C07 **ORGANIC CHEMISTRY** (such compounds as the oxides, sulfides, or oxysulfides of carbon, cyanogen, phosgene, hydrocyanic acid or salts thereof C01; 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 C01B 33/44; macromolecular compounds C08; dyes C09; fermentation products C12; fermentation or enzyme-using processes to synthesise a desired chemical compound or composition or to separate optical isomers from a racemic mixture C12P; production of organic compounds by electrolysis or electrophoresis C25B 3/00, C25B 7/00) **[2]**

Notes

(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. **[4]**

(2) Biocidal, pest repellant, pest attractant or plant growth regulatory activity of compounds or preparations is further classified in subclass A01P. **[8]**

(3) In subclasses C07C to C07K and within each of theses subclasses, 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 the groups for the types of reaction employed, if of interest. 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.

(5) 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. **[5]**

(6) 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 to 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. **[2]**

C07B **GENERAL METHODS OF ORGANIC CHEMISTRY**; **APPARATUS THEREFOR** (preparation of carboxylic acid esters by telomerisation C07C 67/47; telomerisation C08F)

Notes

(1) In this subclass, the functional group which is present already 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. **[4]**

(2) In this subclass, the following term is used with the meaning indicated:
– "separation" means separation only for the purposes of recovering organic compounds. **[4]**

(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. **[8]**

(4) In this subclass, 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. **[4]**

Subclass Index

31/00 Reduction in general [4]

33/00 Oxidation in general [4]

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]

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

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]

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

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

39/00 Halogenation [4]

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

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

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

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

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

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

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

49/00 Grignard reactions [4]

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

53/00 Asymmetric syntheses [4]

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

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

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

61/00 Other general methods [4]

61/02 . Generation of organic free radicals **[4]**

Purification; Separation; Stabilisation [4]

63/00 Purification; Separation (separation of optically-active compounds C07B 57/00); **Stabilisation; Use of additives [4]**

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

C07C ACYCLIC OR CARBOCYCLIC COMPOUNDS (preparation of macromolecular compounds C08F; production of organic compounds by electrolysis or electrophoresis C25B 3/00, C25B 7/00)

Notes

(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. **[5]**

(2) Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C to C07K and within these subclasses. **[8]**

(3) Therapeutic activity of compounds is further classified in subclass A61P. **[7]**

(4) When classifying in this subclass, classification is also made in group B01D 15/08insofar as subject matter of general interest relating to chromatography is concerned. **[8]**

(5) In this subclass, in the absence of an indication to the contrary, a process is classified in the last appropriate place. **[3]**

(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". **[5]**

(7) For the classification of compounds in groups C07C 1/00 to C07C 71/00and C07C 401/00 to 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 to 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. **[5]**

Subclass Index

Hydrocarbons [3]

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

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

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

2/02 . by addition between unsaturated hydrocarbons **[3]**
2/04 . . by oligomerisation of well-defined unsaturated hydrocarbons without ring formation **[3]**
2/06 . . . of alkenes, i.e. acyclic hydrocarbons having only one carbon-to-carbon double bond **[3]**
2/08 . . . . Catalytic processes **[3]**
2/10 . . . . . with metal oxides **[3]**
2/12 . . . . . with crystalline alumino-silicates, e.g. molecular sieves **[3]**
2/14 . . . . . with inorganic acids; with salts or anhydrides of acids **[3]**
2/16 . . . . . Acids of sulfur; Salts thereof; Sulfur oxides **[3]**
2/18 . . . . . Acids of phosphorus; Salts thereof; Phosphorus oxides **[3]**
2/20 . . . . . Acids of halogen; Salts thereof **[3]**
2/22 . . . . . Metal halides; Complexes thereof with organic compounds **[3]**
2/24 . . . . . with metals **[3]**
2/26 . . . . . with hydrides or organic compounds (C07C 2/22 takes precedence) **[3]**
2/28 . . . . . with ion-exchange resins **[3]**
2/30 . . . . . containing a metal-to-carbon bond; Metal hydrides **[3]**
2/32 . . . . . as complexes, e.g. acetyl-acetonates **[3]**
2/34 . . . . . Metal-hydrocarbon complexes **[3]**
2/36 . . . . . as phosphines, arsines, stilbines or bismuthines **[3]**
2/38 . . . of dienes or alkynes **[3]**
2/40 . . . . of conjugated dienes **[3]**
2/42 . . homo- or co-oligomerisation with ring formation, not being a Diels-Alder conversion **[3]**
2/44 . . . of conjugated dienes only **[3]**
2/46 . . . . Catalytic processes **[3]**
2/48 . . . of only hydrocarbons containing a carbon-to-carbon triple bond **[3]**
2/50 . . Diels-Alder conversion **[3]**
2/52 . . . Catalytic processes **[3]**
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]**
2/56 . . Addition to acyclic hydrocarbons **[3]**
2/58 . . . Catalytic processes **[3]**
2/60 . . . . with halides **[3]**
2/62 . . . . with acids **[3]**
2/64 . . Addition to a carbon atom of a six-membered aromatic ring **[3]**
2/66 . . . Catalytic processes **[3]**
2/68 . . . . with halides **[3]**
2/70 . . . . with acids **[3]**
2/72 . . Addition to a non-aromatic carbon atom of hydrocarbons containing a six-membered aromatic ring **[3]**
2/74 . by addition with simultaneous hydrogenation **[3]**
2/76 . by condensation of hydrocarbons with partial elimination of hydrogen **[3]**
2/78 . . Processes with partial combustion **[3]**
2/80 . . Processes with the aid of electrical means **[3]**
2/82 . . oxidative coupling **[3]**
2/84 . . . catalytic **[3]**
2/86 . by condensation between a hydrocarbon and a non-hydrocarbon **[3]**
2/88 . . Growth and elimination reactions **[3]**

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

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

5/00 Preparation of hydrocarbons from hydrocarbons containing the same number of carbon atoms

5/02 . by hydrogenation

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

Notes

(1) In this group:
– the catalyst is considered as forming part of the acceptor system in case of simultaneous catalyst reduction; **[3]**
– compounds added for binding the reduced acceptor system are not considered as belonging to the acceptor system. **[3]**

(2) The acceptor system is classified according to the supplying substances in case of in situ formation of the acceptor system or of in situ regeneration of the reduced acceptor system. **[3]**

5/44 . . with a halogen or a halogen-containing compound as an acceptor **[2]**
5/46 . . with sulfur or a sulfur-containing compound as an acceptor **[2]**
5/48 . . with oxygen as an acceptor **[2]**
5/50 . . with an organic compound as an acceptor **[2]**
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]**
5/54 . . with an acceptor system containing at least two compounds provided for in more than one of groups C07C 5/44 to C07C 5/50 **[3]**
5/56 . . . containing only oxygen and either halogens or halogen-containing compounds **[3]**

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

6/02 . Metathesis reactions at an unsaturated carbon-to-carbon bond **[3]**
6/04 . . at a carbon-to-carbon double bond **[3]**
6/06 . . . at a cyclic carbon-to-carbon double bond **[3]**
6/08 . by conversion at a saturated carbon-to-carbon bond **[3]**
6/10 . . in hydrocarbons containing no six-membered aromatic rings **[3]**
6/12 . . of exclusively hydrocarbons containing a six-membered aromatic ring **[3]**

7/00 Purification, separation or stabilisation of hydrocarbons; Use of additives [5]

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

9/00 Acyclic saturated hydrocarbons

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

11/00 Acyclic unsaturated hydrocarbons

11/02 . Alkenes
11/04 . . Ethene

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

13/00 Cyclic hydrocarbons containing rings other than, or in addition to, six-membered aromatic rings

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

Note

Ring systems consisting only of condensed six-membered rings with maximum number of non-cumulative double bonds are classified in group C07C 15/00. **[3]**

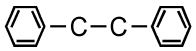
13/32 . . with condensed rings
13/34 . . . with a bicyclo ring system containing four carbon atoms
13/36 . . . with a bicyclo ring system containing five carbon atoms
13/38 . . . with a bicyclo ring system containing six carbon atoms
13/39 . . . with a bicyclo ring system containing seven carbon atoms **[3]**
13/40 . . . . with a bicycloheptane ring structure **[3]**
13/42 . . . . with a bicycloheptene ring structure **[3]**
13/43 . . . . . substituted by unsaturated acyclic hydrocarbon groups **[3]**
13/44 . . . with a bicyclo ring system containing eight carbon atoms
13/45 . . . with a bicyclo ring system containing nine carbon atoms **[3]**
13/465 . . . . Indenes; Completely or partially hydrogenated indenes **[3]**
13/47 . . . with a bicyclo ring system containing ten carbon atoms **[3]**
13/48 . . . . Completely or partially hydrogenated naphthalenes **[3]**
13/50 . . . . . Decahydronaphthalenes **[3]**
13/52 . . . . Azulenes; Completely or partially hydrogenated azulenes **[3]**
13/54 . . . with three condensed rings
13/547 . . . . at least one ring not being six-membered, the other rings being at the most six-membered **[3]**
13/553 . . . . . Indacenes; Completely or partially hydrogenated indacenes **[3]**
13/567 . . . . . Fluorenes; Completely or partially hydrogenated fluorenes **[3]**
13/573 . . . . with three six-membered rings **[3]**
13/58 . . . . . Completely or partially hydrogenated anthracenes **[3]**
13/60 . . . . . Completely or partially hydrogenated phenanthrenes **[3]**
13/605 . . . . with a bridged ring system **[3]**
13/61 . . . . . Bridged indenes, e.g. dicyclopentadiene **[3]**
13/615 . . . . . Adamantanes **[3]**
13/62 . . . with more than three condensed rings
13/64 . . . . with a bridged ring system **[3]**
13/66 . . . . the condensed ring system contains only four rings **[3]**
13/68 . . . . . with a bridged ring system **[3]**
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]**
13/72 . . . Spiro hydrocarbons **[3]**

15/00 Cyclic hydrocarbons containing only six-membered aromatic rings as cyclic part [2]

15/02 . Monocyclic hydrocarbons
15/04 . . Benzene
15/06 . . Toluene
15/067 . . C_8H_{10} hydrocarbons **[3]**
15/073 . . . Ethylbenzene **[3]**
15/08 . . . Xylenes **[3]**
15/085 . . Isopropylbenzene **[3]**
15/107 . . having a saturated side-chain containing at least six carbon atoms, e.g. detergent alkylates **[3]**
15/113 . . . having at least two saturated side-chains, each containing at least six carbon atoms **[3]**
15/12 . Polycyclic non-condensed hydrocarbons
15/14 . . all phenyl groups being directly linked **[3]**

15/16 . . containing at least two phenyl groups linked by one single acyclic carbon atom

15/18 . . containing at least one group with formula



15/20 . Polycyclic condensed hydrocarbons

15/24 . . containing two rings

15/27 . . containing three rings **[3]**

15/28 . . . Anthracenes **[3]**

15/30 . . . Phenanthrenes **[3]**

15/38 . . containing four rings **[3]**

15/40 . substituted by unsaturated hydrocarbon radicals **[3]**

15/42 . . monocyclic **[3]**

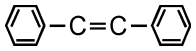
15/44 . . . the hydrocarbon substituent containing a carbon-to-carbon double bond **[3]**

15/46 . . . . Styrene; Ring-alkylated styrenes **[3]**

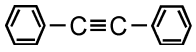
15/48 . . . the hydrocarbon substituent containing a carbon-to-carbon triple bond **[3]**

15/50 . . polycyclic non-condensed **[3]**

15/52 . . . containing a group with formula

 **[3]**

15/54 . . . containing a group with formula

 **[3]**

15/56 . . polycyclic condensed **[3]**

15/58 . . . containing two rings **[3]**

15/60 . . . containing three rings **[3]**

15/62 . . . containing four rings **[3]**

Compounds containing carbon and halogens with or without hydrogen

17/00 Preparation of halogenated hydrocarbons

17/007 . from carbon or carbides and halogens **[6]**

17/013 . by addition of halogens **[6]**

17/02 . . to unsaturated hydrocarbons **[6]**

17/04 . . to unsaturated halogenated hydrocarbons **[6]**

17/06 . . combined with replacement of hydrogen atoms by halogens

17/07 . by addition of hydrogen halides **[6]**

17/08 . . to unsaturated hydrocarbons **[6]**

17/087 . . to unsaturated halogenated hydrocarbons **[6]**

17/093 . by replacement by halogens **[6]**

17/10 . . of hydrogen atoms (combined with addition of halogens to unsaturated hydrocarbons C07C 17/06) **[6]**

17/12 . . . in the ring of aromatic compounds **[6]**

17/14 . . . in the side-chain of aromatic compounds **[6]**

17/15 . . with oxygen as auxiliary reagent, e.g. oxychlorination **[2,6]**

17/152 . . . of hydrocarbons **[3,6]**

17/154 . . . . of saturated hydrocarbons **[3,6]**

17/156 . . . . of unsaturated hydrocarbons **[3,6]**

17/158 . . . of halogenated hydrocarbons **[3,6]**

17/16 . . of hydroxyl groups **[3,6]**

17/18 . . of oxygen atoms of carbonyl groups **[6]**

17/20 . . of halogen atoms by other halogen atoms **[6]**

17/21 . . . with simultaneous increase of the number of halogen atoms **[6]**

17/23 . by dehalogenation **[6]**

17/25 . by splitting-off hydrogen halides from halogenated hydrocarbons **[6]**

17/26 . by reactions involving an increase in the number of carbon atoms in the skeleton

