01]**

2/04 • characterised by the coating material **[4, 2006.01]**

2/06 • • Zinc or cadmium or alloys based thereon **[4, 2006.01]**

2/08 • • Tin or alloys based thereon **[4, 2006.01]**

2/10 • • Lead or alloys based thereon **[4, 2006.01]**

2/12 • • Aluminium or alloys based thereon **[4, 2006.01]**

2/14 • Removing excess of molten coatings; Controlling or regulating the coating thickness (controlling or regulating thickness in general G05D 5/02) **[4, 2006.01]**

2/16 • • using fluids under pressure, e.g. air knives **[4, 2006.01]**

2/18 • • • Removing excess of molten coatings from elongated material **[4, 2006.01]**

2/20 • • • • Strips; Plates **[4, 2006.01]**

2/22 • • by rubbing, e.g. using knives **[4, 2006.01]**

2/24 • • using magnetic or electric fields **[4, 2006.01]**

2/26 • After-treatment (C23C 2/14 takes precedence) **[4, 2006.01]**

2/28 • • Thermal after-treatment, e.g. treatment in oil bath **[4, 2006.01]**

2/30 • Fluxes or coverings on molten baths (C23C 2/22 takes precedence) **[4, 2006.01]**

2/32 • using vibratory energy applied to the bath or substrate (C23C 2/14 takes precedence) **[4, 2006.01]**

2/34 • characterised by the shape of the material to be treated (C23C 2/14 takes precedence) **[4, 2006.01]**

2/36 • • Elongated material **[4, 2006.01]**

2/38 • • • Wires; Tubes **[4, 2006.01]**

2/40 • • • Plates; Strips **[4, 2006.01]**

4/00 Coating by spraying the coating material in the molten state, e.g. by flame, plasma or electric discharge *(build-up welding B23K, e.g. B23K 5/18, B23K 9/04)* ***[4, 2006.01, 2016.01]***

4/01 • Selective coating, e.g. pattern coating, without pre-treatment of the material to be coated ***[2016.01]***

4/02 • Pretreatment of the material to be coated, e.g. for coating on selected surface areas **[4, 2006.01]**

4/04 • characterised by the coating material **[4, 2006.01]**

4/06 • • Metallic material ***[4, 2006.01, 2016.01]***

4/067 • • • containing free particles of non-metal elements, e.g. carbon, silicon, boron, phosphorus or arsenic ***[2016.01]***

4/073 • • • containing MCrAl or MCrAlY alloys, where M is nickel, cobalt or iron, with or without non-metal elements ***[2016.01]***

4/08 • • • containing only metal elements (C23C 4/073 takes precedence) ***[4, 2006.01, 2016.01]***

4/10 • • Oxides, borides, carbides, nitrides or silicides; Mixtures thereof ***[4, 2006.01, 2016.01]***

4/11 • • • Oxides ***[2016.01]***

4/12 • characterised by the method of spraying ***[4, 2006.01, 2016.01]***

Note(s) [2016.01]

In this group, multi-aspect classification is applied, so that subject matter characterised by aspects covered by more than one of its subgroups should be classified in each of those subgroups.

4/123 • • Spraying molten metal ***[2016.01]***

4/126 • • Detonation spraying ***[2016.01]***

4/129 • • Flame spraying ***[2016.01]***

4/131 • • Wire arc spraying ***[2016.01]***

4/134 • • Plasma spraying ***[2016.01]***

4/137 • • Spraying in vacuum or in an inert atmosphere ***[2016.01]***

4/14 • • for coating elongate material ***[4, 2006.01, 2016.01]***

4/16 • • • Wires; Tubes ***[4, 2006.01, 2016.01]***

4/18 • After-treatment **[4, 2006.01]**

6/00 Coating by casting molten material on the substrate [4, 2006.01]

Solid state diffusion into metallic material surfaces [4]

8/00 Solid state diffusion of only non-metal elements into metallic material surfaces (diffusion of silicon C23C 10/00)**; Chemical surface treatment of metallic material by reaction of the surface with a reactive gas, leaving reaction products of surface material in the coating, e.g. conversion coatings, passivation of metals** (C23C 14/00 takes precedence) **[4, 2006.01]**

8/02 • Pretreatment of the material to be coated (C23C 8/04 takes precedence) **[4, 2006.01]**

8/04 • Treatment of selected surface areas, e.g. using masks **[4, 2006.01]**

8/06 • using gases **[4, 2006.01]**

8/08 • • only one element being applied **[4, 2006.01]**

8/10 • • • Oxidising **[4, 2006.01]**

8/12 • • • • using elemental oxygen or ozone **[4, 2006.01]**

8/14 • • • • • Oxidising of ferrous surfaces **[4, 2006.01]**

8/16 • • • • using oxygen-containing compounds, e.g. H_2O, CO_2 **[4, 2006.01]**

8/18 • • • • • Oxidising of ferrous surfaces **[4, 2006.01]**

8/20 • • • Carburising **[4, 2006.01]**

8/22 • • • • of ferrous surfaces **[4, 2006.01]**

8/24 • • • Nitriding **[4, 2006.01]**

8/26 • • • • of ferrous surfaces **[4, 2006.01]**

8/28 • • more than one element being applied in one step **[4, 2006.01]**

8/30 • • • Carbo-nitriding **[4, 2006.01]**

8/32 • • • • of ferrous surfaces **[4, 2006.01]**

8/34 • • more than one element being applied in more than one step **[4, 2006.01]**

8/36 • • using ionised gases, e.g. ionitriding (discharge tubes with provision for introducing objects or material to be exposed to the discharge H01J 37/00) **[4, 2006.01]**

8/38 • • • Treatment of ferrous surfaces **[4, 2006.01]**

8/40 • using liquids, e.g. salt baths, liquid suspensions **[4, 2006.01]**

8/42 • • only one element being applied **[4, 2006.01]**

8/44 • • • Carburising **[4, 2006.01]**

8/46 • • • • of ferrous surfaces **[4, 2006.01]**

8/48 • • • Nitriding **[4, 2006.01]**

8/50 • • • • of ferrous surfaces **[4, 2006.01]**

8/52 • • more than one element being applied in one step **[4, 2006.01]**
8/54 • • • Carbo-nitriding **[4, 2006.01]**
8/56 • • • • of ferrous surfaces **[4, 2006.01]**
8/58 • • more than one element being applied in more than one step **[4, 2006.01]**
8/60 • using solids, e.g. powders, pastes (using liquid suspensions of solids C23C 8/40) **[4, 2006.01]**
8/62 • • only one element being applied **[4, 2006.01]**
8/64 • • • Carburising **[4, 2006.01]**
8/66 • • • • of ferrous surfaces **[4, 2006.01]**
8/68 • • • Boronising **[4, 2006.01]**
8/70 • • • • of ferrous surfaces **[4, 2006.01]**
8/72 • • more than one element being applied in one step **[4, 2006.01]**
8/74 • • • Carbo-nitriding **[4, 2006.01]**
8/76 • • • • of ferrous surfaces **[4, 2006.01]**
8/78 • • more than one element being applied in more than one step **[4, 2006.01]**
8/80 • After-treatment **[4, 2006.01]**

10/00 Solid state diffusion of only metal elements or silicon into metallic material surfaces [4, 2006.01]
10/02 • Pretreatment of the material to be coated (C23C 10/04 takes precedence) **[4, 2006.01]**
10/04 • Diffusion into selected surface areas, e.g. using masks **[4, 2006.01]**
10/06 • using gases **[4, 2006.01]**
10/08 • • only one element being diffused **[4, 2006.01]**
10/10 • • • Chromising **[4, 2006.01]**
10/12 • • • • of ferrous surfaces **[4, 2006.01]**
10/14 • • more than one element being diffused in one step **[4, 2006.01]**
10/16 • • more than one element being diffused in more than one step **[4, 2006.01]**
10/18 • using liquids, e.g. salt baths, liquid suspensions **[4, 2006.01]**
10/20 • • only one element being diffused **[4, 2006.01]**
10/22 • • • Metal melt containing the element to be diffused **[4, 2006.01]**
10/24 • • • Salt bath containing the element to be diffused **[4, 2006.01]**
10/26 • • more than one element being diffused **[4, 2006.01]**
10/28 • using solids, e.g. powders, pastes **[4, 2006.01]**
10/30 • • using a layer of powder or paste on the surface (using liquid suspensions of solids C23C 10/18) **[4, 2006.01]**
10/32 • • • Chromising **[4, 2006.01]**
10/34 • • Embedding in a powder mixture, i.e. pack cementation **[4, 2006.01]**
10/36 • • • only one element being diffused **[4, 2006.01]**
10/38 • • • • Chromising **[4, 2006.01]**
10/40 • • • • • of ferrous surfaces **[4, 2006.01]**
10/42 • • • • • • in the presence of volatile transport additives, e.g. halogenated substances **[4, 2006.01]**
10/44 • • • • Siliconising **[4, 2006.01]**
10/46 • • • • • of ferrous surfaces **[4, 2006.01]**
10/48 • • • • Aluminising **[4, 2006.01]**
10/50 • • • • • of ferrous surfaces **[4, 2006.01]**
10/52 • • • more than one element being diffused in one step **[4, 2006.01]**
10/54 • • • • Diffusion of at least chromium **[4, 2006.01]**
10/56 • • • • • and at least aluminium **[4, 2006.01]**
10/58 • • • more than one element being diffused in more than one step **[4, 2006.01]**
10/60 • After-treatment **[4, 2006.01]**

12/00 Solid state diffusion of at least one non-metal element other than silicon and at least one metal element or silicon into metallic material surfaces [4, 2006.01]
12/02 • Diffusion in one step **[4, 2006.01]**

Coating by vacuum evaporation, by sputtering or by ion implantation [4]

14/00 Coating by vacuum evaporation, by sputtering or by ion implantation of the coating forming material (discharge tubes with provision for introducing objects or material to be exposed to the discharge H01J 37/00) **[4, 2006.01]**