17/263 . . by condensation reactions **[6]**

17/266 . . . of hydrocarbons and halogenated hydrocarbons **[6]**

17/269 . . . of only halogenated hydrocarbons **[6]**

17/272 . . by addition reactions **[6]**

17/275 . . . of hydrocarbons and halogenated hydrocarbons **[6]**

17/278 . . . of only halogenated hydrocarbons **[6]**

17/281 . . . . of only one compound **[6]**

17/30 . . by a Diels-Alder synthesis

17/32 . . by introduction of halogenated alkyl groups into ring compounds

17/35 . by reactions not affecting the number of carbon or halogen atoms in the molecules **[6]**

17/354 . . by hydrogenation **[6]**

17/357 . . by dehydrogenation **[6]**

17/358 . . by isomerisation **[6]**

17/361 . by reactions involving a decrease in the number of carbon atoms **[6]**

17/363 . . by elimination of carboxyl groups **[6]**

17/367 . . by depolymerisation **[6]**

17/37 . by disproportionation of halogenated hydrocarbons **[6]**

17/38 . Separation; Purification; Stabilisation; Use of additives

17/383 . . by distillation **[6]**

17/386 . . . with auxiliary compounds **[6]**

17/389 . . by adsorption on solids **[6]**

17/392 . . by crystallisation; Purification or separation of the crystals **[6]**

17/395 . . by treatment giving rise to a chemical modification of at least one compound **[6]**

17/42 . . Use of additives, e.g. for stabilisation **[3,6]**

19/00 Acyclic saturated compounds containing halogen atoms [5]

19/01 . containing chlorine **[6]**

19/03 . . Chloromethanes **[6]**

19/04 . . . Chloroform **[6]**

19/041 . . . Carbon tetrachloride **[6]**

19/043 . . Chloroethanes **[6]**

19/045 . . . Dichloroethanes **[3,6]**

19/05 . . . Trichloroethanes **[3,6]**

19/055 . . . Tetrachloroethanes **[3,6]**

19/07 . containing iodine **[2]**

19/075 . containing bromine **[6]**

19/08 . containing fluorine

19/10 . . and chlorine **[6]**

19/12 . . . having two carbon atoms **[6]**

19/14 . . and bromine **[6]**

19/16 . . and iodine **[6]**

21/00 Acyclic unsaturated compounds containing halogen atoms [5]

21/02 . containing carbon-to-carbon double bonds

21/04 . . Chloro-alkenes

21/06 . . . Vinyl chloride

21/067 . . . Allyl chloride; Methallyl chloride **[3]**

21/073 . . . Dichloro-alkenes **[3]**

21/08 . . . . Vinylidene chloride **[3]**

21/09 . . . . Dichloro-butenes **[3]**

21/10 . . . Trichloro-ethylene

21/12 . . . Tetrachloro-ethylene

21/14 . . containing bromine

21/16 . . . Crotyl bromide

21/17 . . containing iodine **[5]**
21/18 . . containing fluorine
21/185 . . . Tetrafluoroethene **[5]**
21/19 . . Halogenated dienes **[3]**
21/20 . . . Halogenated butadienes **[3]**
21/21 . . . . Chloroprene **[3]**
21/215 . . Halogenated polyenes with more than two carbon-to-carbon double bonds **[3]**
21/22 . containing carbon-to-carbon triple bonds

22/00 Cyclic compounds containing halogen atoms bound to an acyclic carbon atom [5]

22/02 . having unsaturation in the rings **[5]**
22/04 . . containing six-membered aromatic rings **[5]**
22/06 . . . Trichloromethylbenzene **[5]**
22/08 . . . containing fluorine **[5]**

23/00 Compounds containing at least one halogen atom bound to a ring other than a six-membered aromatic ring

23/02 . Monocyclic halogenated hydrocarbons
23/04 . . with a three-membered ring
23/06 . . with a four-membered ring
23/08 . . with a five-membered ring
23/10 . . with a six-membered ring
23/12 . . . Hexachlorocyclohexanes
23/14 . . with a seven-membered ring
23/16 . . with an eight-membered ring
23/18 . Polycyclic halogenated hydrocarbons
23/20 . . with condensed rings none of which is aromatic
23/22 . . . with a bicyclo ring system containing four carbon atoms
23/24 . . . with a bicyclo ring system containing five carbon atoms
23/26 . . . with a bicyclo ring system containing six carbon atoms
23/27 . . . with a bicyclo ring system containing seven carbon atoms **[5]**
23/28 . . . . Saturated bicyclo ring system **[5]**
23/30 . . . . Mono-unsaturated bicyclo ring system **[5]**
23/32 . . . with a bicyclo ring system containing eight carbon atoms
23/34 . . . Halogenated completely or partially hydrogenated indenes
23/36 . . . Halogenated completely or partially hydrogenated naphthalenes
23/38 . . . with three condensed rings
23/40 . . . . Halogenated completely or partially hydrogenated fluorenes
23/42 . . . . Halogenated completely or partially hydrogenated anthracenes
23/44 . . . . Halogenated completely or partially hydrogenated phenanthrenes
23/46 . . . with more than 3 condensed rings

25/00 Compounds containing at least one halogen atom bound to a six-membered aromatic ring

25/02 . Monocyclic aromatic halogenated hydrocarbons
25/06 . . Monochloro-benzene **[3]**
25/08 . . Dichloro-benzenes **[3]**
25/10 . . Trichloro-benzenes **[3]**
25/12 . . Hexachloro-benzene **[3]**
25/125 . . Halogenated xylenes **[2,3]**
25/13 . . containing fluorine **[2,3]**
25/18 . Polycyclic aromatic halogenated hydrocarbons
25/20 . . Dichloro-diphenyl-trichloro-ethane
25/22 . . with condensed rings
25/24 . Halogenated aromatic hydrocarbons with unsaturated side chains
25/28 . . Halogenated styrenes **[3]**

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

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

29/00 Preparation of compounds having hydroxy or O-metal groups bound to a carbon atom not belonging to a six-membered aromatic ring

29/03 . by addition of hydroxy groups to unsaturated carbon-to-carbon bonds, e.g. with the aid of H_2O_2 **[3]**
29/04 . . by hydration of carbon-to-carbon double bonds
29/05 . . . with formation of absorption products in mineral acids and their hydrolysis **[3]**
29/06 . . . . the acid being sulfuric acid **[3]**
29/08 . . . . the acid being phosphoric acid **[3]**
29/09 . by hydrolysis (of esters of organic acids C07C 27/02) **[3]**
29/10 . . of ethers, including cyclic ethers, e.g. oxiranes
29/12 . . of esters of mineral acids **[3]**
29/124 . . . of halides **[3]**
29/128 . by alcoholysis (of esters of organic acids C07C 27/02) **[3]**
29/132 . by reduction of an oxygen-containing functional group **[3]**
29/136 . . of $\rangle C{=}O$ containing groups, e.g. $-COOH$ **[3]**
29/14 . . . of a $-CHO$ group **[3]**
29/141 . . . . with hydrogen or hydrogen-containing gases **[5]**
29/143 . . . of ketones **[5]**
29/145 . . . . with hydrogen or hydrogen-containing gases **[5]**
29/147 . . . of carboxylic acids or derivatives thereof **[5]**
29/149 . . . . with hydrogen or hydrogen-containing gases **[5]**
29/15 . by reduction of oxides of carbon exclusively **[3]**
29/151 . . with hydrogen or hydrogen-containing gases **[5]**
29/152 . . . characterised by the reactor used **[5]**
29/153 . . . characterised by the catalyst used **[5]**

29/154 . . . . containing copper, silver, gold, or compounds thereof **[5]**
29/156 . . . . containing iron group metals, platinum group metals, or compounds thereof **[5]**
29/157 . . . . . containing platinum group metals or compounds thereof **[5]**
29/158 . . . . . . containing rhodium or compounds thereof **[5]**
29/159 . . with reducing agents other than hydrogen or hydrogen-containing gases **[5]**
29/16 . by oxo-reaction combined with reduction
29/17 . by hydrogenation of carbon-to-carbon double or triple bonds **[3]**
29/19 . . in six-membered aromatic rings **[3]**
29/20 . . . in non-condensed rings substituted with hydroxy groups **[3]**
29/32 . increasing the number of carbon atoms by reactions without formation of hydroxy groups **[3]**
29/34 . . by condensation involving hydroxy groups or the mineral ester groups derived therefrom, e.g. Guerbet reaction **[3]**
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]**
29/38 . . by reaction with aldehydes or ketones **[3]**
29/40 . . . with compounds containing carbon-to-metal bonds **[3]**
29/42 . . . with compounds containing triple carbon-to-carbon bonds, e.g. with metal-alkynes **[3]**
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]**
29/46 . . by diene-synthesis **[3]**
29/48 . by oxidation reactions with formation of hydroxy groups **[3]**
29/50 . . with molecular oxygen only **[3]**
29/52 . . . in the presence of mineral boron compounds with, when necessary, hydrolysis of the intermediate formed **[3]**
29/54 . . . starting from compounds containing carbon-to-metal bonds and followed by conversion of the O-metal to hydroxy groups **[3]**
29/56 . by isomerisation **[3]**
29/58 . by elimination of halogen, e.g. by hydrogenolysis, splitting-off (C07C 29/124 takes precedence) **[3]**
29/60 . by elimination of hydroxy groups, e.g. by dehydration (C07C 29/34 takes precedence) **[3]**
29/62 . by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3]**
29/64 . by simultaneous introduction of hydroxy groups and halogens **[3]**
29/66 . . by addition of hypohalogenous acids, which may be formed in situ, to carbon-to-carbon unsaturated bonds **[3]**
29/68 . Preparation of metal-alcoholates (C07C 29/42, C07C 29/54 take precedence) **[3]**
29/70 . . by converting hydroxy groups to O-metal groups **[3]**
29/72 . . by oxidation of carbon-to-metal bonds **[3]**
29/74 . Separation; Purification; Stabilisation; Use of additives **[3]**
29/76 . . by physical treatment **[3]**
29/78 . . . by condensation or crystallisation **[3]**
29/80 . . . by distillation **[3]**
29/82 . . . . by azeotropic distillation **[3]**
29/84 . . . . by extractive distillation **[3]**
29/86 . . . by liquid-liquid treatment **[3]**
29/88 . . by treatment giving rise to a chemical modification of at least one compound (chemisorption C07C 29/76) **[3]**
29/90 . . . using hydrogen only **[3]**
29/92 . . . by a consecutive conversion and reconstruction **[3]**
29/94 . . Use of additives, e.g. for stabilisation **[3]**

31/00 Saturated compounds having hydroxy or O-metal groups bound to acyclic carbon atoms

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

33/00 Unsaturated compounds having hydroxy or O-metal groups bound to acyclic carbon atoms

Note

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. **[3]**

33/02 . Acyclic alcohols with carbon-to-carbon double bonds
33/025 . . with only one double bond **[3]**
33/03 . . . in beta-position, e.g. allyl alcohol, methallyl alcohol **[3]**
33/035 . . . Alkenediols **[3]**
33/04 . Acyclic alcohols with carbon-to-carbon triple bonds
33/042 . . with only one triple bond **[3]**
33/044 . . . Alkynediols **[3]**
33/046 . . . . Butynediols **[3]**
33/048 . . with double and triple bonds **[3]**

33/05 . Alcohols containing rings other than six-membered aromatic rings **[2]**
33/12 . . containing five-membered rings **[3]**
33/14 . . containing six-membered rings **[3]**
33/16 . . containing rings with more than six ring members **[3]**
33/18 . Monohydroxylic alcohols containing only six-membered aromatic rings as cyclic part **[3]**
33/20 . . monocyclic **[3]**
33/22 . . . Benzylalcohol; Phenylethyl alcohol **[3]**
33/24 . . polycyclic without condensed ring systems **[3]**
33/26 . Polyhydroxylic alcohols containing only six-membered aromatic rings as cyclic part **[3]**
33/28 . Alcohols containing only six-membered aromatic rings as cyclic part with unsaturation outside the aromatic rings **[3]**
33/30 . . monocyclic **[3]**
33/32 . . . Cinnamyl alcohol **[3]**
33/34 . Monohydroxylic alcohols containing six-membered aromatic rings and other rings **[3]**
33/36 . Polyhydroxylic alcohols containing six-membered aromatic rings and other rings **[3]**
33/38 . Alcohols containing six-membered aromatic rings and other rings and having unsaturation outside the aromatic rings **[3]**
33/40 . Halogenated unsaturated alcohols **[3]**
33/42 . . acyclic **[3]**
33/44 . . containing rings other than six-membered aromatic rings **[3]**
33/46 . . containing only six-membered aromatic rings as cyclic part **[3]**
33/48 . . . with unsaturation outside the aromatic rings **[3]**
33/50 . . containing six-membered aromatic rings and other rings **[3]**

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 [2]

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

37/00 Preparation of compounds having hydroxy or O-metal groups bound to a carbon atom of a six-membered aromatic ring

37/01 . by replacing functional groups bound to a six-membered aromatic ring by hydroxy groups, e.g. by hydrolysis **[3]**
37/02 . . by substitution of halogen **[3]**
37/04 . . by substitution of SO_3H groups or a derivative thereof **[3]**
37/045 . . by substitution of a group bound to the ring by nitrogen **[3]**
37/05 . . . by substitution of a NH_2 group **[3]**
37/055 . . by substitution of a group bound to the ring by oxygen, e.g. ether group **[3]**
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
37/07 . . with simultaneous reduction of C=O group in that ring **[3]**
37/08 . by decomposition of hydroperoxides, e.g. cumene hydroperoxide
37/11 . by reactions increasing the number of carbon atoms **[3]**
37/14 . . by addition reactions, i.e. reactions involving at least one carbon-to-carbon unsaturated bond **[3]**
37/16 . . by condensation involving hydroxy groups of phenols or alcohols or the ether or mineral ester group derived therefrom **[3]**
37/18 . . by condensation involving halogen atoms of halogenated compounds
37/20 . . using aldehydes or ketones
37/48 . by exchange of hydrocarbon groups which may be substituted, from other compounds, e.g. transalkylation **[3]**
37/50 . by reactions decreasing the number of carbon atoms (C07C 37/01, C07C 37/08, C07C 37/48 take precedence) **[3]**
37/52 . . by splitting polyaromatic compounds, e.g. polyphenolalkanes **[3]**
37/54 . . . by hydrolysis of lignin or sulfite waste liquor **[3]**
37/56 . . by replacing a carboxyl or aldehyde group by a hydroxy group **[3]**

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]**

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]**

37/62 . by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3]**

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]**

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

37/68 . Separation; Purification; Stabilisation; Use of additives **[3]**

37/70 . . by physical treatment **[3]**

37/72 . . . by liquid-liquid treatment **[3]**

37/74 . . . by distillation **[3]**

37/76 . . . . by steam distillation **[3]**

37/78 . . . . by azeotropic distillation **[3]**

37/80 . . . . by extractive distillation **[3]**

37/82 . . . by solid-liquid treatment; by chemisorption **[3]**

37/84 . . . by crystallisation **[3]**

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

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

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

Note

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. **[3]**

39/02 . monocyclic with no unsaturation outside the aromatic ring

39/04 . . Phenol

39/06 . . Alkylated phenols

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

39/08 . . Dihydroxy benzenes; Alkylated derivatives thereof

39/10 . . Polyhydroxy benzenes; Alkylated derivatives thereof (C07C 39/08 takes precedence)

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

39/12 . polycyclic with no unsaturation outside the aromatic rings

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

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

39/16 . . . Bis(hydroxy phenyl)alkanes; Tris(hydroxy phenyl)alkanes **[3]**

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

39/18 . monocyclic with unsaturation outside the aromatic ring

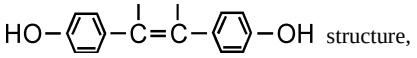
39/19 . . containing carbon-to-carbon double bonds but no carbon-to-carbon triple bonds **[3]**

39/20 . . . Hydroxy styrenes **[3]**

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

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

39/215 . . . containing the



structure, e.g. diethylstilbestrol **[3]**

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

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

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

39/24 . Halogenated derivatives

39/26 . . monocyclic monohydroxylic containing halogen bound to ring carbon atoms

39/27 . . . all halogen atoms being attached to the ring

39/28 . . . . the halogen being one chlorine atom

39/30 . . . . the halogen being two chlorine atoms

39/32 . . . . the halogen being three chlorine atoms

39/34 . . . . the halogen being four chlorine atoms

39/36 . . . . Pentachlorophenol

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

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

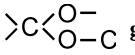
39/38 . . with at least one hydroxy group on a condensed ring system containing two rings

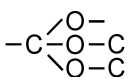
39/40 . . with at least one hydroxy group on a condensed ring system containing more than two rings **[3]**

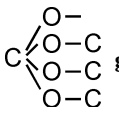
39/42 . . containing six-membered aromatic rings and other rings **[3]**

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

41/00 Preparation of ethers; **Preparation of compounds having**

 **groups,**

 **groups or**

 **groups [3]**

41/01 . Preparation of ethers **[3]**

41/02 . . from oxiranes **[3]**

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

41/05 . . by addition of compounds to unsaturated compounds **[3]**

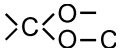
41/06 . . . by addition of organic compounds only **[3]**

41/08 . . . . to carbon-to-carbon triple bonds **[3]**

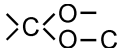
41/09 . . by dehydration of compounds containing hydroxy groups **[3]**

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

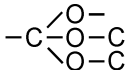
41/16 . . by reaction of esters of mineral or organic acids with hydroxy or O-metal groups **[3]**
41/18 . . by reactions not forming ether-oxygen bonds **[3]**
41/20 . . . by hydrogenation of carbon-to-carbon double or triple bonds **[3]**
41/22 . . . by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3]**
41/24 . . . by elimination of halogen, e.g. elimination of HCl **[3]**
41/26 . . . by introduction of hydroxy or O-metal groups **[3]**
41/28 . . . from acetals, e.g. by dealcoholysis **[3]**
41/30 . . . by increasing the number of carbon atoms, e.g. by oligomerisation **[3]**
41/32 . . by isomerisation **[3]**
41/34 . . Separation; Purification; Stabilisation; Use of additives **[3]**
41/36 . . . by solid-liquid treatment; by chemisorption **[3]**
41/38 . . . by liquid-liquid treatment **[3]**
41/40 . . . by change of physical state, e.g. by crystallisation **[3]**
41/42 . . . . by distillation **[3]**
41/44 . . . by treatment giving rise to a chemical modification (by chemisorption C07C 41/36) **[3]**
41/46 . . . Use of additives, e.g. for stabilisation **[3]**
41/48 . Preparation of compounds having

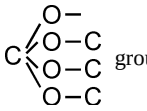
 groups **[3]**

41/50 . . by reactions producing

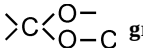
 groups **[3]**

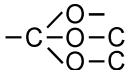
41/52 . . . by substitution of halogen only **[3]**
41/54 . . . by addition of compounds to unsaturated carbon-to-carbon bonds **[3]**
41/56 . . . by condensation of aldehydes, paraformaldehyde, or ketones **[3]**
41/58 . . Separation; Purification; Stabilisation; Use of additives **[3]**
41/60 . Preparation of compounds having

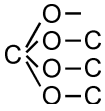
 groups or

 groups **[3]**

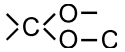
43/00 **Ethers**; **Compounds having**

 **groups,**

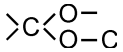
 **groups or**

 **groups**

43/02 . Ethers
43/03 . . having all ether-oxygen atoms bound to acyclic carbon atoms **[3]**
43/04 . . . Saturated ethers **[3]**
43/06 . . . . Diethyl ether **[3]**
43/10 . . . . of polyhydroxy compounds **[3]**
43/11 . . . . . Polyethers containing $-O-(C-C-O-)_n$ units with 2 <= n <= 10 **[2,3]**
43/115 . . . . containing carbocyclic rings **[3]**
43/12 . . . . containing halogen **[3]**
43/13 . . . . containing hydroxy or O-metal groups (C07C 43/11 takes precedence) **[3]**
43/14 . . . Unsaturated ethers **[3]**
43/15 . . . . containing only non-aromatic carbon-to-carbon double bonds **[3]**
43/16 . . . . . Vinyl ethers **[3]**
43/162 . . . . containing rings other than six-membered aromatic rings **[3]**
43/164 . . . . containing six-membered aromatic rings **[3]**
43/166 . . . . . having unsaturation outside the aromatic rings **[3]**
43/168 . . . . . containing six-membered aromatic rings and other rings **[3]**
43/17 . . . . containing halogen **[2,3]**
43/172 . . . . . containing rings other than six-membered aromatic rings **[3]**
43/174 . . . . . containing six-membered aromatic rings **[3]**
43/176 . . . . . having unsaturation outside the aromatic rings **[3]**
43/178 . . . . containing hydroxy or O-metal groups **[3]**
43/18 . . having an ether-oxygen atom bound to a carbon atom of a ring other than a six-membered aromatic ring
43/184 . . . to a carbon atom of a non-condensed ring **[3]**
43/188 . . . Unsaturated ethers **[3]**
43/192 . . . containing halogen **[3]**
43/196 . . . containing hydroxy or O-metal groups **[3]**
43/20 . . having an ether-oxygen atom bound to a carbon atom of a six-membered aromatic ring
43/205 . . . the aromatic ring being a non-condensed ring **[3]**
43/21 . . . containing rings other than six-membered aromatic rings **[3]**
43/215 . . . having unsaturation outside the six-membered aromatic rings **[3]**
43/225 . . . containing halogen **[3]**
43/23 . . . containing hydroxy or O-metal groups **[3]**
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]**
43/243 . . . having unsaturation outside the six-membered aromatic rings **[3]**
43/247 . . . containing halogen **[3]**
43/253 . . . containing hydroxy or O-metal groups **[3]**
43/257 . . having an ether-oxygen atom bound to carbon atoms both belonging to six-membered aromatic rings **[3]**
43/263 . . . the aromatic rings being non-condensed **[3]**
43/267 . . . containing other rings **[3]**
43/275 . . . having all ether-oxygen atoms bound to carbon atoms of six-membered aromatic rings **[3]**
43/285 . . . having unsaturation outside the six-membered aromatic rings **[3]**
43/29 . . . containing halogen **[3]**
43/295 . . . containing hydroxy or O-metal groups **[3]**

43/30 . Compounds having  groups

Note

In this group, the acetal carbon atom is the carbon of the  group. **[3]**

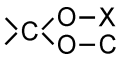
43/303 . . having acetal carbon atoms bound to acyclic carbon atoms **[3]**

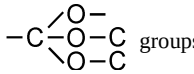
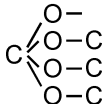
43/305 . . having acetal carbon atoms as ring members or bound to carbon atoms of rings other than six-membered aromatic rings **[3]**

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

43/313 . . containing halogen **[3]**

43/315 . . containing oxygen atoms singly bound to carbon atoms not being acetal carbon atoms **[3]**

43/317 . . having  groups, X being hydrogen or metal **[3]**

43/32 . Compounds having  groups or  groups

45/00 Preparation of compounds having 〉C=O groups bound only to carbon or hydrogen atoms; **Preparation of chelates of such compounds [2]**

45/26 . by hydration of carbon-to-carbon triple bonds **[3]**

45/27 . by oxidation **[3]**

45/28 . . of $-CH_x$-moieties **[3]**

45/29 . . of hydroxy groups **[3]**

45/30 . . with halogen containing compounds, e.g. hypohalogenation **[3]**

45/31 . . with compounds containing mercury atoms, which may be regenerated in situ, e.g. by oxygen **[3]**

45/32 . . with molecular oxygen **[3]**

45/33 . . . of CH_x-moieties **[3]**

45/34 . . . . in unsaturated compounds **[3]**

45/35 . . . . . in propene or isobutene **[3]**

45/36 . . . . . in compounds containing six-membered aromatic rings **[3]**

45/37 . . . of 〉C−O− functional groups to 〉C=O groups **[3]**

45/38 . . . . being a primary hydroxy group **[3]**

45/39 . . . . being a secondary hydroxy group **[3]**

45/40 . by oxidation with ozone; by ozonolysis **[3]**

45/41 . by hydrogenolysis or reduction of carboxylic groups or functional derivatives thereof **[3]**

45/42 . by hydrolysis **[3]**

45/43 . . of 〉CX_2 groups, X being halogen **[3]**

45/44 . by reduction and hydrolysis of nitriles **[3]**

45/45 . by condensation **[3]**

45/46 . . Friedel-Crafts reactions **[3]**

45/47 . . using phosgene **[3]**

45/48 . . involving decarboxylation **[3]**

45/49 . by reaction with carbon monoxide **[3]**

45/50 . . by oxo-reactions **[3]**

45/51 . by pyrolysis, rearrangement or decomposition **[3]**

45/52 . . by dehydration and rearrangement involving two hydroxy groups in the same molecule **[3]**

45/53 . . of hydroperoxides **[3]**

45/54 . . of compounds containing doubly bound oxygen atoms, e.g. esters **[3]**

45/55 . . of oligo- or polymeric oxo-compounds **[3]**

45/56 . from heterocyclic compounds (C07C 45/55 takes precedence) **[3]**

45/57 . . with oxygen as the only hetero atom **[3]**

45/58 . . . in three-membered rings **[3]**

45/59 . . . in five-membered rings (from ozonides C07C 45/40) **[3]**

45/60 . . . in six-membered rings **[3]**

45/61 . by reactions not involving the formation of 〉C=O groups **[3]**

45/62 . . by hydrogenation of carbon-to-carbon double or triple bonds **[3]**

45/63 . . by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3]**

45/64 . . by introduction of functional groups containing oxygen only in singly bound form **[3]**