14/02 • Pretreatment of the material to be coated (C23C 14/04 takes precedence) **[4, 2006.01]**
14/04 • Coating on selected surface areas, e.g. using masks **[4, 2006.01]**
14/06 • characterised by the coating material (C23C 14/04 takes precedence) **[4, 2006.01]**
14/08 • • Oxides (C23C 14/10 takes precedence) **[4, 2006.01]**
14/10 • • Glass or silica **[4, 2006.01]**
14/12 • • Organic material **[4, 2006.01]**
14/14 • • Metallic material, boron or silicon **[4, 2006.01]**
14/16 • • • on metallic substrates or on substrates of boron or silicon **[4, 2006.01]**
14/18 • • • on other inorganic substrates **[4, 2006.01]**
14/20 • • • on organic substrates **[4, 2006.01]**
14/22 • characterised by the process of coating **[4, 2006.01]**
14/24 • • Vacuum evaporation **[4, 2006.01]**
14/26 • • • by resistance or inductive heating of the source **[4, 2006.01]**
14/28 • • • by wave energy or particle radiation (C23C 14/32-C23C 14/48 take precedence) **[4, 2006.01]**
14/30 • • • • by electron bombardment **[4, 2006.01]**
14/32 • • • by explosion; by evaporation and subsequent ionisation of the vapours (C23C 14/34-C23C 14/48 take precedence) **[4, 2006.01]**
14/34 • • Sputtering **[4, 2006.01]**
14/35 • • • by application of a magnetic field, e.g. magnetron sputtering **[5, 2006.01]**
14/36 • • • Diode sputtering (C23C 14/35 takes precedence) **[4, 5, 2006.01]**
14/38 • • • • by direct current glow discharge **[4, 2006.01]**
14/40 • • • • with alternating current discharge, e.g. high-frequency discharge **[4, 2006.01]**
14/42 • • • Triode sputtering (C23C 14/35 takes precedence) **[4, 5, 2006.01]**
14/44 • • • • by application of high frequencies and additional direct voltages **[4, 2006.01]**
14/46 • • • by ion beam produced by an external ion source (C23C 14/40 takes precedence) **[4, 2006.01]**
14/48 • • Ion implantation **[4, 2006.01]**
14/50 • • Substrate holders **[4, 2006.01]**
14/52 • • Means for observation of the coating process **[4, 2006.01]**
14/54 • • Controlling or regulating the coating process (controlling or regulating in general G05) **[4, 2006.01]**

14/56 • • Apparatus specially adapted for continuous coating; Arrangements for maintaining the vacuum, e.g. vacuum locks **[4, 2006.01]**

14/58 • After-treatment **[4, 2006.01]**

Chemical deposition or plating by decomposition; Contact plating [4]

16/00 Chemical coating by decomposition of gaseous compounds, without leaving reaction products of surface material in the coating, i.e. chemical vapour deposition (CVD) processes (reactive sputtering or vacuum evaporation C23C 14/00) **[4, 2006.01]**

16/01 • on temporary substrates, e.g. on substrates subsequently removed by etching **[7, 2006.01]**

16/02 • Pretreatment of the material to be coated (C23C 16/04 takes precedence) **[4, 2006.01]**

16/04 • Coating on selected surface areas, e.g. using masks **[4, 2006.01]**

16/06 • characterised by the deposition of metallic material **[4, 2006.01]**

16/08 • • from metal halides **[4, 2006.01]**

16/10 • • • Deposition of chromium only **[4, 2006.01]**

16/12 • • • Deposition of aluminium only **[4, 2006.01]**

16/14 • • • Deposition of only one other metal element **[4, 2006.01]**

16/16 • • from metal carbonyl compounds **[4, 2006.01]**

16/18 • • from metallo-organic compounds **[4, 2006.01]**

16/20 • • • Deposition of aluminium only **[4, 2006.01]**

16/22 • characterised by the deposition of inorganic material, other than metallic material **[4, 2006.01]**

16/24 • • Deposition of silicon only **[4, 2006.01]**

16/26 • • Deposition of carbon only **[4, 2006.01]**

16/27 • • • Diamond only **[7, 2006.01]**

16/28 • • Deposition of only one other non-metal element **[4, 2006.01]**

16/30 • • Deposition of compounds, mixtures or solid solutions, e.g. borides, carbides, nitrides **[4, 2006.01]**

16/32 • • • Carbides **[4, 2006.01]**

16/34 • • • Nitrides **[4, 2006.01]**

16/36 • • • Carbo-nitrides **[4, 2006.01]**

16/38 • • • Borides **[4, 2006.01]**

16/40 • • • Oxides **[4, 2006.01]**

16/42 • • • Silicides **[4, 2006.01]**

16/44 • characterised by the method of coating (C23C 16/04 takes precedence) **[4, 2006.01]**

16/442 • • using fluidised bed processes **[7, 2006.01]**

16/448 • • characterised by the method used for generating reactive gas streams, e.g. by evaporation or sublimation of precursor materials **[7, 2006.01]**

16/452 • • • by activating reactive gas streams before introduction into the reaction chamber, e.g. by ionization or by addition of reactive species **[7, 2006.01]**

16/453 • • passing the reaction gases through burners or torches, e.g. atmospheric pressure CVD (C23C 16/513 takes precedence; for flame or plasma spraying of coating material in the molten state C23C 4/00) **[7, 2006.01]**

16/455 • • characterised by the method used for introducing gases into the reaction chamber or for modifying gas flows in the reaction chamber **[7, 2006.01]**

16/458 • • characterised by the method used for supporting substrates in the reaction chamber **[7, 2006.01]**

16/46 • • characterised by the method used for heating the substrate (C23C 16/48, C23C 16/50 take precedence) **[4, 2006.01]**

16/48 • • by irradiation, e.g. photolysis, radiolysis, particle radiation **[4, 2006.01]**

16/50 • • using electric discharges **[4, 2006.01]**

16/503 • • • using dc or ac discharges **[7, 2006.01]**

16/505 • • • using radio frequency discharges **[7, 2006.01]**

16/507 • • • • using external electrodes, e.g. in tunnel type reactors **[7, 2006.01]**

16/509 • • • • using internal electrodes **[7, 2006.01]**

16/511 • • • using microwave discharges **[7, 2006.01]**

16/513 • • • using plasma jets **[7, 2006.01]**

16/515 • • • using pulsed discharges **[7, 2006.01]**

16/517 • • • using a combination of discharges covered by two or more of groups C23C 16/503-C23C 16/515 **[7, 2006.01]**

16/52 • • Controlling or regulating the coating process (controlling or regulating in general G05) **[4, 2006.01]**

16/54 • • Apparatus specially adapted for continuous coating **[4, 2006.01]**

16/56 • After-treatment **[4, 2006.01]**

18/00 Chemical coating by decomposition of either liquid compounds or solutions of the coating forming compounds, without leaving reaction products of surface material in the coating (chemical surface reaction C23C 8/00, C23C 22/00)**; Contact plating [4, 2006.01]**

Note(s) [4]

This group covers also suspensions containing reactive liquids and non-reactive solid particles.

18/02 • by thermal decomposition **[4, 2006.01]**

18/04 • • Pretreatment of the material to be coated (C23C 18/06 takes precedence) **[4, 2006.01]**

18/06 • • Coating on selected surface areas, e.g. using masks **[4, 2006.01]**

18/08 • • characterised by the deposition of metallic material **[4, 2006.01]**

18/10 • • • Deposition of aluminium only **[4, 2006.01]**

18/12 • • characterised by the deposition of inorganic material other than metallic material **[4, 2006.01]**

18/14 • Decomposition by irradiation, e.g. photolysis, particle radiation **[4, 2006.01]**

18/16 • by reduction or substitution, i.e. electroless plating (C23C 18/54 takes precedence) **[4, 2006.01]**

18/18 • • Pretreatment of the material to be coated **[4, 2006.01]**

18/20 • • • of organic surfaces, e.g. resins **[4, 2006.01]**

18/22 • • • • Roughening, e.g. by etching **[4, 2006.01]**

18/24 • • • • • using acid aqueous solutions **[4, 2006.01]**

18/26 • • • • • using organic liquids **[4, 2006.01]**

18/28 • • • • Sensitising or activating **[4, 2006.01]**

18/30 • • • • • Activating **[4, 2006.01]**

18/31 • • Coating with metals **[5, 2006.01]**

18/32 • • • Coating with one of iron, cobalt or nickel; Coating with mixtures of phosphorus or boron with one of these metals **[4, 5, 2006.01]**

18/34 • • • • using reducing agents **[4, 5, 2006.01]**

18/36 • • • • • using hypophosphites **[4, 5, 2006.01]**

18/38 • • • Coating with copper **[4, 5, 2006.01]**

18/40 • • • • using reducing agents **[4, 5, 2006.01]**

18/42 • • • Coating with noble metals **[4, 5, 2006.01]**

18/44 • • • • using reducing agents **[4, 5, 2006.01]**

18/48 • • Coating with alloys **[4, 5, 2006.01]**
18/50 • • • with alloys based on iron, cobalt or nickel (C23C 18/32 takes precedence) **[4, 5, 2006.01]**
18/52 • • using reducing agents for coating with metallic material not provided for in a single one of groups C23C 18/32-C23C 18/50 **[4, 2006.01]**
18/54 • Contact plating, i.e. electroless electrochemical plating **[4, 2006.01]**

20/00 Chemical coating by decomposition of either solid compounds or suspensions of the coating forming compounds, without leaving reaction products of surface material in the coating (chemical surface reaction C23C 8/00, C23C 22/00) **[4, 2006.01]**

Note(s) [4]

This group covers also suspensions containing non-reactive liquids and reactive solid particles.

20/02 • Coating with metallic material **[4, 2006.01]**
20/04 • • with metals **[4, 2006.01]**
20/06 • Coating with inorganic material, other than metallic material **[4, 2006.01]**
20/08 • • with compounds, mixtures or solid solutions, e.g. borides, carbides, nitrides **[4, 2006.01]**

22/00 Chemical surface treatment of metallic material by reaction of the surface with a reactive liquid, leaving reaction products of surface material in the coating, e.g. conversion coatings, passivation of metals (wash primers C09D 5/12) **[4, 2006.01]**

Note(s) [4]

1. This group covers also suspensions containing reactive liquids and non-reactive solid particles.
2. Rejuvenating of the bath is classified in the appropriate place for the specific bath composition.