45/65 . . by splitting-off hydrogen atoms or functional groups; by hydrogenolysis of functional groups **[3]**

45/66 . . . by dehydration **[3]**

45/67 . . by isomerisation; by change of size of the carbon skeleton **[3]**

45/68 . . . by increase in the number of carbon atoms **[3]**

45/69 . . . . by addition to carbon-to-carbon double or triple bonds **[3]**

45/70 . . . . by reaction with functional groups containing oxygen only in singly bound form **[3]**

45/71 . . . . . being hydroxy groups **[3]**

45/72 . . . . by reaction of compounds containing 〉C=O groups with the same or other compounds containing 〉C=O groups **[3]**

45/73 . . . . . combined with hydrogenation **[3]**

45/74 . . . . . combined with dehydration **[3]**

45/75 . . . . . Reactions with formaldehyde **[3]**

45/76 . . . with the aid of ketenes **[3]**

45/77 . Preparation of chelates of aldehydes or ketones **[3]**

45/78 . Separation; Purification; Stabilisation; Use of additives **[3]**

45/79 . . by solid-liquid treatment; by chemisorption **[3]**

45/80 . . by liquid-liquid treatment **[3]**

45/81 . . by change in the physical state, e.g. crystallisation **[3]**

45/82 . . . by distillation **[3]**

45/83 . . . . by extractive distillation **[3]**

45/84 . . . . by azeotropic distillation **[3]**

45/85 . . by treatment giving rise to a chemical modification **[3]**

45/86 . . Use of additives, e.g. for stabilisation **[3]**

45/87 . Preparation of ketenes or dimeric ketenes **[3]**

45/88 . . from ketones **[3]**

45/89 . . from carboxylic acids, their anhydrides, esters or halides **[3]**

45/90 . . Separation; Purification; Stabilisation; Use of additives **[3]**

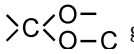
46/00 Preparation of quinones [3]

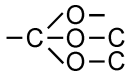
46/02 . by oxidation giving rise to quinoid structures **[3]**

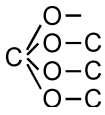
46/04 . . of unsubstituted ring carbon atoms in six-membered aromatic rings **[3]**
46/06 . . of at least one hydroxy group on a six-membered aromatic ring **[3]**
46/08 . . . with molecular oxygen **[3]**
46/10 . Separation; Purification; Stabilisation; Use of additives **[3]**

47/00 Compounds having −CHO groups

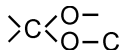
47/02 . Saturated compounds having −CHO groups bound to acyclic carbon atoms or to hydrogen
47/04 . . Formaldehyde
47/042 . . . Preparation from carbon monoxide **[3]**
47/045 . . . Preparation by depolymerisation **[3]**
47/048 . . . Preparation by oxidation of hydrocarbons **[3]**
47/052 . . . Preparation by oxidation of methanol **[3]**
47/055 . . . . using noble metals or compounds thereof as catalysts **[3]**
47/058 . . . Separation; Purification; Stabilisation; Use of additives **[3]**
47/06 . . Acetaldehyde
47/07 . . . Preparation by oxidation **[3]**
47/09 . . . Separation; Purification; Stabilisation; Use of additives **[3]**
47/105 . . containing rings **[3]**
47/11 . . . monocyclic **[3]**
47/115 . . . containing condensed ring systems **[3]**
47/12 . . containing more than one −CHO group
47/127 . . . Glyoxal **[3]**
47/133 . . . containing rings **[3]**
47/14 . . containing halogen
47/16 . . . Trichloroacetaldehyde
47/17 . . . containing rings **[3]**
47/19 . . containing hydroxy groups **[2,3]**
47/192 . . . containing rings **[3]**
47/195 . . . containing halogen **[3]**
47/198 . . containing ether groups,

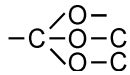
 groups,

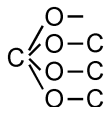
 groups, or

 groups **[3]**

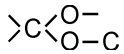
47/20 . Unsaturated compounds having −CHO groups bound to acyclic carbon atoms
47/21 . . with only carbon-to-carbon double bonds as unsaturation **[3]**
47/22 . . . Acrylaldehyde; Methacrylaldehyde **[3]**
47/222 . . with only carbon-to-carbon triple bonds as unsaturation **[3]**
47/225 . . containing rings other than six-membered aromatic rings **[3]**
47/228 . . containing six-membered aromatic rings, e.g. phenylacetaldehyde **[3]**
47/23 . . . polycyclic **[3]**
47/232 . . . having unsaturation outside the aromatic rings **[3]**
47/235 . . containing six-membered aromatic rings and other rings **[3]**
47/238 . . . having unsaturation outside the aromatic rings **[3]**
47/24 . . containing halogen
47/26 . . containing hydroxy groups **[3]**
47/263 . . . acyclic **[3]**
47/267 . . . containing rings other than six-membered aromatic rings **[3]**
47/27 . . . containing six-membered aromatic rings **[3]**
47/273 . . . containing halogen **[3]**
47/277 . . containing ether groups,

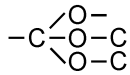
 groups,

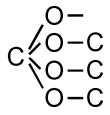
 groups, or

 groups **[3]**

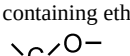
47/28 . Saturated compounds having −CHO groups bound to carbon atoms of rings other than six-membered aromatic rings
47/293 . . with a three- or four-membered ring **[3]**
47/30 . . with a five-membered ring
47/32 . . with a six-membered ring
47/33 . . with a seven- to twelve-membered ring **[3]**
47/34 . . polycyclic
47/347 . . . having a −CHO group on a condensed ring system **[3]**
47/353 . . containing halogen **[3]**
47/36 . . containing hydroxy groups
47/37 . . containing ether groups,

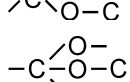
 groups,

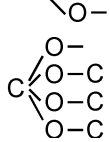
 groups, or

 groups **[3]**

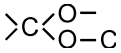
47/38 . Unsaturated compounds having −CHO groups bound to carbon atoms of rings other than six-membered aromatic rings
47/395 . . with a three- or four-membered ring **[3]**
47/40 . . with a five-membered ring **[3]**
47/42 . . with a six-membered ring **[3]**
47/43 . . with a seven- to twelve-membered ring **[3]**
47/44 . . polycyclic **[3]**
47/445 . . . containing a condensed ring system **[3]**
47/45 . . having unsaturation outside the rings **[2]**
47/453 . . containing six-membered aromatic rings **[3]**
47/457 . . containing halogen **[3]**
47/46 . . containing hydroxy groups
47/47 . . containing ether groups,

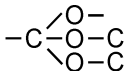
 groups,

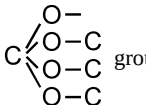
 groups, or

 groups **[3]**

47/52 . Compounds having −CHO groups bound to carbon atoms of six-membered aromatic rings
47/54 . . Benzaldehyde
47/542 . . Alkylated benzaldehydes **[3]**
47/544 . . Diformyl-benzenes; Alkylated derivatives thereof **[3]**
47/546 . . polycyclic **[3]**
47/548 . . having unsaturation outside the six-membered aromatic rings **[3]**
47/55 . . containing halogen **[2]**
47/56 . . containing hydroxy groups
47/565 . . . all hydroxy groups bound to the ring **[3]**
47/57 . . . polycyclic **[3]**
47/575 . . containing ether groups,

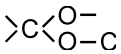
 groups,

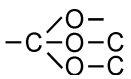
 groups, or

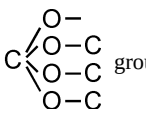
 groups **[3]**

47/58 . . . Vanillin

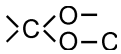
49/00 Ketones; **Ketenes**; **Dimeric ketenes**; **Ketonic chelates**
49/04 . Saturated compounds containing keto groups bound to acyclic carbon atoms
49/08 . . Acetone **[3]**
49/10 . . Methyl-ethyl ketone **[3]**
49/105 . . containing rings **[3]**
49/11 . . . monocyclic **[3]**
49/115 . . . containing condensed ring systems **[3]**
49/12 . . Ketones containing more than one keto group
49/14 . . . Acetylacetone, i.e. 2,4-pentanedione
49/15 . . . containing rings **[3]**
49/16 . . containing halogen
49/163 . . . containing rings **[3]**
49/167 . . . containing only fluorine as halogen **[3]**
49/17 . . containing hydroxy groups **[2]**
49/172 . . . containing rings **[3]**
49/173 . . . containing halogen **[3]**
49/175 . . containing ether groups,

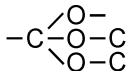
 groups,

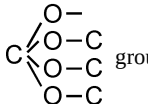
 groups, or

 groups **[2,3]**

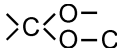
49/185 . . containing −CHO groups **[3]**
49/20 . Unsaturated compounds containing keto groups bound to acyclic carbon atoms
49/203 . . with only carbon-to-carbon double bonds as unsaturation **[3]**
49/205 . . . Methyl-vinyl ketone **[3]**
49/207 . . with only carbon-to-carbon triple bonds as unsaturation **[3]**
49/21 . . containing rings other than six-membered aromatic rings **[3]**
49/213 . . containing six-membered aromatic rings **[3]**
49/215 . . . polycyclic **[3]**
49/217 . . . having unsaturation outside the aromatic rings **[3]**
49/223 . . . . polycyclic **[3]**
49/225 . . containing six-membered aromatic rings and other rings **[3]**
49/227 . . containing halogen **[3]**
49/23 . . . containing rings other than six-membered aromatic rings **[3]**
49/233 . . . containing six-membered aromatic rings **[3]**
49/235 . . . . having unsaturation outside the aromatic rings **[3]**
49/237 . . . containing six-membered aromatic rings and other rings **[3]**
49/24 . . containing hydroxy groups
49/242 . . . containing rings other than six-membered aromatic rings **[3]**
49/245 . . . containing six-membered aromatic rings **[3]**
49/248 . . . . having unsaturation outside the aromatic rings **[3]**
49/252 . . . containing six-membered aromatic rings and other rings **[3]**
49/255 . . containing ether groups,

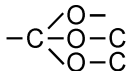
 groups,

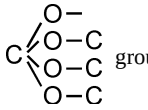
 groups, or

 groups **[3]**

49/258 . . containing −CHO groups **[3]**
49/29 . Saturated compounds containing keto groups bound to rings **[3]**
49/293 . . to a three- or four-membered ring **[3]**
49/297 . . to a five-membered ring **[3]**
49/303 . . to a six-membered ring **[3]**
49/307 . . to a seven- to twelve-membered ring **[3]**
49/313 . . polycyclic **[3]**
49/317 . . . both carbon atoms bound to the keto group belonging to rings **[3]**
49/323 . . . having keto groups bound to condensed ring systems **[3]**
49/327 . . containing halogen **[3]**
49/333 . . . polycyclic **[3]**
49/337 . . containing hydroxy groups **[3]**
49/345 . . . polycyclic **[3]**
49/35 . . containing ether groups,

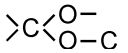
 groups,

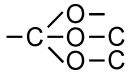
 groups, or

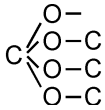
 groups **[3]**

49/355 . . containing −CHO groups **[3]**
49/385 . Saturated compounds containing a keto group being part of a ring **[3]**
49/39 . . of a three- or four-membered ring **[3]**
49/395 . . of a five-membered ring **[3]**
49/403 . . of a six-membered ring **[3]**
49/407 . . . Menthones **[3]**

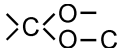
49/413 . . of a seven- to twelve-membered ring **[3]**
49/417 . . polycyclic **[3]**
49/423 . . . a keto group being part of a condensed ring system **[3]**
49/427 . . . . having two rings **[3]**
49/433 . . . . . the condensed ring system containing seven carbon atoms **[3]**
49/437 . . . . . Camphor; Fenchone **[3]**
49/443 . . . . . the condensed ring system containing eight or nine carbon atoms **[3]**
49/447 . . . . . the condensed ring system containing ten carbon atoms **[3]**
49/453 . . . . having three rings **[3]**
49/457 . . containing halogen **[3]**
49/463 . . . a keto group being part of a six-membered ring **[3]**
49/467 . . . polycyclic **[3]**
49/473 . . . . a keto group being part of a condensed ring system **[3]**
49/477 . . . . . having two rings **[3]**
49/483 . . . . . having three rings **[3]**
49/487 . . containing hydroxy groups **[3]**
49/493 . . . a keto group being part of a three- to five-membered ring **[3]**
49/497 . . . a keto group being part of a six-membered ring **[3]**
49/503 . . . a keto group being part of a seven- to twelve-membered ring **[3]**
49/507 . . . polycyclic **[3]**
49/513 . . . . a keto group being part of a condensed ring system **[3]**
49/517 . . containing ether groups,

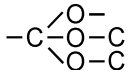
 groups,

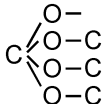
 groups, or

 groups **[3]**

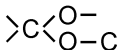
49/523 . . containing −CHO groups **[3]**
49/527 . Unsaturated compounds containing keto groups bound to rings other than six-membered aromatic rings **[3]**
49/533 . . to a three- or four-membered ring **[3]**
49/537 . . to a five-membered ring **[3]**
49/543 . . to a six-membered ring **[3]**
49/547 . . to a seven- to twelve-membered ring **[3]**
49/553 . . polycyclic **[3]**
49/557 . . having unsaturation outside the rings **[3]**
49/563 . . containing six-membered aromatic rings **[3]**
49/567 . . containing halogen **[3]**
49/573 . . containing hydroxy groups **[3]**
49/577 . . containing ether groups,

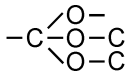
 groups,

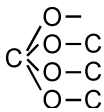
 groups, or

 groups **[3]**

49/583 . . containing −CHO groups **[3]**
49/587 . Unsaturated compounds containing a keto group being part of a ring **[3]**
49/593 . . of a three- or four-membered ring **[3]**
49/597 . . of a five-membered ring **[3]**
49/603 . . of a six-membered ring **[3]**
49/607 . . of a seven- to twelve-membered ring **[3]**
49/613 . . polycyclic **[3]**
49/617 . . . a keto group being part of a condensed ring system **[3]**
49/623 . . . . having two rings **[3]**
49/627 . . . . . the condensed ring system containing seven carbon atoms **[3]**
49/633 . . . . . the condensed ring system containing eight or nine carbon atoms **[3]**
49/637 . . . . . the condensed ring system containing ten carbon atoms **[3]**
49/643 . . . . having three rings **[3]**
49/647 . . having unsaturation outside the ring **[3]**
49/653 . . . polycyclic **[3]**
49/657 . . containing six-membered aromatic rings **[3]**
49/665 . . . a keto group being part of a condensed ring system **[3]**
49/67 . . . . having two rings, e.g. tetralones **[3]**
49/675 . . . . having three rings **[3]**
49/683 . . . having unsaturation outside the aromatic rings **[3]**
49/687 . . containing halogen **[3]**
49/693 . . . polycyclic **[3]**
49/697 . . . containing six-membered aromatic rings **[3]**
49/703 . . containing hydroxy groups **[3]**
49/707 . . . a keto group being part of a three- to five-membered ring **[3]**
49/713 . . . a keto group being part of a six-membered ring **[3]**
49/717 . . . a keto group being part of a seven- to twelve-membered ring **[3]**
49/723 . . . polycyclic **[3]**
49/727 . . . . a keto group being part of a condensed ring system **[3]**
49/733 . . . . . having two rings **[3]**
49/737 . . . . . having three rings **[3]**
49/743 . . . having unsaturation outside the rings, e.g. humulones, lupulones **[3]**
49/747 . . . containing six-membered aromatic rings **[3]**
49/753 . . containing ether groups,

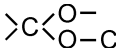
 groups,

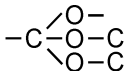
 groups, or

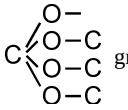
 groups **[3]**

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]**
49/757 . . containing −CHO groups **[3]**
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 to C07C 49/757)
49/78 . . Acetophenone

49/782 . . polycyclic **[3]**
49/784 . . . with all keto groups bound to a non-condensed ring **[3]**
49/786 . . . . Benzophenone **[3]**
49/788 . . . with keto groups bound to a condensed ring system **[3]**
49/792 . . . containing rings other than six-membered aromatic rings **[3]**
49/794 . . having unsaturation outside an aromatic ring **[3]**
49/796 . . . polycyclic **[3]**
49/798 . . . containing rings other than six-membered aromatic rings **[3]**
49/80 . . containing halogen
49/807 . . . all halogen atoms bound to the ring **[3]**
49/813 . . . polycyclic **[3]**
49/82 . . containing hydroxy groups **[3]**
49/825 . . . all hydroxy groups bound to the ring **[3]**
49/83 . . . polycyclic **[3]**
49/835 . . . having unsaturation outside an aromatic ring **[3]**
49/84 . . containing ether groups,

 groups,

 groups, or

 groups **[2,3]**

49/86 . . containing $-CHO$ groups **[3]**
49/88 . Ketenes; Dimeric ketenes **[3]**
49/90 . . Ketene, i.e. C_2H_2O **[3]**
49/92 . Ketonic chelates **[3]**

50/00 **Quinones** (for quinone methides, see unsaturated ketones with a keto group being part of a ring) **[3]**

Note

In this group, quinhydrones are classified according to their quinoid part. **[3]**

50/02 . with monocyclic quinoid structure **[3]**
50/04 . . Benzoquinones, i.e. $C_6H_4O_2$ **[3]**
50/06 . . with unsaturation outside the quinoid structure **[3]**
50/08 . with polycyclic non-condensed quinoid structure **[3]**
50/10 . the quinoid structure being part of a condensed ring system containing two rings **[3]**
50/12 . . Naphthoquinones, i.e. $C_{10}H_6O_2$ **[3]**
50/14 . . with unsaturation outside the ring system, e.g. vitamin K_1 **[3]**
50/16 . the quinoid structure being part of a condensed ring system containing three rings **[3]**
50/18 . . Anthraquinones, i.e. $C_{14}H_8O_2$ **[3]**
50/20 . . with unsaturation outside the ring system **[3]**
50/22 . the quinoid structure being part of a condensed ring system containing four or more rings **[3]**
50/24 . containing halogen **[3]**
50/26 . containing groups having oxygen atoms singly bound to carbon atoms **[3]**
50/28 . . with monocyclic quinoid structure **[3]**
50/30 . . with polycyclic non-condensed quinoid structure **[3]**
50/32 . . the quinoid structure being part of a condensed ring system having two rings **[3]**
50/34 . . the quinoid structure being part of a condensed ring system having three rings **[3]**
50/36 . . the quinoid structure being part of a condensed ring system having four or more rings **[3]**
50/38 . containing $-CHO$ or non-quinoid keto groups **[3]**

51/00 **Preparation of carboxylic acids or their salts, halides, or anhydrides [2]**

51/02 . from salts of carboxylic acids
51/04 . from carboxylic acid halides
51/06 . from carboxylic acid amides
51/08 . from nitriles
51/083 . from carboxylic acid anhydrides **[3]**
51/087 . . by hydrolysis **[3]**
51/09 . from carboxylic acid esters or lactones (saponification of carboxylic acid esters C07C 27/02)
51/093 . by hydrolysis of $-CX_3$ groups, X being halogen **[3]**
51/097 . from or via nitro-substituted organic compounds **[3]**
51/10 . by reaction with carbon monoxide
51/12 . . on an oxygen-containing group in organic compounds, e.g. alcohols
51/14 . . on a carbon-to-carbon unsaturated bond in organic compounds **[3]**
51/145 . . with simultaneous oxidation **[3]**
51/15 . by reaction of organic compounds with carbon dioxide, e.g. Kolbe-Schmitt synthesis **[2]**
51/16 . by oxidation (C07C 51/145 takes precedence) **[3]**
51/21 . . with molecular oxygen **[3]**
51/215 . . . of saturated hydrocarbyl groups **[3]**
51/225 . . . . of paraffin waxes **[3]**
51/23 . . . of oxygen-containing groups to carboxyl groups **[3]**
51/235 . . . . of $-CHO$ groups or primary alcohol groups **[3]**
51/245 . . . . of keto groups or secondary alcohol groups **[3]**
51/25 . . . of unsaturated compounds containing no six-membered aromatic ring **[3]**
51/255 . . . of compounds containing six-membered aromatic rings without ring-splitting **[3]**
51/265 . . . . having alkyl side chains which are oxidised to carboxyl groups **[3]**
51/27 . . with oxides of nitrogen or nitrogen-containing mineral acids **[3]**
51/275 . . . of hydrocarbyl groups **[3]**
51/285 . . with peroxy-compounds **[3]**
51/29 . . with halogen-containing compounds which may be formed in situ **[3]**
51/295 . . with inorganic bases, e.g. by alkali fusion **[3]**
51/305 . . with sulfur or sulfur-containing compounds **[3]**
51/31 . . of cyclic compounds with ring-splitting **[3]**
51/34 . by oxidation with ozone; by hydrolysis of ozonides **[3]**
51/347 . by reactions not involving formation of carboxyl groups **[3]**
51/353 . . by isomerisation; by change of size of the carbon skeleton **[3]**
51/36 . . by hydrogenation of carbon-to-carbon unsaturated bonds **[3]**
51/363 . . by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3]**
51/367 . . by introduction of functional groups containing oxygen only in singly bound form **[3]**

51/373 . . by introduction of functional groups containing oxygen only in doubly bound form **[3]**
51/377 . . by splitting-off hydrogen or functional groups; by hydrogenolysis of functional groups **[3]**
51/38 . . . by decarboxylation **[3]**
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]**
51/42 . Separation; Purification; Stabilisation; Use of additives **[3]**
51/43 . . by change of the physical state, e.g. crystallisation **[3]**
51/44 . . . by distillation **[3]**
51/46 . . . . by azeotropic distillation **[3]**
51/47 . . by solid-liquid treatment; by chemisorption **[3]**
51/48 . . by liquid-liquid treatment
51/487 . . by treatment giving rise to chemical modification (by chemisorption C07C 51/47) **[3]**
51/493 . . . whereby carboxylic acid esters are formed **[3]**
51/50 . . Use of additives, e.g. for stabilisation **[3]**
51/54 . Preparation of carboxylic acid anhydrides (by oxidation C07C 51/16)
51/56 . . from organic acids, their salts, or their esters
51/567 . . by reactions not involving the carboxylic acid anhydride group **[3]**
51/573 . . Separation; Purification; Stabilisation; Use of additives **[3]**
51/58 . Preparation of carboxylic acid halides
51/60 . . by conversion of carboxylic acids or their anhydrides into halides with the same carboxylic acid part **[3]**
51/62 . . by reactions not involving the carboxylic acid halide group **[3]**
51/64 . . Separation; Purification; Stabilisation; Use of additives **[3]**

53/00 Saturated compounds having only one carboxyl group bound to an acyclic carbon atom or hydrogen

53/02 . Formic acid
53/04 . . Preparation from carbon monoxide
53/06 . . Salts thereof
53/08 . Acetic acid
53/10 . . Salts thereof
53/12 . Acetic anhydride (ketene C07C 49/90)
53/122 . Propionic acid **[3]**
53/124 . Acids containing four carbon atoms **[3]**
53/126 . Acids containing more than four carbon atoms **[3]**
53/128 . . the carboxyl group being bound to a carbon atom bound to at least two other carbon atoms, e.g. neo-acids **[3]**
53/132 . containing rings **[3]**
53/134 . . monocyclic **[3]**
53/136 . . containing condensed ring systems **[3]**
53/138 . . . containing an adamantane ring system **[3]**
53/15 . containing halogen **[3]**
53/16 . . Halogenated acetic acids **[3]**
53/18 . . . containing fluorine **[3]**
53/19 . . Acids containing three or more carbon atoms **[3]**
53/21 . . . containing fluorine **[3]**
53/23 . . containing rings **[3]**
53/38 . Acyl halides **[3]**
53/40 . . Acetyl halides **[3]**
53/42 . . of acids containing three or more carbon atoms **[3]**
53/44 . . containing rings **[3]**
53/46 . . containing halogen outside the carbonyl halide group **[3]**
53/48 . . . Halogenated acetyl halides **[3]**
53/50 . . . of acids containing three or more carbon atoms **[3]**

55/00 Saturated compounds having more than one carboxyl group bound to acyclic carbon atoms [2]

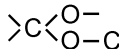
55/02 . Dicarboxylic acids
55/06 . . Oxalic acid
55/07 . . . Salts thereof **[3]**
55/08 . . Malonic acid
55/10 . . Succinic acid
55/12 . . Glutaric acid
55/14 . . Adipic acid
55/16 . . Pimelic acid
55/18 . . Azelaic acid
55/20 . . Sebacic acid
55/21 . . Dicarboxylic acids having twelve carbon atoms **[3]**
55/22 . Tricarboxylic acids
55/24 . containing more than three carboxyl groups
55/26 . containing rings **[3]**
55/28 . . monocyclic **[3]**
55/30 . . containing condensed ring systems **[3]**
55/32 . containing halogen **[3]**
55/34 . . containing rings **[3]**
55/36 . Acyl halides **[3]**
55/38 . . containing rings **[3]**
55/40 . . containing halogen outside the carbonyl halide group **[3]**

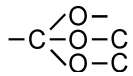
57/00 Unsaturated compounds having carboxyl groups bound to acyclic carbon atoms [2]