Note(s) [4]

In groups C23C 22/02-C23C 22/86, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

22/02 • using non-aqueous solutions **[4, 2006.01]**
22/03 • • containing phosphorus compounds **[4, 2006.01]**
22/04 • • containing hexavalent chromium compounds **[4, 2006.01]**
22/05 • using aqueous solutions **[5, 2006.01]**
22/06 • • using aqueous acidic solutions with pH < 6 **[4, 5, 2006.01]**
22/07 • • • containing phosphates **[4, 5, 2006.01]**
22/08 • • • • Orthophosphates **[4, 5, 2006.01]**
22/10 • • • • • containing oxidants **[4, 5, 2006.01]**
22/12 • • • • • containing zinc cations **[4, 5, 2006.01]**
22/13 • • • • • • containing also nitrate or nitrite anions **[4, 5, 2006.01]**
22/14 • • • • • • containing also chlorate anions **[4, 5, 2006.01]**
22/16 • • • • • • containing also peroxy-compounds **[4, 5, 2006.01]**
22/17 • • • • • • containing also organic acids **[4, 5, 2006.01]**
22/18 • • • • • containing manganese cations **[4, 5, 2006.01]**
22/20 • • • • • containing aluminium cations **[4, 5, 2006.01]**
22/22 • • • • • • containing alkaline earth metal cations **[4, 5, 2006.01]**
22/23 • • • • Condensed phosphates **[4, 5, 2006.01]**
22/24 • • • containing hexavalent chromium compounds **[4, 5, 2006.01]**
22/26 • • • • containing also organic compounds **[4, 5, 2006.01]**
22/27 • • • • • Acids **[4, 5, 2006.01]**
22/28 • • • • • Macromolecular compounds **[4, 5, 2006.01]**
22/30 • • • • containing also trivalent chromium **[4, 5, 2006.01]**
22/32 • • • • containing also pulverulent metals **[4, 5, 2006.01]**
22/33 • • • • containing also phosphates **[4, 5, 2006.01]**
22/34 • • • containing fluorides or complex fluorides **[4, 5, 2006.01]**
22/36 • • • • containing also phosphates **[4, 5, 2006.01]**
22/37 • • • • containing also hexavalent chromium compounds **[4, 5, 2006.01]**
22/38 • • • • • containing also phosphates **[4, 5, 2006.01]**
22/40 • • • containing molybdates, tungstates or vanadates **[4, 5, 2006.01]**
22/42 • • • • containing also phosphates **[4, 5, 2006.01]**
22/43 • • • • containing also hexavalent chromium compounds **[4, 5, 2006.01]**
22/44 • • • • containing also fluorides or complex fluorides **[4, 5, 2006.01]**
22/46 • • • containing oxalates **[4, 5, 2006.01]**
22/47 • • • • containing also phosphates **[4, 5, 2006.01]**
22/48 • • • not containing phosphates, hexavalent chromium compounds, fluorides or complex fluorides, molybdates, tungstates, vanadates or oxalates **[4, 5, 2006.01]**
22/50 • • • • Treatment of iron or alloys based thereon **[4, 5, 2006.01]**
22/52 • • • • Treatment of copper or alloys based thereon **[4, 5, 2006.01]**
22/53 • • • • Treatment of zinc or alloys based thereon **[4, 5, 2006.01]**
22/54 • • • • Treatment of refractory metals or alloys based thereon **[4, 5, 2006.01]**
22/56 • • • • Treatment of aluminium or alloys based thereon **[4, 5, 2006.01]**
22/57 • • • • Treatment of magnesium or alloys based thereon **[4, 5, 2006.01]**
22/58 • • • • Treatment of other metallic material **[4, 5, 2006.01]**
22/60 • • using alkaline aqueous solutions with pH > 8 **[4, 5, 2006.01]**
22/62 • • • Treatment of iron or alloys based thereon **[4, 5, 2006.01]**
22/63 • • • Treatment of copper or alloys based thereon **[4, 5, 2006.01]**
22/64 • • • Treatment of refractory metals or alloys based thereon **[4, 5, 2006.01]**
22/66 • • • Treatment of aluminium or alloys based thereon **[4, 5, 2006.01]**
22/67 • • • • with solutions containing hexavalent chromium **[4, 5, 2006.01]**
22/68 • • using aqueous solutions with pH between 6 and 8 **[4, 5, 2006.01]**
22/70 • using melts **[4, 2006.01]**
22/72 • • Treatment of iron or alloys based thereon **[4, 2006.01]**

22/73 • characterised by the process **[4, 2006.01]**
22/74 • • for obtaining burned-in conversion coatings **[4, 2006.01]**
22/76 • • Applying the liquid by spraying **[4, 2006.01]**
22/77 • • Controlling or regulating of the coating process (controlling or regulating in general G05) **[4, 2006.01]**
22/78 • Pretreatment of the material to be coated **[4, 2006.01]**
22/80 • • with solutions containing titanium or zirconium compounds **[4, 2006.01]**
22/82 • After-treatment **[4, 2006.01]**
22/83 • • Chemical after-treatment **[4, 2006.01]**
22/84 • • Dyeing **[4, 2006.01]**
22/86 • Regeneration of coating baths **[4, 2006.01]**

24/00 Coating starting from inorganic powder (spraying of the coating material in molten state C23C 4/00; solid state diffusion C23C 8/00-C23C 12/00; manufacture of composite layers, workpieces or articles by sintering metallic powder B22F 7/00; friction welding B23K 20/12) **[4, 2006.01]**
24/02 • by application of pressure only **[4, 2006.01]**
24/04 • • Impact or kinetic deposition of particles **[4, 2006.01]**
24/06 • • Compressing powdered coating material, e.g. by milling **[4, 2006.01]**
24/08 • by application of heat or pressure and heat (C23C 24/04 takes precedence) **[4, 2006.01]**
24/10 • • with intermediate formation of a liquid phase in the layer **[4, 2006.01]**

26/00 Coating not provided for in groups C23C 2/00-C23C 24/00 [4, 2006.01]
26/02 • applying molten material to the substrate (applying melts to surfaces, in general B05) **[4, 2006.01]**

28/00 Coating for obtaining at least two superposed coatings either by methods not provided for in a single one of main groups C23C 2/00-C23C 26/00, or by combinations of methods provided for in subclasses C23C and C25D [4, 2006.01]
28/02 • only coatings of metallic material **[4, 2006.01]**
28/04 • only coatings of inorganic non-metallic material **[4, 2006.01]**

30/00 Coating with metallic material characterised only by the composition of the metallic material, i.e. not characterised by the coating process (C23C 26/00, C23C 28/00 take precedence) **[4, 2006.01]**

C23D ENAMELLING OF, OR APPLYING A VITREOUS LAYER TO, METALS (chemical composition of the enamels C03C)

Subclass index

TREATMENT PRIOR TO ENAMELLING.....1/00, 3/00
ENAMELLING.....5/00-11/00
AFTER-TREATMENT.....13/00, 15/00, 17/00

1/00 Melting or fritting the enamels; Apparatus or furnaces therefor [1, 2006.01]
1/02 • Granulating the melt; Drying the granules **[1, 2006.01]**

Coating with the enamels

3/00 Chemical treatment of the metal surfaces prior to coating (cleaning or de-greasing of metallic objects C23G) **[1, 2006.01]**

5/00 Coating with enamels or vitreous layers [1, 4, 2006.01]
5/02 • by wet methods **[1, 2006.01]**
5/04 • by dry methods **[1, 2006.01]**
5/06 • producing designs or letters **[1, 2006.01]**
5/08 • Applying enamels non-uniformly over the surface **[1, 2006.01]**

7/00 Treating the coatings, e.g. drying before burning [1, 2006.01]

Firing the enamels

9/00 Ovens specially adapted for firing enamels [1, 2006.01]
9/02 • Non-electric muffle furnaces **[1, 2006.01]**
9/04 • Non-electric tunnel ovens **[1, 2006.01]**
9/06 • Electric furnaces **[1, 2006.01]**
9/08 • Supporting devices for burning-bars **[1, 2006.01]**
9/10 • Loading or unloading devices **[1, 2006.01]**

11/00 Continuous processes for firing enamels; Apparatus therefor [1, 2006.01]

After-treatment

13/00 After-treatment of the enamelled articles [1, 2006.01]
13/02 • Removing defects by local re-melting of the enamel; Adjusting the shape **[1, 2006.01]**

15/00 Joining enamelled articles to other enamelled articles by processes involving an enamelling step [1, 2006.01]

17/00 De-enamelling [1, 2006.01]

C23F **NON-MECHANICAL REMOVAL OF METALLIC MATERIAL FROM SURFACES** (working of metal by electro-erosion B23H; desurfacing by applying flames B23K 7/00; working metal by laser beam B23K 26/00)**; INHIBITING CORROSION OF METALLIC MATERIAL; INHIBITING INCRUSTATION IN GENERAL** (treating metal surfaces or coating of metals by electrolysis or electrophoresis C25D, C25F)**; MULTI-STEP PROCESSES FOR SURFACE TREATMENT OF METALLIC MATERIAL INVOLVING AT LEAST ONE PROCESS PROVIDED FOR IN CLASS C23 AND AT LEAST ONE PROCESS COVERED BY SUBCLASS C21D OR C22F OR CLASS C25 [4]**

Note(s)

1. This subclass covers inhibiting corrosion or incrustation in general, whether of or on metallic or non-metallic surfaces, subject to Note (2) below.
2. This subclass does not cover:
   - protective layers or coating compositions or methods of applying them; these are classified in the appropriate places, e.g. B05, B44, C09D, C10M, C23C;
   - mechanical devices or constructional features of particular articles for inhibiting incrustation; these are classified in the appropriate places, e.g. in pipes or pipe fittings F16L 58/00;
   - articles characterised by being made of materials selected for their properties of resistance to corrosion or incrustation; these are classified in the appropriate places, e.g. turbine blades F01D 5/28.

Subclass index

ETCHING, BRIGHTENING, COMPOSITIONS THEREFOR.....1/00, 3/00
OTHER REMOVING OF METALLIC MATERIAL.....4/00
INHIBITING CORROSION OR INCRUSTATION.....11/00-15/00
MULTI-STEP SURFACE TREATMENTS.....17/00

1/00 **Etching metallic material by chemical means [1, 2, 2006.01]**
1/02 • Local etching **[1, 2006.01]**
1/04 • • Chemical milling **[1, 2006.01]**
1/06 • Sharpening files **[1, 2006.01]**
1/08 • Apparatus, e.g. for photomechanical printing surfaces **[1, 2006.01]**
1/10 • Etching compositions (C23F 1/44 takes precedence) **[4, 2006.01]**
1/12 • • Gaseous compositions **[4, 2006.01]**
1/14 • • Aqueous compositions **[4, 2006.01]**
1/16 • • • Acidic compositions (C23F 1/42 takes precedence) **[4, 2006.01]**
1/18 • • • • for etching copper or alloys thereof **[4, 2006.01]**
1/20 • • • • for etching aluminium or alloys thereof **[4, 2006.01]**
1/22 • • • • for etching magnesium or alloys thereof **[4, 2006.01]**
1/24 • • • • for etching silicon or germanium **[4, 2006.01]**
1/26 • • • • for etching refractory metals **[4, 2006.01]**
1/28 • • • • for etching iron group metals **[4, 2006.01]**
1/30 • • • • for etching other metallic material **[4, 2006.01]**
1/32 • • • Alkaline compositions (C23F 1/42 takes precedence) **[4, 2006.01]**
1/34 • • • • for etching copper or alloys thereof **[4, 2006.01]**
1/36 • • • • for etching aluminium or alloys thereof **[4, 2006.01]**
1/38 • • • • for etching refractory metals **[4, 2006.01]**
1/40 • • • • for etching other metallic material **[4, 2006.01]**
1/42 • • • containing a dispersed water-immiscible liquid **[4, 2006.01]**
1/44 • Compositions for etching metallic material from a metallic material substrate of different composition **[4, 2006.01]**
1/46 • Regeneration of etching compositions **[4, 2006.01]**

3/00 **Brightening metals by chemical means [1, 2, 2006.01]**
3/02 • Light metals **[1, 2006.01]**
3/03 • • with acidic solutions **[4, 2006.01]**
3/04 • Heavy metals **[1, 2006.01]**
3/06 • • with acidic solutions **[4, 2006.01]**

4/00 **Processes for removing metallic material from surfaces, not provided for in group C23F 1/00 or C23F 3/00 [4, 2006.01]**
4/02 • by evaporation **[4, 2006.01]**
4/04 • by physical dissolution **[4, 2006.01]**

11/00 **Inhibiting corrosion of metallic material by applying inhibitors to the surface in danger of corrosion or adding them to the corrosive agent [1, 2006.01]**
11/02 • in air or gases by adding vapour phase inhibitors **[1, 2006.01]**
11/04 • in markedly acid liquids **[1, 2006.01]**
11/06 • in markedly alkaline liquids **[1, 2006.01]**
11/08 • in other liquids **[1, 2006.01]**
11/10 • • using organic inhibitors **[1, 2006.01]**

Note(s)

In groups C23F 11/12-C23F 11/173, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a compound is classified in the last appropriate place.

11/12 • • • Oxygen-containing compounds **[1, 2006.01]**
11/14 • • • Nitrogen-containing compounds **[1, 2006.01]**
11/16 • • • Sulfur-containing compounds **[1, 2006.01]**
11/167 • • • Phosphorus-containing compounds **[4, 2006.01]**
11/173 • • • Macromolecular compounds **[4, 2006.01]**
11/18 • • using inorganic inhibitors **[1, 2006.01]**

13/00 Inhibiting corrosion of metals by anodic or cathodic protection [1, 2006.01]
13/02 • cathodic; Selection of conditions, parameters or procedures for cathodic protection, e.g. of electrical conditions **[5, 2006.01]**
13/04 • • Controlling or regulating desired parameters **[5, 2006.01]**
13/06 • • Constructional parts, or assemblies of cathodic-protection apparatus **[5, 2006.01]**
13/08 • • • Electrodes specially adapted for inhibiting corrosion by cathodic protection; Manufacture thereof; Conducting electric current thereto **[5, 2006.01]**
13/10 • • • • Electrodes characterised by the structure (C23F 13/16 takes precedence) **[5, 2006.01]**
13/12 • • • • Electrodes characterised by the material (C23F 13/16 takes precedence) **[5, 2006.01]**
13/14 • • • • • Material for sacrificial anodes **[5, 2006.01]**
13/16 • • • • Electrodes characterised by the combination of the structure and the material **[5, 2006.01]**
13/18 • • • • Means for supporting electrodes **[5, 2006.01]**
13/20 • • • • Conducting electric current to electrodes **[5, 2006.01]**
13/22 • • • • Monitoring arrangements therefor **[5, 2006.01]**

14/00 Inhibiting incrustation in apparatus for heating liquids for physical or chemical purposes (adding scale preventives or removers to water C02F 5/00) **[1, 2, 2006.01]**
14/02 • by chemical means **[1, 2006.01]**

15/00 Other methods of preventing corrosion or incrustation [1, 2006.01]

17/00 Multi-step processes for surface treatment of metallic material involving at least one process provided for in class C23 and at least one process covered by subclass C21D or C22F or class C25 (C23C 28/00 takes precedence) **[1, 4, 2006.01]**

C23G CLEANING OR DE-GREASING OF METALLIC MATERIAL BY CHEMICAL METHODS OTHER THAN ELECTROLYSIS (polishing compositions C09G; detergents in general C11D)

1/00 Cleaning or pickling metallic material with solutions or molten salts (with organic solvents C23G 5/02) **[1, 2006.01]**
1/02 • with acid solutions **[1, 2006.01]**
1/04 • • using inhibitors **[1, 2006.01]**
1/06 • • • organic inhibitors **[1, 2006.01]**
1/08 • • Iron or steel **[1, 2006.01]**
1/10 • • Other heavy metals **[1, 2006.01]**
1/12 • • Light metals **[1, 2006.01]**
1/14 • with alkaline solutions **[1, 2006.01]**
1/16 • • using inhibitors **[1, 2006.01]**
1/18 • • • Organic inhibitors **[1, 2006.01]**
1/19 • • Iron or steel **[4, 2006.01]**
1/20 • • Other heavy metals **[1, 4, 2006.01]**
1/22 • • Light metals **[1, 2006.01]**
1/24 • with neutral solutions **[1, 2006.01]**
1/26 • • using inhibitors **[1, 2006.01]**
1/28 • with molten salts **[1, 2006.01]**
1/30 • • using inhibitors **[1, 2006.01]**
1/32 • • Heavy metals **[1, 2006.01]**
1/34 • • Light metals **[1, 2006.01]**
1/36 • Regeneration of waste pickling liquors **[1, 2006.01]**

3/00 Apparatus for cleaning or pickling metallic material (with organic solvents C23G 5/04) **[1, 2006.01]**
3/02 • for cleaning wires, strips, filaments continuously **[1, 2006.01]**
3/04 • for cleaning pipes **[1, 2006.01]**

5/00 Cleaning or de-greasing metallic material by other methods; Apparatus for cleaning or de-greasing metallic material with organic solvents [1, 2006.01]

Note(s) [4]

In groups C23G 5/02-C23G 5/06, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

5/02 • using organic solvents **[1, 2006.01]**
5/024 • • containing hydrocarbons **[4, 2006.01]**
5/028 • • containing halogenated hydrocarbons **[4, 2006.01]**
5/032 • • containing oxygen-containing compounds **[4, 2006.01]**
5/036 • • • having also nitrogen **[4, 2006.01]**
5/04 • • Apparatus **[1, 2006.01]**
5/06 • using emulsions **[4, 2006.01]**

C25 ELECTROLYTIC OR ELECTROPHORETIC PROCESSES; APPARATUS THEREFOR

Note(s) [2, 2012.01]

1. Electrolytic or electrophoretic processes or apparatus or operational features are classified
   i. in the groups for the compounds or articles produced, and
   ii. in the groups which cover the apparatus or operational features.
2. The electrolytic or electrophoretic purification of materials is classified according to the nature of the liquid in the relevant places, e.g. A01K 63/00, C02F 1/46, C25B 15/08, C25D 21/16, C25F 7/02.
3. Multi-step processes for surface treatment of metallic material involving at least one process provided for in class C23 and at least one process provided for in class C25 are classified in group C23F 17/00.

Class index

ELECTROLYTIC PRODUCTION
Inorganic compounds, non-metals....C25B 1/00
Organic compounds....C25B 3/00
Non-metallic coatings....C25D 9/00
Metals....C25C 1/00, C25C 3/00, C25C 5/00
Metallic coatings....C25D 3/00, C25D 5/00, C25D 7/00
ELECTROLYTIC PRODUCTION OF COMPOUNDS OR NON-METALS WITH SIMULTANEOUS PRODUCTION OF ELECTRICITY....C25B 5/00
ELECTROPHORETIC PRODUCTION
Compounds, non-metals....C25B 7/00
Coatings....C25D 13/00
ELECTROFORMING....C25D 1/00
ANODISING, PHOSPHATISING, CHROMATISING....C25D 11/00
COATINGS WITH EMBEDDED MATERIAL....C25D 15/00
ELECTROLYTIC CLEANING, PICKLING, OR REMOVAL OF METALLIC COATINGS....C25F 1/00, C25F 5/00
ELECTROLYTIC ETCHING OR POLISHING....C25F 3/00
CELLS, ELECTRODES, DIAPHRAGMS
Production of compounds or non-metals....C25B 9/00, C25B 11/00, C25B 13/00, C25B 15/00
Production of metals....C25C 7/00
Production of coatings....C25D 17/00, C25D 19/00, C25D 21/00
Cleaning, pickling, surface treatment....C25F 7/00

C25B ELECTROLYTIC OR ELECTROPHORETIC PROCESSES FOR THE PRODUCTION OF COMPOUNDS OR NON-METALS; APPARATUS THEREFOR (anodic or cathodic protection C23F 13/00; single-crystal growth C30B) [2]

Note(s) [2]

1. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.
2. Compounds of particular interest are also classified in the relevant classes, e.g. in C01, C07.

1/00 Electrolytic production of inorganic compounds or non-metals [2, 2006.01]
1/02 • of hydrogen or oxygen **[2, 2006.01]**
1/04 • • by electrolysis of water **[2, 2006.01]**
1/06 • • • in cells with flat or plate-like electrodes **[2, 2006.01]**
1/08 • • • • of the filter-press type **[2, 2006.01]**
1/10 • • • in diaphragm cells **[2, 2006.01]**
1/12 • • • in pressure cells **[2, 2006.01]**
1/13 • of ozone **[7, 2006.01]**
1/14 • of alkali metal compounds **[2, 2006.01]**
1/16 • • Hydroxides **[2, 2006.01]**
1/18 • of alkaline earth metal compounds or magnesium compounds **[2, 2006.01]**
1/20 • • Hydroxides **[2, 2006.01]**
1/21 • of manganese oxides **[7, 2006.01]**
1/22 • of inorganic acids **[2, 2006.01]**
1/24 • of halogens or compounds thereof **[2, 2006.01]**
1/26 • • Chlorine; Compounds thereof **[2, 2006.01]**
1/28 • of per-compounds **[2, 2006.01]**
1/30 • • Peroxides **[2, 2006.01]**
1/32 • • Perborates **[2, 2006.01]**
1/34 • Simultaneous production of alkali metal hydroxides and chlorine, its oxyacids or salts **[2, 2006.01]**
1/36 • • in mercury cathode cells **[2, 2006.01]**
1/38 • • • with vertical mercury cathode **[2, 2006.01]**
1/40 • • • with horizontal mercury cathode **[2, 2006.01]**
1/42 • • • Decomposition of amalgams **[2, 2006.01]**
1/44 • • • • with the aid of catalysts **[2, 2006.01]**
1/46 • • in diaphragm cells **[2, 2006.01]**

3/00 Electrolytic production of organic compounds [2, 2006.01]
3/02 • by oxidation **[2, 2006.01]**
3/04 • by reduction **[2, 2006.01]**
3/06 • by halogenation **[2, 2006.01]**
3/08 • • by fluorination **[2, 2006.01]**
3/10 • by coupling reactions, e.g. dimerisation **[2, 2006.01]**
3/12 • of organo-metallic compounds **[2, 2006.01]**

5/00 Electrogenerative processes, i.e. processes for producing compounds in which simultaneously electricity is generated [2, 2006.01]

7/00 Electrophoretic production of compounds or non-metals (separation or purification of peptides, e.g. of proteins, by electrophoresis C07K 1/26) **[2, 2006.01]**

9/00 Cells or assemblies of cells; Constructional parts of cells; Assemblies of constructional parts, e.g. electrode-diaphragm assemblies [2, 7, 2006.01]
9/02 • Holders for electrodes **[2, 2006.01]**
9/04 • Devices for current supply; Electrode connections; Electric inter-cell connections **[2, 2006.01]**
9/06 • Cells comprising dimensionally-stable non-movable electrodes; Assemblies of constructional parts thereof **[7, 2006.01]**
9/08 • • with diaphragms **[7, 2006.01]**