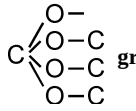
57/02 . with only carbon-to-carbon double bonds as unsaturation
57/03 . . Monocarboxylic acids **[3]**
57/04 . . . Acrylic acid; Methacrylic acid **[3]**
57/045 . . . . Preparation by oxidation in the liquid phase **[3]**
57/05 . . . . Preparation by oxidation in the gaseous phase **[3]**
57/055 . . . . . starting from unsaturated aldehydes **[3]**
57/065 . . . . Preparation by splitting-off H−X, X being halogen, OR, or NR_2, R being hydrogen or a hydrocarbon group **[3]**
57/07 . . . . Separation; Purification; Stabilisation; Use of additives **[3]**
57/075 . . . . . Use of additives, e.g. for stabilisation **[3]**
57/08 . . . Crotonic acid **[3]**
57/10 . . . Sorbic acid **[3]**
57/12 . . . Straight chain carboxylic acids containing eighteen carbon atoms **[3]**
57/13 . . Dicarboxylic acids **[3]**
57/145 . . . Maleic acid **[3]**
57/15 . . . Fumaric acid **[3]**
57/155 . . . Citraconic acid **[3]**
57/16 . . . Muconic acid **[3]**
57/18 . with only carbon-to-carbon triple bonds as unsaturation
57/20 . . Propiolic acid
57/22 . . Acetylene dicarboxylic acid
57/24 . . Diacetylene or polyacetylene dicarboxylic acids
57/26 . containing rings other than six-membered aromatic rings **[3]**

57/28 . . containing an adamantane ring system **[3]**
57/30 . containing six-membered aromatic rings **[3]**
57/32 . . Phenylacetic acid **[3]**
57/34 . . containing more than one carboxyl group **[3]**
57/36 . . . Phenylmalonic acid **[3]**
57/38 . . polycyclic **[3]**
57/40 . . . containing condensed ring systems **[3]**
57/42 . . having unsaturation outside the rings **[3]**
57/44 . . . Cinnamic acid **[3]**
57/46 . containing six-membered aromatic rings and other rings, e.g. cyclohexylphenylacetic acid **[3]**
57/48 . . having unsaturation outside the aromatic rings **[3]**
57/50 . . containing condensed ring systems **[3]**
57/52 . containing halogen **[3]**
57/54 . . Halogenated acrylic or methacrylic acids **[3]**
57/56 . . containing rings other than six-membered aromatic rings **[3]**
57/58 . . containing six-membered aromatic rings **[3]**
57/60 . . . having unsaturation outside the rings **[3]**
57/62 . . containing six-membered aromatic rings and other rings **[3]**
57/64 . Acyl halides **[3]**
57/66 . . with only carbon-to-carbon double bonds as unsaturation **[3]**
57/68 . . with only carbon-to-carbon triple bonds as unsaturation **[3]**
57/70 . . containing rings other than six-membered aromatic rings **[3]**
57/72 . . containing six-membered aromatic rings **[3]**
57/74 . . containing six-membered aromatic rings and other rings **[3]**
57/76 . . containing halogen outside the carbonyl halide groups **[3]**

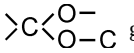
59/00 Compounds having carboxyl groups bound to acyclic carbon atoms and containing any of the groups OH, O-metal, −CHO, keto, ether,

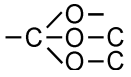
 **groups,**

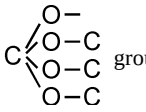
 **groups, or**

 **groups [2]**

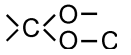
59/01 . Saturated compounds having only one carboxyl group and containing hydroxy or O-metal groups **[3]**
59/06 . . Glycolic acid **[3]**
59/08 . . Lactic acid **[3]**
59/10 . . Polyhydroxy carboxylic acids
59/105 . . . having five or more carbon atoms, e.g. aldonic acids **[3]**
59/11 . . containing rings **[3]**
59/115 . . containing halogen **[3]**
59/125 . Saturated compounds having only one carboxyl group and containing ether groups,

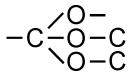
 groups,

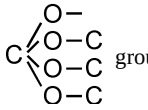
 groups, or

 groups **[3]**

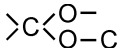
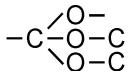
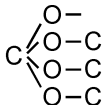
59/13 . . containing rings **[3]**
59/135 . . containing halogen **[3]**
59/147 . Saturated compounds having only one carboxyl group and containing −CHO groups **[3]**
59/153 . . Glyoxylic acid **[3]**
59/185 . Saturated compounds having only one carboxyl group and containing keto groups **[3]**
59/19 . . Pyruvic acid **[3]**
59/195 . . Acetoacetic acid **[3]**
59/205 . . containing rings **[3]**
59/21 . . containing halogen **[3]**
59/215 . . containing singly bound oxygen-containing groups **[3]**
59/225 . . containing −CHO groups **[3]**
59/235 . Saturated compounds having more than one carboxyl group **[3]**
59/245 . . containing hydroxy or O-metal groups **[3]**
59/255 . . . Tartaric acid **[3]**
59/265 . . . Citric acid **[3]**
59/285 . . . Polyhydroxy dicarboxylic acids having five or more carbon atoms, e.g. saccharic acids **[3]**
59/29 . . . containing rings **[3]**
59/295 . . . containing halogen **[3]**
59/305 . . containing ether groups,

 groups,

 groups, or

 groups **[3]**

59/31 . . . containing rings **[3]**
59/315 . . . containing halogen **[3]**
59/325 . . containing −CHO groups **[3]**
59/347 . . containing keto groups **[3]**
59/353 . . . containing rings **[3]**
59/40 . Unsaturated compounds **[3]**
59/42 . . containing hydroxy or O-metal groups **[3]**
59/44 . . . Ricinoleic acid **[3]**
59/46 . . . containing rings other than six-membered aromatic rings **[3]**
59/48 . . . containing six-membered aromatic rings **[3]**
59/50 . . . . Mandelic acid **[3]**
59/52 . . . a hydroxy or O-metal group being bound to a carbon atom of a six-membered aromatic ring **[3]**
59/54 . . . containing six-membered aromatic rings and other rings **[3]**
59/56 . . . containing halogen **[3]**

59/58 . . containing ether groups,  groups,  groups, or  groups **[3]**

59/60 . . . the non-carboxylic part of the ether being unsaturated **[3]**

59/62 . . . containing rings other than six-membered aromatic rings **[3]**

59/64 . . . containing six-membered aromatic rings **[3]**

59/66 . . . . the non-carboxylic part of the ether containing six-membered aromatic rings **[3]**

59/68 . . . . . the oxygen atom of the ether group being bound to a non-condensed six-membered aromatic ring **[3]**

59/70 . . . . . Ethers of hydroxy-acetic acid **[3]**

59/72 . . . containing six-membered aromatic rings and other rings **[3]**

59/74 . . containing −CHO groups **[3]**

59/76 . . containing keto groups **[3]**

59/80 . . . containing rings other than six-membered aromatic rings **[3]**

59/82 . . . . the keto group being part of a ring **[3]**

59/84 . . . containing six-membered aromatic rings **[3]**

59/86 . . . containing six-membered aromatic rings and other rings **[3]**

59/88 . . . containing halogen **[3]**

59/90 . . . containing singly bound oxygen-containing groups **[3]**

59/92 . . . containing −CHO groups **[3]**

61/00 Compounds having carboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings

61/04 . Saturated compounds having a carboxyl group bound to a three- or four-membered ring **[3]**

61/06 . Saturated compounds having a carboxyl group bound to a five-membered ring **[3]**

61/08 . Saturated compounds having a carboxyl group bound to a six-membered ring **[3]**

61/09 . . Completely hydrogenated benzenedicarboxylic acids **[2,3]**

61/10 . Saturated compounds having a carboxyl group bound to a seven- to twelve-membered ring **[3]**

61/12 . Saturated polycyclic compounds **[3]**

61/125 . . having a carboxyl group bound to a condensed ring system **[3]**

61/13 . . . having two rings **[3]**

61/135 . . . having three rings **[3]**

61/15 . Saturated compounds containing halogen **[3]**

61/16 . Unsaturated compounds **[3]**

61/20 . . having a carboxyl group bound to a five-membered ring **[3]**

61/22 . . having a carboxyl group bound to a six-membered ring **[3]**

61/24 . . . Partially hydrogenated benzenedicarboxylic acids **[3]**

61/26 . . having a carboxyl group bound to a seven- to twelve-membered ring **[3]**

61/28 . . polycyclic **[3]**

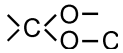
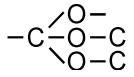
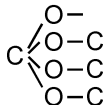
61/29 . . . having a carboxyl group bound to a condensed ring system **[3]**

61/35 . . having unsaturation outside the rings **[3]**

61/37 . . . Chrysanthemumic acid **[3]**

61/39 . . containing six-membered aromatic rings **[3]**

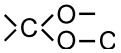
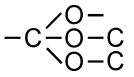
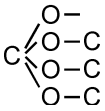
61/40 . . containing halogen **[3]**

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,  **groups,**  **groups, or**  **groups [3]**

62/02 . Saturated compounds containing hydroxy or O-metal groups **[3]**

62/04 . . with a six-membered ring **[3]**

62/06 . . polycyclic **[3]**

62/08 . Saturated compounds containing ether groups,  groups,  groups, or  groups **[3]**

62/10 . . with a six-membered ring **[3]**

62/12 . . polycyclic **[3]**

62/14 . . . having a carboxyl group on a condensed ring system **[3]**

62/16 . Saturated compounds containing −CHO groups **[3]**

62/18 . Saturated compounds containing keto groups **[3]**

62/20 . . with a six-membered ring **[3]**

62/22 . . polycyclic **[3]**

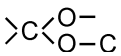
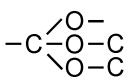
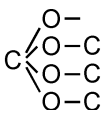
62/24 . . the keto group being part of a ring **[3]**

62/26 . . containing singly bound oxygen-containing groups **[3]**

62/28 . . containing −CHO groups **[3]**

62/30 . Unsaturated compounds **[3]**

62/32 . . containing hydroxy or O-metal groups **[3]**

62/34 . . containing ether groups,  groups,  groups, or  groups **[3]**

62/36 . . containing −CHO groups **[3]**

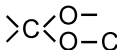
62/38 . . containing keto groups **[3]**

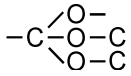
63/00 Compounds having carboxyl groups bound to carbon atoms of six-membered aromatic rings [2]

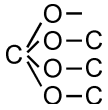
63/04 . Monocyclic monocarboxylic acids

63/06 . . Benzoic acid
63/08 . . . Salts thereof
63/10 . . . Halides thereof
63/14 . Monocyclic dicarboxylic acids
63/15 . . all carboxyl groups bound to carbon atoms of the six-membered aromatic ring **[3]**
63/16 . . . 1,2-Benzenedicarboxylic acid **[3]**
63/20 . . . . Salts thereof **[3]**
63/22 . . . . Halides thereof **[3]**
63/24 . . . 1,3-Benzenedicarboxylic acid **[3]**
63/26 . . . 1,4-Benzenedicarboxylic acid **[3]**
63/28 . . . . Salts thereof **[3]**
63/30 . . . . Halides thereof **[3]**
63/307 . Monocyclic tricarboxylic acids **[3]**
63/313 . Monocyclic acids containing more than three carboxyl groups **[3]**
63/33 . Polycyclic acids **[2,3]**
63/331 . . with all carboxyl groups bound to non-condensed rings **[3]**
63/333 . . . 4,4'-Diphenyldicarboxylic acids **[2,3]**
63/337 . . with carboxyl groups bound to condensed ring systems **[2,3]**
63/34 . . . containing two rings **[3]**
63/36 . . . . containing one carboxyl group **[3]**
63/38 . . . . containing two carboxyl groups both bound to carbon atoms of the condensed ring system **[3]**
63/40 . . . . containing three or more carboxyl groups all bound to carbon atoms of the condensed ring system **[3]**
63/42 . . . containing three or more rings **[3]**
63/44 . . . . containing one carboxyl group **[3]**
63/46 . . . . containing two carboxyl groups both bound to carbon atoms of the condensed ring system **[3]**
63/48 . . . . containing three or more carboxyl groups all bound to carbon atoms of the condensed ring system **[3]**
63/49 . . containing rings other than six-membered aromatic rings **[3]**
63/64 . Monocyclic acids with unsaturation outside the aromatic ring **[3]**
63/66 . Polycyclic acids with unsaturation outside the aromatic rings **[3]**
63/68 . containing halogen **[3]**
63/70 . . Monocarboxylic acids **[3]**
63/72 . . Polycyclic acids **[3]**
63/74 . . having unsaturation outside the aromatic rings **[3]**

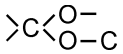
65/00 Compounds having carboxyl groups bound to carbon atoms of six-membered aromatic rings and containing any of the groups OH, O-metal, −CHO, keto, ether,