9/10 • • • including an ion-exchange membrane in or on which electrode material is embedded **[7, 2006.01]**
9/12 • Cells or assemblies of cells comprising at least one movable electrode, e.g. rotary electrodes; Assemblies of constructional parts thereof **[7, 2006.01]**
9/14 • • Liquid electrodes, e.g. mercury electrodes **[7, 2006.01]**
9/16 • Cells or assemblies of cells comprising at least one electrode made of particles; Assemblies of constructional parts thereof **[7, 2006.01]**
9/18 • Assemblies comprising a plurality of cells (assemblies of cells with movable electrodes C25B 9/12; assemblies of cells with electrodes made of particles C25B 9/16) **[7, 2006.01]**
9/20 • • of the filter-press type **[7, 2006.01]**

11/00 Electrodes; Manufacture thereof not otherwise provided for [2, 2006.01]
11/02 • characterised by shape or form **[2, 2006.01]**
11/03 • • perforated or foraminous **[2, 2006.01]**
11/04 • characterised by the material **[2, 2006.01]**
11/06 • • by the catalytic materials used **[2, 2006.01]**
11/08 • • • Noble metals **[2, 2006.01]**
11/10 • • Electrodes based on barrier-type metals, e.g. titanium **[2, 2006.01]**
11/12 • • Electrodes based on carbon **[2, 2006.01]**
11/14 • • • Impregnation of carbon electrodes (C25B 11/06 takes precedence) **[2, 2006.01]**
11/16 • • Electrodes based on manganese dioxide or lead dioxide **[2, 2006.01]**
11/18 • • Mercury or amalgam electrodes **[2, 2006.01]**

13/00 Diaphragms; Spacing elements [4, 2006.01]
13/02 • characterised by form or shape **[2, 2006.01]**
13/04 • characterised by the material **[2, 2006.01]**
13/06 • • based on asbestos **[2, 2006.01]**
13/08 • • based on organic materials **[2, 2006.01]**

15/00 Operating or servicing of cells [2, 2006.01]
15/02 • Process control or regulation **[2, 2006.01]**
15/04 • Regulation of the inter-electrode distance **[2, 2006.01]**
15/06 • Detection or inhibition of short circuits in the cell **[2, 2006.01]**
15/08 • Supplying or removing reactants or electrolytes; Regeneration of electrolytes **[2, 2006.01]**

C25C PROCESSES FOR THE ELECTROLYTIC PRODUCTION, RECOVERY OR REFINING OF METALS; APPARATUS THEREFOR (anodic or cathodic protection C23F 13/00; single-crystal growth C30B) [2]

1/00 Electrolytic production, recovery or refining of metals by electrolysis of solutions (C25C 5/00 takes precedence) **[2, 2006.01]**
1/02 • of light metals **[2, 2006.01]**
1/04 • • in mercury cathode cells **[2, 2006.01]**
1/06 • of iron group metals, refractory metals or manganese **[2, 2006.01]**
1/08 • • of nickel or cobalt **[2, 2006.01]**
1/10 • • of chromium or manganese **[2, 2006.01]**
1/12 • of copper **[2, 2006.01]**
1/14 • of tin **[2, 2006.01]**
1/16 • of zinc, cadmium or mercury **[2, 2006.01]**
1/18 • of lead **[2, 2006.01]**
1/20 • of noble metals **[2, 2006.01]**
1/22 • of metals not provided for in groups C25C 1/02-C25C 1/20 **[2, 2006.01]**
1/24 • Alloys obtained by cathodic reduction of all their ions **[2, 2006.01]**

3/00 Electrolytic production, recovery or refining of metals by electrolysis of melts (C25C 5/00 takes precedence) **[2, 2006.01]**
3/02 • of alkali or alkaline earth metals **[2, 2006.01]**
3/04 • of magnesium **[2, 2006.01]**
3/06 • of aluminium **[2, 2006.01]**
3/08 • • Cell construction, e.g. bottoms, walls, cathodes **[2, 2006.01]**
3/10 • • • External supporting frames or structures **[2, 2006.01]**
3/12 • • • Anodes **[2, 2006.01]**
3/14 • • Devices for feeding or crust breaking **[2, 2006.01]**
3/16 • • Electric current supply devices, e.g. bus bars **[2, 2006.01]**
3/18 • • Electrolytes **[2, 2006.01]**
3/20 • • Automatic control or regulation of cells (controlling or regulating in general G05) **[2, 2006.01]**
3/22 • • Collecting emitted gases **[2, 2006.01]**
3/24 • • Refining **[2, 2006.01]**
3/26 • of titanium, zirconium, hafnium, tantalum or vanadium **[2, 2006.01]**
3/28 • • of titanium **[2, 2006.01]**
3/30 • of manganese **[2, 2006.01]**
3/32 • of chromium **[2, 2006.01]**
3/34 • of metals not provided for in groups C25C 3/02-C25C 3/32 **[2, 2006.01]**
3/36 • Alloys obtained by cathodic reduction of all their ions **[2, 2006.01]**

5/00 Electrolytic production, recovery or refining of metal powders or porous metal masses [2, 2006.01]
5/02 • from solutions **[2, 2006.01]**
5/04 • from melts **[2, 2006.01]**

7/00 Constructional parts, or assemblies thereof, of cells; Servicing or operating of cells (for the production of aluminium C25C 3/06-C25C 3/22) **[2, 2006.01]**
7/02 • Electrodes (consumable anodes for the refining of metals C25C 1/00-C25C 5/00); Connections thereof **[2, 2006.01]**
7/04 • Diaphragms; Spacing elements **[2, 2006.01]**
7/06 • Operating or servicing **[2, 2006.01]**
7/08 • • Separating of deposited metals from the cathode **[2, 2006.01]**

C25D PROCESSES FOR THE ELECTROLYTIC OR ELECTROPHORETIC PRODUCTION OF COATINGS; ELECTROFORMING (manufacturing printed circuits by metal deposition H05K 3/18)**; JOINING WORKPIECES BY ELECTROLYSIS; APPARATUS THEREFOR** (anodic or cathodic protection C23F 13/00; single-crystal growth C30B) **[2, 6]**

Note(s) [2012.01]

Coating with two or more superposed coatings obtained by combination of methods provided for in this subclass and in subclass C23C is classified in group C23C 28/00.

1/00 Electroforming [2, 2006.01]
1/02 • Tubes; Rings; Hollow bodies **[2, 2006.01]**
1/04 • Wires; Strips; Foils **[2, 2006.01]**
1/06 • Wholly-metallic mirrors **[2, 2006.01]**
1/08 • Perforated or foraminous objects, e.g. sieves (C25D 1/10 takes precedence) **[2, 2006.01]**
1/10 • Moulds; Masks; Masterforms **[2, 2006.01]**
1/12 • by electrophoresis **[2, 2006.01]**
1/14 • • of inorganic material **[2, 2006.01]**
1/16 • • • Metals **[2, 2006.01]**
1/18 • • of organic material **[2, 2006.01]**
1/20 • Separation of the formed objects from the electrodes **[2, 2006.01]**
1/22 • • Separating compounds **[2, 2006.01]**

2/00 Joining workpieces by electrolysis [6, 2006.01]

3/00 Electroplating; Baths therefor [2, 2006.01]
3/02 • from solutions (C25D 5/24-C25D 5/32 take precedence) **[2, 2006.01]**
3/04 • • of chromium **[2, 2006.01]**
3/06 • • • from solutions of trivalent chromium **[2, 2006.01]**
3/08 • • • Deposition of black chromium **[2, 2006.01]**
3/10 • • • characterised by the organic bath constituents used **[2, 2006.01]**
3/12 • • of nickel or cobalt **[2, 2006.01]**
3/14 • • • from baths containing acetylenic or heterocyclic compounds **[2, 2006.01]**
3/16 • • • • Acetylenic compounds **[2, 2006.01]**
3/18 • • • • Heterocyclic compounds **[2, 2006.01]**
3/20 • • of iron **[2, 2006.01]**
3/22 • • of zinc **[2, 2006.01]**
3/24 • • • from cyanide baths **[2, 2006.01]**
3/26 • • of cadmium **[2, 2006.01]**
3/28 • • • from cyanide baths **[2, 2006.01]**
3/30 • • of tin **[2, 2006.01]**
3/32 • • • characterised by the organic bath constituents used **[2, 2006.01]**
3/34 • • of lead **[2, 2006.01]**
3/36 • • • characterised by the organic bath constituents used **[2, 2006.01]**
3/38 • • of copper **[2, 2006.01]**
3/40 • • • from cyanide baths **[2, 2006.01]**
3/42 • • of light metals **[2, 2006.01]**
3/44 • • • Aluminium **[2, 2006.01]**
3/46 • • of silver **[2, 2006.01]**
3/48 • • of gold **[2, 2006.01]**
3/50 • • of platinum group metals **[2, 2006.01]**
3/52 • • • characterised by the organic bath constituents used **[2, 2006.01]**
3/54 • • of metals not provided for in groups C25D 3/04-C25D 3/50 **[2, 2006.01]**
3/56 • • of alloys **[2, 2006.01]**
3/58 • • • containing more than 50% by weight of copper **[2, 2006.01]**
3/60 • • • containing more than 50% by weight of tin **[2, 2006.01]**
3/62 • • • containing more than 50% by weight of gold **[2, 2006.01]**
3/64 • • • containing more than 50% by weight of silver **[2, 2006.01]**
3/66 • from melts **[2, 2006.01]**

5/00 Electroplating characterised by the process; Pretreatment or after-treatment of workpieces [2, 2006.01]
5/02 • Electroplating of selected surface areas **[2, 2006.01]**
5/04 • Electroplating with moving electrodes **[2, 2006.01]**
5/06 • • Brush or pad plating **[2, 2006.01]**
5/08 • Electroplating with moving electrolyte, e.g. jet electroplating **[2, 2006.01]**
5/10 • Electroplating with more than one layer of the same or of different metals (for bearings C25D 7/10) **[2, 2006.01]**
5/12 • • at least one layer being of nickel or chromium **[2, 2006.01]**
5/14 • • • two or more layers being of nickel or chromium, e.g. duplex or triplex layers **[2, 2006.01]**
5/16 • Electroplating with layers of varying thickness **[2, 2006.01]**
5/18 • Electroplating using modulated, pulsed or reversing current **[2, 2006.01]**
5/20 • Electroplating using ultrasonics **[2, 2006.01]**
5/22 • Electroplating combined with mechanical treatment during the deposition **[2, 2006.01]**
5/24 • Electroplating of metal surfaces to which a coating cannot readily be applied (C25D 5/34 takes precedence) **[2, 2006.01]**
5/26 • • of iron or steel surfaces **[2, 2006.01]**
5/28 • • of surfaces of refractory metals **[2, 2006.01]**
5/30 • • of surfaces of light metals **[2, 2006.01]**
5/32 • • of surfaces of actinides **[2, 2006.01]**
5/34 • Pretreatment of metallic surfaces to be electroplated **[2, 2006.01]**
5/36 • • of iron or steel **[2, 2006.01]**
5/38 • • of refractory metals or nickel **[2, 2006.01]**
5/40 • • • Nickel; Chromium **[2, 2006.01]**
5/42 • • of light metals **[2, 2006.01]**
5/44 • • • Aluminium **[2, 2006.01]**
5/46 • • of actinides **[2, 2006.01]**
5/48 • After-treatment of electroplated surfaces **[2, 2006.01]**
5/50 • • by heat-treatment **[2, 2006.01]**
5/52 • • by brightening or burnishing **[2, 2006.01]**
5/54 • Electroplating of non-metallic surfaces (C25D 7/12 takes precedence) **[2, 2006.01]**
5/56 • • of plastics **[2, 2006.01]**