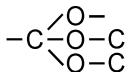
 **groups,**

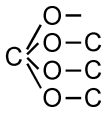
 **groups, or**

 **groups**

65/01 . containing hydroxy or O-metal groups **[3]**
65/03 . . monocyclic and having all hydroxy or O-metal groups bound to the ring **[3]**
65/05 . . . o-Hydroxy carboxylic acids **[3]**
65/10 . . . . Salicylic acid **[3]**
65/105 . . polycyclic **[3]**
65/11 . . . with carboxyl groups on a condensed ring system containing two rings **[3]**
65/15 . . . with carboxyl groups on a condensed ring system containing more than two rings **[3]**
65/17 . . containing rings other than six-membered aromatic rings **[3]**
65/19 . . having unsaturation outside the aromatic ring **[3]**
65/21 . containing ether groups,

 groups,

 groups, or

 groups **[3]**

65/24 . . polycyclic **[3]**
65/26 . . . containing rings other than six-membered aromatic rings **[3]**
65/28 . . having unsaturation outside the aromatic rings **[3]**
65/30 . containing −CHO groups **[3]**
65/32 . containing keto groups **[3]**
65/34 . . polycyclic **[3]**
65/36 . . . containing rings other than six-membered aromatic rings **[3]**
65/38 . . having unsaturation outside the aromatic rings **[3]**
65/40 . . containing singly bound oxygen-containing groups **[3]**
65/42 . . containing −CHO groups **[3]**

66/00 Quinone carboxylic acids [2]
66/02 . Anthraquinone carboxylic acids **[2]**

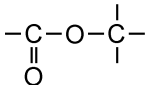
67/00 Preparation of carboxylic acid esters

Note

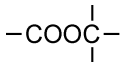
In this group, lactones used as reactants are considered as being esters. **[3]**

67/02 . by interreacting ester groups, i.e. transesterification
67/03 . by reacting an ester group with a hydroxy group **[2]**
67/035 . by reacting carboxylic acids or symmetrical anhydrides with saturated hydrocarbons **[3]**
67/04 . by reacting carboxylic acids or symmetrical anhydrides onto unsaturated carbon-to-carbon bonds **[2]**
67/05 . . with oxidation **[2,3]**
67/055 . . . in the presence of platinum group metals or their compounds **[3]**
67/08 . by reacting carboxylic acids or symmetrical anhydrides with the hydroxy or O-metal group of organic compounds **[2]**
67/10 . by reacting carboxylic acids or symmetrical anhydrides with ester groups or with a carbon-halogen bond **[2]**
67/11 . . being mineral ester groups **[3]**
67/12 . from asymmetrical anhydrides **[2]**
67/14 . from carboxylic acid halides **[2]**
67/16 . from carboxylic acids, esters or anhydrides wherein one oxygen atom has been replaced by a sulfur, selenium or tellurium atom **[2]**

67/18 . by conversion of a group containing nitrogen into an ester group **[2]**
67/20 . . from amides or lactams **[2]**
67/22 . . from nitriles **[2]**
67/24 . by reacting carboxylic acids or derivatives thereof with a carbon-to-oxygen ether bond, e.g. acetal, tetrahydrofuran **[2]**
67/26 . . with an oxirane ring **[2]**
67/27 . from ortho-esters **[3]**
67/28 . by modifying the hydroxylic moiety of the ester, such modification not being an introduction of an ester group **[2]**
67/283 . . by hydrogenation of unsaturated carbon-to-carbon bonds **[3]**
67/287 . . by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3]**
67/29 . . by introduction of oxygen-containing functional groups **[3]**
67/293 . . by isomerisation; by change of size of the carbon skeleton **[3]**
67/297 . . by splitting-off hydrogen or functional groups; by hydrogenolysis of functional groups **[3]**
67/30 . by modifying the acid moiety of the ester, such modification not being an introduction of an ester group **[2]**
67/303 . . by hydrogenation of unsaturated carbon-to-carbon bonds **[3]**
67/307 . . by introduction of halogen; by substitution of halogen atoms by other halogen atoms **[3]**
67/31 . . by introduction of functional groups containing oxygen only in singly bound form **[3]**
67/313 . . by introduction of doubly bound oxygen containing functional groups, e.g. carboxyl groups **[3]**
67/317 . . by splitting-off hydrogen or functional groups; by hydrogenolysis of functional groups **[3]**
67/32 . . . Decarboxylation **[2,3]**
67/327 . . . by elimination of functional groups containing oxygen only in singly bound form **[3]**
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]**
67/34 . . . Migration of



groups in the molecule **[2,3]**
67/343 . . . by increase in the number of carbon atoms **[3]**
67/347 . . . . by addition to unsaturated carbon-to-carbon bonds **[3]**
67/36 . by reaction with carbon monoxide or formates (C07C 67/02, C07C 67/03, C07C 67/10 take precedence) **[2]**
67/37 . . by reaction of ethers with carbon monoxide **[2]**
67/38 . . by addition to an unsaturated carbon-to-carbon bond **[2]**
67/39 . by oxidation of groups which are precursors for the acid moiety of the ester **[3]**
67/40 . . by oxidation of primary alcohols **[2,3]**
67/42 . . by oxidation of secondary alcohols or ketones **[2,3]**
67/44 . by oxidation-reduction of aldehydes, e.g. Tishchenko reaction **[2]**
67/46 . from ketenes or polyketenes **[2]**
67/465 . by oligomerisation **[3]**
67/47 . by telomerisation (macromolecular compounds C08) **[3]**
67/475 . by splitting of carbon-to-carbon bonds and redistribution, e.g. disproportionation or migration of



groups between different molecules **[3]**
67/48 . Separation; Purification; Stabilisation; Use of additives **[2,3]**
67/52 . . by change in the physical state, e.g. crystallisation **[3]**
67/54 . . . by distillation **[3]**
67/56 . . by solid-liquid treatment; by chemisorption **[3]**
67/58 . . by liquid-liquid treatment **[3]**
67/60 . . by treatment giving rise to chemical modification (by chemisorption C07C 67/56) **[3]**
67/62 . . Use of additives, e.g. for stabilisation **[3]**

68/00 **Preparation of esters of carbonic or haloformic acids [2]**

68/02 . from phosgene or haloformates **[2]**
68/04 . from carbon dioxide or inorganic carbonates **[2]**
68/06 . from organic carbonates **[2]**
68/08 . Purification; Separation; Stabilisation **[2]**

69/00 **Esters of carboxylic acids**; **Esters of carbonic or haloformic acids** (ortho esters, see the relevant groups, e.g. C07C 43/32)

Note

Attention is drawn to Note (6) following the title of this subclass. **[5]**

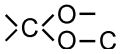
69/003 . Esters of saturated alcohols having the esterified hydroxy group bound to an acyclic carbon atom **[3]**
69/007 . Esters of unsaturated alcohols having the esterified hydroxy group bound to an acyclic carbon atom **[3]**
69/01 . . Vinyl esters **[3]**
69/013 . Esters of alcohols having the esterified hydroxy group bound to a carbon atom of a ring other than a six-membered aromatic ring **[3]**
69/017 . Esters of hydroxy compounds having the esterified hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3]**

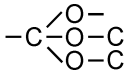
Note

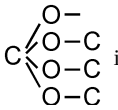
Esters having a variably-specified acid moiety, i.e. covered by more than one of groups C07C 69/02, C07C 69/34, C07C 69/52, C07C 69/608, C07C 69/612, C07C 69/62, C07C 69/66, C07C 69/74, C07C 69/76, C07C 69/95, C07C 69/96, are covered by groups C07C 69/003 to C07C 69/017 according to their hydroxylic moiety. **[3]**

69/02 . Esters of acyclic saturated monocarboxylic acids having the carboxyl group bound to an acyclic carbon atom or to hydrogen
69/025 . . esterified with unsaturated alcohols having the esterified hydroxy group bound to an acyclic carbon atom **[3]**
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]**
69/035 . . esterified with a hydroxy compound having the esterified hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3]**
69/04 . . Formic acid esters
69/06 . . . of monohydroxylic compounds

69/07 . . . . of unsaturated alcohols **[2]**
69/08 . . . of dihydroxylic compounds
69/10 . . . of trihydroxylic compounds
69/12 . . Acetic acid esters
69/14 . . . of monohydroxylic compounds
69/145 . . . . of unsaturated alcohols **[2]**
69/15 . . . . . Vinyl acetate **[2]**
69/155 . . . . . Allyl acetate **[2]**
69/157 . . . . . containing six-membered aromatic rings **[3]**
69/16 . . . of dihydroxylic compounds
69/18 . . . of trihydroxylic compounds
69/21 . . . of hydroxy compounds with more than three hydroxy groups **[2]**
69/22 . . having three or more carbon atoms in the acid moiety
69/24 . . . esterified with monohydroxylic compounds
69/26 . . . . Synthetic waxes
69/28 . . . esterified with dihydroxylic compounds
69/30 . . . esterified with trihydroxylic compounds
69/33 . . . esterified with hydroxy compounds having more than three hydroxy groups **[2]**
69/34 . Esters of acyclic saturated polycarboxylic acids having an esterified carboxyl group bound to an acyclic carbon atom **[3]**
69/347 . . esterified with unsaturated alcohols having the esterified hydroxy group bound to an acyclic carbon atom **[3]**
69/353 . . esterified with a hydroxy compound having the esterified hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3]**
69/36 . . Oxalic acid esters **[3]**
69/38 . . Malonic acid esters **[3]**
69/40 . . Succinic acid esters **[3]**
69/42 . . Glutaric acid esters **[3]**
69/44 . . Adipic acid esters **[3]**
69/46 . . Pimelic acid esters **[3]**
69/48 . . Azelaic acid esters **[3]**
69/50 . . Sebacic acid esters **[3]**
69/52 . Esters of acyclic unsaturated carboxylic acids having the esterified carboxyl group bound to an acyclic carbon atom **[3]**
69/527 . . of unsaturated hydroxy compounds **[3]**
69/533 . . Monocarboxylic acid esters having only one carbon-to-carbon double bond **[3]**
69/54 . . . Acrylic acid esters; Methacrylic acid esters **[3]**
69/56 . . . Crotonic acid esters; Vinyl acetic acid esters **[3]**
69/58 . . . Esters of straight chain acids with eighteen carbon atoms in the acid moiety **[3]**
69/587 . . Monocarboxylic acid esters having at least two carbon-to-carbon double bonds **[3]**
69/593 . . Dicarboxylic acid esters having only one carbon-to-carbon double bond **[3]**
69/60 . . . Maleic acid esters; Fumaric acid esters **[3]**
69/602 . . Dicarboxylic acid esters having at least two carbon-to-carbon double bonds **[3]**
69/604 . . Polycarboxylic acid esters, the acid moiety containing more than two carboxyl groups **[3]**
69/606 . . having only carbon-to-carbon triple bonds as unsaturation in the carboxylic acid moiety **[3]**
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]**
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]**
69/614 . . of phenylacetic acid **[3]**
69/616 . . polycyclic **[3]**
69/618 . . having unsaturation outside the six-membered aromatic ring **[3]**
69/62 . Halogen-containing esters **[2]**
69/63 . . of saturated acids **[2]**
69/635 . . . containing rings in the acid moiety **[3]**
69/65 . . of unsaturated acids **[2]**
69/653 . . . Acrylic acid esters; Methacrylic acid esters; Haloacrylic acid esters; Halomethacrylic acid esters **[3]**
69/657 . . . Maleic acid esters; Fumaric acid esters; Halomaleic acid esters; Halofumaric acid esters **[3]**
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,

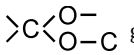
 groups,

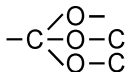
 groups, or

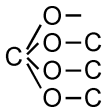
 in the acid moiety

69/67 . . of saturated acids **[2]**
69/675 . . . of saturated hydroxy-carboxylic acids **[3]**
69/68 . . . . Lactic acid esters **[3]**
69/70 . . . . Tartaric acid esters **[3]**
69/704 . . . . Citric acid esters **[3]**
69/708 . . . Ethers **[3]**
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]**
69/716 . . . Esters of keto-carboxylic acids **[3]**
69/72 . . . . Acetoacetic acid esters **[3]**
69/73 . . of unsaturated acids **[2]**
69/732 . . . of unsaturated hydroxy carboxylic acids **[3]**
69/734 . . . Ethers **[3]**
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]**
69/738 . . . Esters of keto-carboxylic acids **[3]**
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
69/743 . . of acids with a three-membered ring and with unsaturation outside the ring **[3]**
69/747 . . . Chrysanthemumic acid esters **[3]**
69/75 . . of acids with a six-membered ring **[3]**
69/753 . . of polycyclic acids **[3]**

69/757 . . having any of the groups OH, O-metal, −CHO, keto, ether, acyloxy,


groups,


groups, or


in the acid moiety **[3]**

69/76 . Esters of carboxylic acids having an esterified carboxyl group bound to a carbon atom of a six-membered aromatic ring

69/767 . . esterified with unsaturated alcohols having the esterified hydroxy group bound to an acyclic carbon atom **[3]**

69/773 . . esterified with a hydroxy compound having the esterified hydroxy group bound to a carbon atom of a six-membered aromatic ring **[3]**

69/78 . . Benzoic acid esters

69/80 . . Phthalic acid esters **[2]**

69/82 . . . Terephthalic acid esters

69/83 . . . of unsaturated alcohols **[2]**

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

69/86 . . . with esterified hydroxyl groups

69/88 . . . with esterified carboxyl groups

69/90 . . . with esterified hydroxyl and carboxyl groups

69/92 . . . with etherified hydroxyl groups **[2]**

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 **[2]**

69/95 . Esters of quinone carboxylic acids **[2]**

69/96 . Esters of carbonic or haloformic acids **[2]**

71/00 Esters of oxyacids of halogens

<u>Compounds containing carbon and nitrogen with or without hydrogen, halogens or oxygen</u> [5]