7/00 Electroplating characterised by the article coated [2, 2006.01]
7/02 • Slide fasteners **[2, 2006.01]**
7/04 • Tubes; Rings; Hollow bodies **[2, 2006.01]**
7/06 • Wires; Strips; Foils **[2, 2006.01]**
7/08 • Mirrors; Reflectors **[2, 2006.01]**
7/10 • Bearings **[2, 2006.01]**
7/12 • Semiconductors **[2, 2006.01]**

9/00 Electrolytic coating other than with metals (C25D 11/00, C25D 15/00 take precedence; electrophoretic coating C25D 13/00) **[2, 2006.01]**
9/02 • with organic materials **[2, 2006.01]**
9/04 • with inorganic materials **[2, 2006.01]**
9/06 • • by anodic processes **[2, 2006.01]**
9/08 • • by cathodic processes **[2, 2006.01]**
9/10 • • • on iron or steel **[2, 2006.01]**
9/12 • • • on light metals **[2, 2006.01]**

11/00 Electrolytic coating by surface reaction, i.e. forming conversion layers [2, 2006.01]
11/02 • Anodisation **[2, 2006.01]**
11/04 • • of aluminium or alloys based thereon **[2, 2006.01]**
11/06 • • • characterised by the electrolytes used **[2, 2006.01]**
11/08 • • • • containing inorganic acids **[2, 2006.01]**
11/10 • • • • containing organic acids **[2, 2006.01]**
11/12 • • • Anodising more than once, e.g. in different baths **[2, 2006.01]**
11/14 • • • Producing integrally coloured layers **[2, 2006.01]**
11/16 • • • Pretreatment **[2, 2006.01]**
11/18 • • • After-treatment, e.g. pore-sealing **[2, 2006.01]**
11/20 • • • • Electrolytic after-treatment **[2, 2006.01]**
11/22 • • • • • for colouring layers **[2, 2006.01]**
11/24 • • • • Chemical after-treatment **[2, 2006.01]**
11/26 • • of refractory metals or alloys based thereon **[2, 2006.01]**
11/28 • • of actinides or alloys based thereon **[2, 2006.01]**
11/30 • • of magnesium or alloys based thereon **[2, 2006.01]**
11/32 • • of semiconducting materials **[2, 2006.01]**
11/34 • • of metals or alloys not provided for in groups C25D 11/04-C25D 11/32 **[2, 2006.01]**
11/36 • Phosphatising **[2, 2006.01]**
11/38 • Chromatising **[2, 2006.01]**

13/00 Electrophoretic coating characterised by the process (C25D 15/00 takes precedence; compositions for electrophoretic coating C09D 5/44) **[2, 2006.01]**
13/02 • with inorganic material **[2, 2006.01]**
13/04 • with organic material **[2, 2006.01]**
13/06 • • polymers **[2, 2006.01]**
13/08 • • • by polymerisation in situ of monomeric materials **[2, 2006.01]**
13/10 • characterised by the additives used **[2, 2006.01]**
13/12 • characterised by the article coated **[2, 2006.01]**
13/14 • • Tubes; Rings; Hollow bodies **[2, 2006.01]**
13/16 • • Wires; Strips; Foils **[2, 2006.01]**
13/18 • using modulated, pulsed or reversing current **[2, 2006.01]**
13/20 • Pretreatment **[2, 2006.01]**
13/22 • Servicing or operating **[2, 2006.01]**
13/24 • • Regeneration of process liquids **[2, 2006.01]**

15/00 Electrolytic or electrophoretic production of coatings containing embedded materials, e.g. particles, whiskers, wires [2, 2006.01]
15/02 • Combined electrolytic and electrophoretic processes **[2, 2006.01]**

17/00 Constructional parts, or assemblies thereof, of cells for electrolytic coating [2, 2006.01]
17/02 • Tanks; Installations therefor **[2, 2006.01]**
17/04 • • External supporting frames or structures **[2, 2006.01]**
17/06 • Suspending or supporting devices for articles to be coated **[2, 2006.01]**
17/08 • • Racks **[2, 2006.01]**
17/10 • Electrodes **[2, 2006.01]**
17/12 • • Shape or form (C25D 17/14 takes precedence) **[2, 2006.01]**
17/14 • • for pad-plating **[2, 2006.01]**
17/16 • Apparatus for electrolytic coating of small objects in bulk **[2, 2006.01]**
17/18 • • having closed containers **[2, 2006.01]**
17/20 • • • Horizontal barrels **[2, 2006.01]**
17/22 • • having open containers **[2, 2006.01]**
17/24 • • • Oblique barrels **[2, 2006.01]**
17/26 • • • Oscillating baskets **[2, 2006.01]**
17/28 • • with means for moving the objects individually through the apparatus during the treatment **[2, 2006.01]**

19/00 Electrolytic coating plants [2, 2006.01]

21/00 Processes for servicing or operating cells for electrolytic coating [2, 2006.01]
21/02 • Heating or cooling **[2, 2006.01]**
21/04 • Removal of gases or vapours **[2, 2006.01]**
21/06 • Filtering **[2, 2006.01]**
21/08 • Rinsing **[2, 2006.01]**
21/10 • Agitating of electrolytes; Moving of racks **[2, 2006.01]**
21/11 • Use of protective surface layers on electrolytic baths **[3, 2006.01]**
21/12 • Process control or regulation **[2, 2006.01]**
21/14 • • Controlled addition of electrolyte components **[2, 2006.01]**
21/16 • Regeneration of process solutions **[2, 2006.01]**
21/18 • • of electrolytes (C25D 21/22 takes precedence) **[2, 2006.01]**
21/20 • • of rinse-solutions (C25D 21/22 takes precedence) **[2, 2006.01]**
21/22 • • by ion-exchange **[2, 2006.01]**

C25F **PROCESSES FOR THE ELECTROLYTIC REMOVAL OF MATERIALS FROM OBJECTS; APPARATUS THEREFOR** (treatment of water, waste water or sewage by electrochemical methods C02F 1/46; anodic or cathodic protection C23F 13/00) **[2]**

Note(s) [2]

In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

1/00 **Electrolytic cleaning, degreasing, pickling, or descaling [2, 2006.01]**
1/02 • Pickling; Descaling **[2, 2006.01]**
1/04 • • in solution **[2, 2006.01]**
1/06 • • • of iron or steel **[2, 2006.01]**
1/08 • • • of refractory metals **[2, 2006.01]**
1/10 • • • of actinides **[2, 2006.01]**
1/12 • • in melts **[2, 2006.01]**
1/14 • • • of iron or steel **[2, 2006.01]**
1/16 • • • of refractory metals **[2, 2006.01]**
1/18 • • • of actinides **[2, 2006.01]**

3/00 **Electrolytic etching or polishing [2, 2006.01]**
3/02 • Etching **[2, 2006.01]**
3/04 • • of light metals **[2, 2006.01]**
3/06 • • of iron or steel **[2, 2006.01]**
3/08 • • of refractory metals **[2, 2006.01]**
3/10 • • of actinides **[2, 2006.01]**
3/12 • • of semiconducting materials **[2, 2006.01]**
3/14 • • locally **[2, 2006.01]**
3/16 • Polishing **[2, 2006.01]**
3/18 • • of light metals **[2, 2006.01]**
3/20 • • • of aluminium **[2, 2006.01]**
3/22 • • of heavy metals **[2, 2006.01]**
3/24 • • • of iron or steel **[2, 2006.01]**
3/26 • • • of refractory metals **[2, 2006.01]**
3/28 • • • of actinides **[2, 2006.01]**
3/30 • • of semiconducting materials **[2, 2006.01]**

5/00 **Electrolytic stripping of metallic layers or coatings [2, 2006.01]**

7/00 **Constructional parts, or assemblies thereof, of cells for electrolytic removal of material from objects** (for both electrolytic coating and removal C25D 17/00)**; Servicing or operating [2, 2006.01]**
7/02 • Regeneration of process liquids **[2, 2006.01]**

C30 CRYSTAL GROWTH

C30B **SINGLE-CRYSTAL GROWTH** (by using ultra-high pressure, e.g. for the formation of diamonds B01J 3/06)**; UNIDIRECTIONAL SOLIDIFICATION OF EUTECTIC MATERIAL OR UNIDIRECTIONAL DEMIXING OF EUTECTOID MATERIAL; REFINING BY ZONE-MELTING OF MATERIAL** (zone-refining of metals or alloys C22B)**; PRODUCTION OF A HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE** (casting of metals, casting of other substances by the same processes or devices B22D; working of plastics B29; modifying the physical structure of metals or alloys C21D, C22F)**; SINGLE CRYSTALS OR HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE; AFTER-TREATMENT OF SINGLE CRYSTALS OR A HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE** (for producing semiconductor devices or parts thereof H01L)**; APPARATUS THEREFOR [3]**

Note(s) [3, 5, 2012.01]

1. In this subclass, the following expressions are used with the meaning indicated:
   - "single crystal" includes also twin crystals and a predominantly single crystal product;
   - "homogeneous polycrystalline material" means a material with crystal particles, all of which have the same chemical composition;
   - "defined structure" means the structure of a material with grains which are oriented in a preferential way or have larger dimensions than normally obtained.
2. In this subclass, multi-aspect classification is applied, so that if subject matter is characterised by aspects covered by more than one of its groups, the subject matter should be classified in each of those groups.
3. In this subclass:
   - the preparation of single crystals or a homogeneous polycrystalline material with defined structure of particular materials or shapes is classified in the group for the process as well as in group C30B 29/00;
   - an apparatus specially adapted for a specific process is classified in the appropriate group for the process. Apparatus to be used in more than one kind of process is classified in group C30B 35/00.

Subclass index

SINGLE-CRYSTAL GROWTH
from solids or gels.....1/00, 3/00, 5/00
from liquids.....7/00-21/00, 27/00
from vapours.....23/00, 25/00
PRODUCTION OF SINGLE CRYSTALS OR HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE.....28/00, 30/00

SINGLE CRYSTALS OR HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE.....29/00
AFTER-TREATMENT.....31/00, 33/00
APPARATUS.....35/00

Single-crystal growth from solids or gels [3]

1/00 Single-crystal growth directly from the solid state (unidirectional demixing of eutectoid materials C30B 3/00; under a protective fluid C30B 27/00) **[3, 2006.01]**

1/02 • by thermal treatment, e.g. strain annealing (C30B 1/12 takes precedence) **[3, 2006.01]**

1/04 • • Isothermal recrystallisation **[3, 2006.01]**

1/06 • • Recrystallisation under a temperature gradient **[3, 2006.01]**

1/08 • • • Zone recrystallisation **[3, 2006.01]**

1/10 • by solid state reactions or multi-phase diffusion **[3, 2006.01]**

1/12 • by pressure treatment during the growth **[3, 2006.01]**

3/00 Unidirectional demixing of eutectoid materials [3, 2006.01]

5/00 Single-crystal growth from gels (under a protective fluid C30B 27/00) **[3, 2006.01]**

5/02 • with addition of doping materials **[3, 2006.01]**

Single-crystal growth from liquids; Unidirectional solidification of eutectic materials [3]

7/00 Single-crystal growth from solutions using solvents which are liquid at normal temperature, e.g. aqueous solutions (from molten solvents C30B 9/00; by normal or gradient freezing C30B 11/00; under a protective fluid C30B 27/00) **[3, 2006.01]**

7/02 • by evaporation of the solvent **[3, 2006.01]**

7/04 • • using aqueous solvents **[3, 2006.01]**

7/06 • • using non-aqueous solvents **[3, 2006.01]**

7/08 • by cooling of the solution **[3, 2006.01]**

7/10 • by application of pressure, e.g. hydrothermal processes **[3, 2006.01]**

7/12 • by electrolysis **[3, 2006.01]**

7/14 • the crystallising materials being formed by chemical reactions in the solution **[3, 2006.01]**

9/00 Single-crystal growth from melt solutions using molten solvents (by normal or gradient freezing C30B 11/00; by zone-melting C30B 13/00; by crystal pulling C30B 15/00; on immersed seed crystal C30B 17/00; by liquid phase epitaxial growth C30B 19/00; under a protective fluid C30B 27/00) **[3, 2006.01]**

9/02 • by evaporation of the molten solvent **[3, 2006.01]**

9/04 • by cooling of the solution **[3, 2006.01]**

9/06 • • using as solvent a component of the crystal composition **[3, 2006.01]**

9/08 • • using other solvents **[3, 2006.01]**

9/10 • • • Metal solvents **[3, 2006.01]**

9/12 • • • Salt solvents, e.g. flux growth **[3, 2006.01]**

9/14 • by electrolysis **[3, 2006.01]**

11/00 Single-crystal-growth by normal freezing or freezing under temperature gradient, e.g. Bridgman-Stockbarger method (C30B 13/00, C30B 15/00, C30B 17/00, C30B 19/00 take precedence; under a protective fluid C30B 27/00) **[3, 2006.01]**

11/02 • without using solvents (C30B 11/06 takes precedence) **[3, 2006.01]**

11/04 • adding crystallising materials or reactants forming it in situ to the melt **[3, 2006.01]**

11/06 • • at least one but not all components of the crystal composition being added **[3, 2006.01]**

11/08 • • every component of the crystal composition being added during the crystallisation **[3, 2006.01]**

11/10 • • • Solid or liquid components, e.g. Verneuil method **[3, 2006.01]**

11/12 • • • Vaporous components, e.g. vapour-liquid-solid-growth **[3, 2006.01]**

11/14 • characterised by the seed, e.g. its crystallographic orientation **[3, 2006.01]**

13/00 Single-crystal growth by zone-melting; Refining by zone-melting (C30B 17/00 takes precedence; by changing the cross-section of the treated solid C30B 15/00; under a protective fluid C30B 27/00; for the growth of homogeneous polycrystalline material with defined structure C30B 28/00; zone-refining of specific materials, see the relevant subclasses for the materials) **[3, 5, 2006.01]**

13/02 • Zone-melting with a solvent, e.g. travelling solvent process **[3, 2006.01]**

13/04 • Homogenisation by zone-levelling **[3, 2006.01]**

13/06 • the molten zone not extending over the whole cross-section **[3, 2006.01]**

13/08 • adding crystallising materials or reactants forming it in situ to the molten zone **[3, 2006.01]**

13/10 • • with addition of doping materials **[3, 2006.01]**

13/12 • • • in the gaseous or vapour state **[3, 2006.01]**

13/14 • Crucibles or vessels **[3, 2006.01]**

13/16 • Heating of the molten zone **[3, 2006.01]**

13/18 • • the heating element being in contact with, or immersed in, the molten zone **[3, 2006.01]**

13/20 • • by induction, e.g. hot wire technique (C30B 13/18 takes precedence) **[3, 2006.01]**

13/22 • • by irradiation or electric discharge **[3, 2006.01]**

13/24 • • • using electromagnetic waves **[3, 2006.01]**

13/26 • Stirring of the molten zone **[3, 2006.01]**

13/28 • Controlling or regulating **[3, 2006.01]**

13/30 • • Stabilisation or shape controlling of the molten zone, e.g. by concentrators, by electromagnetic fields; Controlling the section of the crystal **[3, 2006.01]**

13/32 • Mechanisms for moving either the charge or the heater **[3, 2006.01]**

13/34 • characterised by the seed, e.g. by its crystallographic orientation **[3, 2006.01]**

15/00 Single-crystal growth by pulling from a melt, e.g. Czochralski method (under a protective fluid C30B 27/00) **[3, 2006.01]**

15/02 • adding crystallising materials or reactants forming it in situ to the melt **[3, 2006.01]**
15/04 • • adding doping materials, e.g. for n–p-junction **[3, 2006.01]**
15/06 • Non-vertical pulling **[3, 2006.01]**
15/08 • Downward pulling **[3, 2006.01]**
15/10 • Crucibles or containers for supporting the melt **[3, 2006.01]**
15/12 • • Double crucible methods **[3, 2006.01]**
15/14 • Heating of the melt or the crystallised materials **[3, 2006.01]**
15/16 • • by irradiation or electric discharge **[3, 2006.01]**
15/18 • • using direct resistance heating in addition to other methods of heating, e.g. using Peltier heat **[3, 2006.01]**
15/20 • Controlling or regulating (controlling or regulating in general G05) **[3, 2006.01]**
15/22 • • Stabilisation or shape controlling of the molten zone near the pulled crystal; Controlling the section of the crystal **[3, 2006.01]**
15/24 • • • using mechanical means, e.g. shaping guides (shaping dies for edge-defined film-fed crystal growth C30B 15/34) **[3, 2006.01]**
15/26 • • • using television detectors; using photo or X-ray detectors **[3, 2006.01]**
15/28 • • • using weight changes of the crystal or the melt, e.g. flotation methods **[3, 2006.01]**
15/30 • Mechanisms for rotating or moving either the melt or the crystal (flotation methods C30B 15/28) **[3, 2006.01]**
15/32 • Seed holders, e.g. chucks **[3, 2006.01]**
15/34 • Edge-defined film-fed crystal growth using dies or slits **[3, 2006.01]**
15/36 • characterised by the seed, e.g. its crystallographic orientation **[3, 2006.01]**

17/00 Single-crystal growth on to a seed which remains in the melt during growth, e.g. Nacken-Kyropoulos method (C30B 15/00 takes precedence) **[3, 2006.01]**

19/00 Liquid-phase epitaxial-layer growth [3, 2006.01]
19/02 • using molten solvents, e.g. flux **[3, 2006.01]**
19/04 • • the solvent being a component of the crystal composition **[3, 2006.01]**
19/06 • Reaction chambers; Boats for supporting the melt; Substrate holders **[3, 2006.01]**
19/08 • Heating of the reaction chamber or the substrate **[3, 2006.01]**
19/10 • Controlling or regulating (controlling or regulating in general G05) **[3, 2006.01]**
19/12 • characterised by the substrate **[3, 2006.01]**

21/00 Unidirectional solidification of eutectic materials [3, 2006.01]
21/02 • by normal casting or gradient freezing **[3, 2006.01]**
21/04 • by zone-melting **[3, 2006.01]**
21/06 • by pulling from a melt **[3, 2006.01]**

Single-crystal growth from vapours [3]

23/00 Single-crystal growth by condensing evaporated or sublimed materials [3, 2006.01]
23/02 • Epitaxial-layer growth **[3, 2006.01]**
23/04 • • Pattern deposit, e.g. by using masks **[3, 2006.01]**
23/06 • • Heating of the deposition chamber, the substrate, or the materials to be evaporated **[3, 2006.01]**
23/08 • • by condensing ionised vapours (by reactive sputtering C30B 25/06) **[3, 2006.01]**

25/00 Single-crystal growth by chemical reaction of reactive gases, e.g. chemical vapour deposition growth [3, 2006.01]
25/02 • Epitaxial-layer growth **[3, 2006.01]**
25/04 • • Pattern deposit, e.g. by using masks **[3, 2006.01]**
25/06 • • by reactive sputtering **[3, 2006.01]**
25/08 • • Reaction chambers; Selection of materials therefor **[3, 2006.01]**
25/10 • • Heating of the reaction chamber or the substrate **[3, 2006.01]**
25/12 • • Substrate holders or susceptors **[3, 2006.01]**
25/14 • • Feed and outlet means for the gases; Modifying the flow of the reactive gases **[3, 2006.01]**
25/16 • • Controlling or regulating (controlling or regulating in general G05) **[3, 2006.01]**
25/18 • • characterised by the substrate **[3, 2006.01]**
25/20 • • • the substrate being of the same materials as the epitaxial layer **[3, 2006.01]**
25/22 • • Sandwich processes **[3, 2006.01]**

27/00 Single-crystal growth under a protective fluid [3, 2006.01]
27/02 • by pulling from a melt **[3, 2006.01]**

28/00 Production of homogeneous polycrystalline material with defined structure [5, 2006.01]
28/02 • directly from the solid state **[5, 2006.01]**
28/04 • from liquids **[5, 2006.01]**
28/06 • • by normal freezing or freezing under temperature gradient **[5, 2006.01]**
28/08 • • by zone-melting **[5, 2006.01]**
28/10 • • by pulling from a melt **[5, 2006.01]**
28/12 • directly from the gas state **[5, 2006.01]**
28/14 • • by chemical reaction of reactive gases **[5, 2006.01]**

29/00 Single crystals or homogeneous polycrystalline material with defined structure characterised by the material or by their shape [3, 5, 2006.01]

Note(s) [3, 2010.01]

1. In groups C30B 29/02-C30B 29/54, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a material is classified in the last appropriate place.
2. Attention is drawn to Note (3) after the title of section C, which Note indicates to which version of the periodic table of chemical elements the IPC refers. In this group, the Periodic System used is the 8 group system indicated by Roman numerals in the Periodic Table thereunder.

29/02 • Elements **[3, 2006.01]**
29/04 • • Diamond **[3, 2006.01]**
29/06 • • Silicon **[3, 2006.01]**
29/08 • • Germanium **[3, 2006.01]**
29/10 • Inorganic compounds or compositions **[3, 2006.01]**
29/12 • • Halides **[3, 2006.01]**
29/14 • • Phosphates **[3, 2006.01]**
29/16 • • Oxides **[3, 2006.01]**
29/18 • • • Quartz **[3, 2006.01]**
29/20 • • • Aluminium oxides **[3, 2006.01]**
29/22 • • • Complex oxides **[3, 2006.01]**

29/24 • • • • with formula $AMeO_3$, wherein A is a rare earth metal and Me is Fe, Ga, Sc, Cr, Co, or Al, e.g. ortho ferrites **[3, 2006.01]**
29/26 • • • • with formula BMe_2O_4, wherein B is Mg, Ni, Co, Al, Zn or Cd and Me is Fe, Ga, Sc, Cr, Co, or Al **[3, 2006.01]**
29/28 • • • • with formula $A_3Me_5O_{12}$, wherein A is a rare earth metal and Me is Fe, Ga, Sc, Cr, Co or Al, e.g. garnets **[3, 2006.01]**
29/30 • • • • Niobates; Vanadates; Tantalates **[3, 2006.01]**
29/32 • • • • Titanates; Germanates; Molybdates; Tungstates **[3, 2006.01]**
29/34 • • Silicates **[3, 2006.01]**
29/36 • • Carbides **[3, 2006.01]**
29/38 • • Nitrides **[3, 2006.01]**
29/40 • • $A_{III}B_V$ compounds **[3, 2006.01]**
29/42 • • • Gallium arsenide **[3, 2006.01]**
29/44 • • • Gallium phosphide **[3, 2006.01]**
29/46 • • Sulfur-, selenium- or tellurium-containing compounds **[3, 2006.01]**
29/48 • • • $A_{II}B_{VI}$ compounds **[3, 2006.01]**
29/50 • • • • Cadmium sulfide **[3, 2006.01]**
29/52 • • Alloys **[3, 2006.01]**
29/54 • Organic compounds **[3, 2006.01]**
29/56 • • Tartrates **[3, 2006.01]**
29/58 • • Macromolecular compounds **[3, 2006.01]**
29/60 • characterised by shape **[3, 2006.01]**
29/62 • • Whiskers or needles **[3, 2006.01]**
29/64 • • Flat crystals, e.g. plates, strips, disks **[5, 2006.01]**
29/66 • • Crystals of complex geometrical shape, e.g. tubes, cylinders **[5, 2006.01]**
29/68 • • Crystals with laminate structure, e.g. "superlattices" **[5, 2006.01]**

30/00 Production of single crystals or homogeneous polycrystalline material with defined structure characterised by the action of electric or magnetic fields, wave energy or other specific physical conditions [5, 2006.01]

Note(s) [5]

When classifying in this group, classification is also made in groups C30B 1/00-C30B 28/00 according to the process of crystal growth.

30/02 • using electric fields, e.g. electrolysis **[5, 2006.01]**
30/04 • using magnetic fields **[5, 2006.01]**
30/06 • using mechanical vibrations **[5, 2006.01]**
30/08 • in conditions of zero-gravity or low gravity **[5, 2006.01]**

After-treatment of single crystals or homogeneous polycrystalline material with defined structure [3, 5]

31/00 Diffusion or doping processes for single crystals or homogeneous polycrystalline material with defined structure; Apparatus therefor [3, 5, 2006.01]
31/02 • by contacting with diffusion materials in the solid state **[3, 2006.01]**
31/04 • by contacting with diffusion materials in the liquid state **[3, 2006.01]**
31/06 • by contacting with diffusion material in the gaseous state (C30B 31/18 takes precedence) **[3, 2006.01]**
31/08 • • the diffusion materials being a compound of the elements to be diffused **[3, 2006.01]**
31/10 • • Reaction chambers; Selection of materials therefor **[3, 2006.01]**
31/12 • • Heating of the reaction chamber **[3, 2006.01]**
31/14 • • Substrate holders or susceptors **[3, 2006.01]**
31/16 • • Feed and outlet means for the gases; Modifying the flow of the gases **[3, 2006.01]**
31/18 • • Controlling or regulating **[3, 2006.01]**
31/20 • Doping by irradiation with electromagnetic waves or by particle radiation **[3, 2006.01]**
31/22 • • by ion-implantation **[3, 2006.01]**

33/00 After-treatment of single crystals or homogeneous polycrystalline material with defined structure (C30B 31/00 takes precedence) **[3, 5, 2006.01]**
33/02 • Heat treatment (C30B 33/04, C30B 33/06 take precedence) **[5, 2006.01]**
33/04 • using electric or magnetic fields or particle radiation **[5, 2006.01]**
33/06 • Joining of crystals **[5, 2006.01]**
33/08 • Etching **[5, 2006.01]**
33/10 • • in solutions or melts **[5, 2006.01]**
33/12 • • in gas atmosphere or plasma **[5, 2006.01]**

35/00 Apparatus not otherwise provided for, specially adapted for the growth, production or after-treatment of single crystals or of a homogeneous polycrystalline material with defined structure [3, 5, 2006.01]

COMBINATORIAL TECHNOLOGY

C40 COMBINATORIAL TECHNOLOGY

C40B COMBINATORIAL CHEMISTRY; LIBRARIES, e.g. CHEMICAL LIBRARIES, IN SILICO LIBRARIES [2006.01]

Note(s) [2006.01]

1. In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.
2. When classifying in this subclass, subject matter of interest is also classified in other appropriate places:
   a. library members are also classified in the appropriate places elsewhere in the IPC (e.g. in section C) according to established procedure relating to "Markush"-type formulae (see paragraphs 100 and 101 of the Guide);
   b. methods or apparatus covered by this subclass are also classified for their biological, chemical, physical or other features in the appropriate places in the IPC, if such features are of interest, e.g.
   A01N.....Biocides
   A61K.....Preparations for medical, dental or toilet purposes
   A61P.....Therapeutic activity of compounds
   B01D.....Separation
   B01J.....Chemical or physical processes, e.g. catalysis; Apparatus therefor
   B01L.....Chemical or physical laboratory apparatus
   B29.....Shaped plastics
   C01, C07, C08.....Inorganic, organic or organic macromolecular compounds; Methods of preparation or separation thereof
   C12.....Biochemistry, microbiology, enzymology including micro-organisms or enzymes, preparing them, using them to synthesise compounds or compositions; Measuring or testing processes involving micro-organisms or enzymes; Mutation or genetic engineering
   C22.....Metal alloys
   G01N.....Chemical or physical analysis
   G01R, G01T.....Physical measurements methods; Apparatus therefor
   G03F.....Photomechanical methods
   G06F.....Electrical digital data processing
   G06K.....Data processing
   G06T.....Image data processing
   G09F.....Displaying; Advertising

10/00 Directed molecular evolution of macromolecules, e.g. RNA, DNA or proteins [2006.01]

20/00 Methods specially adapted for identifying library members [2006.01]

20/02 • Identifying library members by their fixed physical location on a support or substrate **[2006.01]**

20/04 • Identifying library members by means of a tag, label, or other readable or detectable entity associated with the library members, e.g. decoding processes **[2006.01]**

20/06 • using iterative deconvolution techniques **[2006.01]**

20/08 • Direct analysis of the library members per se by physical methods, e.g. spectroscopy **[2006.01]**

30/00 Methods of screening libraries [2006.01]

30/02 • In silico screening **[2006.01]**

30/04 • by measuring the ability to specifically bind a target molecule, e.g. antibody-antigen binding, receptor-ligand binding **[2006.01]**

30/06 • by measuring effects on living organisms, tissues or cells **[2006.01]**

30/08 • by measuring catalytic activity **[2006.01]**

30/10 • by measuring physical properties, e.g. mass **[2006.01]**

40/00 Libraries per se, e.g. arrays, mixtures [2006.01]

40/02 • Libraries contained in or displayed by micro-organisms, e.g. bacteria or animal cells; Libraries contained in or displayed by vectors, e.g. plasmids; Libraries containing only micro-organisms or vectors **[2006.01]**

40/04 • Libraries containing only organic compounds **[2006.01]**

Note(s) [2006.01]

Libraries containing salts of organic compounds are classified in the groups for the libraries containing the parent compounds

40/06 • • Libraries containing nucleotides or polynucleotides, or derivatives thereof **[2006.01]**

40/08 • • • Libraries containing RNA or DNA which encodes proteins, e.g. gene libraries **[2006.01]**

40/10 • • Libraries containing peptides or polypeptides, or derivatives thereof **[2006.01]**

40/12 • • Libraries containing saccharides or polysaccharides, or derivatives thereof **[2006.01]**

40/14 • • Libraries containing macromolecular compounds and not covered by groups C40B 40/06-C40B 40/12 **[2006.01]**

40/16 • • Libraries containing metal-containing organic compounds **[2006.01]**

40/18 • Libraries containing only inorganic compounds or inorganic materials **[2006.01]**

50/00 Methods of creating libraries, e.g. combinatorial synthesis [2006.01]

50/02 • In silico or mathematical conception of libraries **[2006.01]**

50/04 • using dynamic combinatorial chemistry techniques **[2006.01]**

50/06 • Biochemical methods, e.g. using enzymes or whole viable micro-organisms **[2006.01]**

50/08 • Liquid phase synthesis, i.e. wherein all library building blocks are in liquid phase or in solution during library creation; Particular methods of cleavage from the liquid support **[2006.01]**

50/10 • • involving encoding steps **[2006.01]**

50/12 • • using a particular method of attachment to the liquid support **[2006.01]**

50/14 • Solid phase synthesis, i.e. wherein one or more library building blocks are bound to a solid support during library creation; Particular methods of cleavage from the solid support **[2006.01]**

50/16 • • involving encoding steps **[2006.01]**

50/18 • • using a particular method of attachment to the solid support **[2006.01]**

60/00 Apparatus specially adapted for use in combinatorial chemistry or with libraries [2006.01]

60/02 • Integrated apparatus specially adapted for creating libraries, screening libraries and for identifying library members **[2006.01]**

60/04 • Integrated apparatus specially adapted for both screening libraries and identifying library members **[2006.01]**

60/06 • Integrated apparatus specially adapted for both creating libraries and identifying library members **[2006.01]**

60/08 • Integrated apparatus specially adapted for both creating and screening libraries **[2006.01]**

60/10 • for identifying library members **[2006.01]**

60/12 • for screening libraries **[2006.01]**

60/14 • for creating libraries **[2006.01]**

70/00 Tags or labels specially adapted for combinatorial chemistry or libraries, e.g. fluorescent tags or barcodes [2006.01]

80/00 Linkers or spacers specially adapted for combinatorial chemistry or libraries, e.g. traceless linkers or safety-catch linkers [2006.01]

99/00 Subject matter not provided for in other groups of this subclass [2006.01]

C99 SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION

C99Z SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION [2006.01]

Note(s) [2006.01]

This subclass covers subject matter that:

a. is not provided for, but is most closely related to, the subject matter covered by the subclasses of this section, and
b. is not explicitly covered by any subclass of another section.

99/00 Subject matter not otherwise provided for in this section [2006.01]