201/00 Preparation of esters of nitric or nitrous acid or of compounds containing nitro or nitroso groups bound to a carbon skeleton [5]

201/02 . Preparation of esters of nitric acid **[5]**

201/04 . Preparation of esters of nitrous acid **[5]**

201/06 . Preparation of nitro compounds **[5]**

201/08 . . by substitution of hydrogen atoms by nitro groups **[5]**

201/10 . . by substitution of functional groups by nitro groups **[5]**

201/12 . . by reactions not involving the formation of nitro groups **[5]**

201/14 . . by formation of nitro groups together with reactions not involving the formation of nitro groups **[5]**

201/16 . . Separation; Purification; Stabilisation; Use of additives **[5]**

203/00 Esters of nitric or nitrous acid [5]

203/02 . Esters of nitric acid **[5]**

203/04 . . having nitrate groups bound to acyclic carbon atoms **[5]**

203/06 . . . Glycerol trinitrate **[5]**

203/08 . . having nitrate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

203/10 . . having nitrate groups bound to carbon atoms of six-membered aromatic rings **[5]**

205/00 Compounds containing nitro groups bound to a carbon skeleton [5]

205/01 . having nitro groups bound to acyclic carbon atoms **[5]**

205/02 . . of a saturated carbon skeleton **[5]**

205/03 . . of an unsaturated carbon skeleton **[5]**

205/04 . . . containing six-membered aromatic rings **[5]**

205/05 . having nitro groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

205/06 . having nitro groups bound to carbon atoms of six-membered aromatic rings **[5]**

205/07 . the carbon skeleton being further substituted by halogen atoms **[5]**

205/08 . . having nitro groups bound to acyclic carbon atoms **[5]**

205/09 . . . of an unsaturated carbon skeleton **[5]**

205/10 . . having nitro groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

205/11 . . having nitro groups bound to carbon atoms of six-membered aromatic rings **[5]**

205/12 . . . the six-membered aromatic ring or a condensed ring system containing that ring being substituted by halogen atoms **[5]**

205/13 . the carbon skeleton being further substituted by hydroxy groups **[5]**

205/14 . . having nitro groups and hydroxy groups bound to acyclic carbon atoms **[5]**

205/15 . . . of a saturated carbon skeleton **[5]**

205/16 . . . of a carbon skeleton containing six-membered aromatic rings **[5]**

205/17 . . having nitro groups bound to acyclic carbon atoms and hydroxy groups bound to carbon atoms of six-membered aromatic rings **[5]**

205/18 . . having nitro groups or hydroxy groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

205/19 . . having nitro groups bound to carbon atoms of six-membered aromatic rings and hydroxy groups bound to acyclic carbon atoms **[5]**

205/20 . . having nitro groups and hydroxy groups bound to carbon atoms of six-membered aromatic rings **[5]**

205/21 . . . having nitro groups and hydroxy groups bound to carbon atoms of the same non-condensed six-membered aromatic ring **[5]**

205/22 . . . . having one nitro group bound to the ring **[5]**

205/23 . . . . having two nitro groups bound to the ring **[5]**

205/24 . . . . having three, and only three, nitro groups bound to the ring **[5]**

205/25 . . . having nitro groups bound to carbon atoms of six-membered aromatic rings being part of a condensed ring system **[5]**

205/26 . . and being further substituted by halogen atoms **[5]**

205/27 . the carbon skeleton being further substituted by etherified hydroxy groups **[5]**

205/28 . . having nitro groups and etherified hydroxy groups bound to acyclic carbon atoms of the carbon skeleton **[5]**

205/29 . . . the carbon skeleton being saturated **[5]**

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]**
205/31 . . . the carbon skeleton containing six-membered aromatic rings **[5]**
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]**
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]**
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]**
205/35 . . having nitro groups and etherified hydroxy groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5]**
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]**
205/37 . . . . the oxygen atom of at least one of the etherified hydroxy groups being further bound to an acyclic carbon atom **[5]**
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]**
205/39 . the carbon skeleton being further substituted by esterified hydroxy groups **[5]**
205/40 . . having nitro groups and esterified hydroxy groups bound to acyclic carbon atoms of the carbon skeleton **[5]**
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]**
205/42 . . having nitro groups or esterified hydroxy groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5]**
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]**
205/44 . the carbon skeleton being further substituted by −CHO groups **[5]**
205/45 . the carbon skeleton being further substituted by at least one doubly-bound oxygen atom, not being part of a −CHO group **[5]**
205/46 . . the carbon skeleton containing carbon atoms of quinone rings **[5]**
205/47 . . . Anthraquinones containing nitro groups **[5]**
205/48 . . . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**
205/49 . the carbon skeleton being further substituted by carboxyl groups **[5]**
205/50 . . having nitro groups and carboxyl groups bound to acyclic carbon atoms of the carbon skeleton **[5]**
205/51 . . . the carbon skeleton being saturated **[5]**
205/52 . . . . Nitro-acetic acids **[5]**
205/53 . . . the carbon skeleton containing six-membered aromatic rings **[5]**
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]**
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]**
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]**
205/57 . . having nitro groups and carboxyl groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5]**
205/58 . . . the carbon skeleton being further substituted by halogen atoms **[5]**
205/59 . . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**
205/60 . . . . in ortho-position to the carboxyl group, e.g. nitro-salicylic acids **[5]**
205/61 . . . the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5]**

207/00 Compounds containing nitroso groups bound to a carbon skeleton [5]
207/02 . the carbon skeleton not being further substituted **[5]**
207/04 . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**

209/00 Preparation of compounds containing amino groups bound to a carbon skeleton [5]
209/02 . by substitution of hydrogen atoms by amino groups **[5]**
209/04 . by substitution of functional groups by amino groups **[5]**
209/06 . . by substitution of halogen atoms **[5]**
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]**
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]**
209/12 . . . with formation of quaternary ammonium compounds **[5]**
209/14 . . by substitution of hydroxy groups or of etherified or esterified hydroxy groups **[5]**
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]**
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]**
209/20 . . . with formation of quaternary ammonium compounds **[5]**
209/22 . . by substitution of other functional groups **[5]**
209/24 . by reductive alkylation of ammonia, amines or compounds having groups reducible to amino groups, with carbonyl compounds **[5]**
209/26 . . by reduction with hydrogen **[5]**
209/28 . . by reduction with other reducing agents **[5]**
209/30 . by reduction of nitrogen-to-oxygen or nitrogen-to-nitrogen bonds **[5]**

209/32 . . by reduction of nitro groups **[5]**
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]**
209/36 . . . by reduction of nitro groups bound to carbon atoms of six-membered aromatic rings **[5]**
209/38 . . by reduction of nitroso groups **[5]**
209/40 . . by reduction of hydroxylamino or oxyimino groups **[5]**
209/42 . . by reduction of nitrogen-to-nitrogen bonds **[5]**
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]**
209/46 . . by reduction of carboxylic acids or esters thereof in presence of ammonia or amines **[5]**
209/48 . . by reduction of nitriles **[5]**
209/50 . . by reduction of carboxylic acid amides **[5]**
209/52 . . by reduction of imines or imino-ethers (C07C 209/24 takes precedence) **[5]**
209/54 . by rearrangement reactions **[5]**
209/56 . . from carboxylic acids involving a Hofmann, Curtius, Schmidt, or Lossen-type rearrangement **[5]**
209/58 . . from or via amides **[5]**
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]**
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]**
209/64 . by disproportionation **[5]**
209/66 . from or via metallo-organic compounds **[5]**
209/68 . from amines, by reactions not involving amino groups, e.g. reduction of unsaturated amines, aromatisation, or substitution of the carbon skeleton **[5]**
209/70 . . by reduction of unsaturated amines **[5]**
209/72 . . . by reduction of six-membered aromatic rings **[5]**
209/74 . . by halogenation, hydrohalogenation, dehalogenation, or dehydrohalogenation **[5]**
209/76 . . by nitration **[5]**
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]**
209/80 . by photochemical reactions; by using free radicals **[5]**
209/82 . Purification; Separation; Stabilisation; Use of additives **[5]**
209/84 . . Purification **[5]**
209/86 . . Separation **[5]**
209/88 . . . Separation of optical isomers **[5]**
209/90 . . Stabilisation; Use of additives **[5]**

211/00 Compounds containing amino groups bound to a carbon skeleton [5]

211/01 . having amino groups bound to acyclic carbon atoms **[5]**
211/02 . . of an acyclic saturated carbon skeleton **[5]**
211/03 . . . Monoamines **[5]**
211/04 . . . . Mono-, di- or tri-methylamine **[5]**
211/05 . . . . Mono-, di- or tri-ethylamine **[5]**
211/06 . . . . containing only n- or iso-propyl groups **[5]**
211/07 . . . . containing one, two or three alkyl groups, each having the same number of carbon atoms in excess of three **[5]**
211/08 . . . . containing alkyl groups having a different number of carbon atoms **[5]**
211/09 . . . Diamines **[5]**
211/10 . . . . Diaminoethanes **[5]**
211/11 . . . . Diaminopropanes **[5]**
211/12 . . . . 1,6-Diaminohexanes **[5]**
211/13 . . . Amines containing three or more amino groups bound to the carbon skeleton **[5]**
211/14 . . . Amines containing amino groups bound to at least two aminoalkyl groups, e.g. diethylenetriamines **[5]**
211/15 . . . the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5]**
211/16 . . of a saturated carbon skeleton containing rings other than six-membered aromatic rings **[5]**
211/17 . . . containing only non-condensed rings **[5]**
211/18 . . . containing at least two amino groups bound to the carbon skeleton **[5]**
211/19 . . . containing condensed ring systems **[5]**
211/20 . . of an acyclic unsaturated carbon skeleton **[5]**
211/21 . . . Monoamines **[5]**
211/22 . . . containing at least two amino groups bound to the carbon skeleton **[5]**
211/23 . . . the carbon skeleton containing carbon-to-carbon triple bonds **[5]**
211/24 . . . the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5]**
211/25 . . of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5]**
211/26 . . of an unsaturated carbon skeleton containing at least one six-membered aromatic ring **[5]**
211/27 . . . having amino groups linked to the six-membered aromatic ring by saturated carbon chains **[5]**
211/28 . . . having amino groups linked to the six-membered aromatic ring by unsaturated carbon chains **[5]**
211/29 . . . the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5]**
211/30 . . . the six-membered aromatic ring being part of a condensed ring system formed by two rings **[5]**
211/31 . . . the six-membered aromatic ring being part of a condensed ring system formed by at least three rings **[5]**
211/32 . . . . containing dibenzocycloheptane or dibenzocycloheptene ring systems or condensed derivatives thereof **[5]**
211/33 . having amino groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
211/34 . . of a saturated carbon skeleton **[5]**
211/35 . . . containing only non-condensed rings **[5]**
211/36 . . . containing at least two amino groups bound to the carbon skeleton **[5]**
211/37 . . . being further substituted by halogen atoms or by nitro or nitroso groups **[5]**
211/38 . . . containing condensed ring systems **[5]**
211/39 . . of an unsaturated carbon skeleton **[5]**
211/40 . . . containing only non-condensed rings **[5]**
211/41 . . . containing condensed ring systems **[5]**
211/42 . . . . with six-membered aromatic rings being part of the condensed ring systems **[5]**

211/43 . having amino groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5]**
211/44 . . having amino groups bound to only one six-membered aromatic ring **[5]**
211/45 . . . Monoamines **[5]**
211/46 . . . . Aniline **[5]**
211/47 . . . . Toluidines; Homologues thereof **[5]**
211/48 . . . . N-alkylated amines **[5]**
211/49 . . . having at least two amino groups bound to the carbon skeleton **[5]**
211/50 . . . . with at least two amino groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5]**
211/51 . . . . . Phenylenediamines **[5]**
211/52 . . . the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5]**
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]**
211/54 . . having amino groups bound to two or three six-membered aromatic rings **[5]**
211/55 . . . Diphenylamines **[5]**
211/56 . . . the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5]**
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]**
211/58 . . . Naphthylamines; N-substituted derivatives thereof **[5]**
211/59 . . . the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5]**
211/60 . . . containing a ring other than a six-membered aromatic ring forming part of at least one of the condensed ring systems **[5]**
211/61 . . . with at least one of the condensed ring systems formed by three or more rings **[5]**
211/62 . Quaternary ammonium compounds **[5]**
211/63 . . having quaternised nitrogen atoms bound to acyclic carbon atoms **[5]**
211/64 . . having quaternised nitrogen atoms bound to carbon atoms of six-membered aromatic rings **[5]**
211/65 . Metal complexes of amines **[5]**

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]

213/02 . by reactions involving the formation of amino groups from compounds containing hydroxy groups or etherified or esterified hydroxy groups **[5]**
213/04 . by reaction of ammonia or amines with olefin oxides or halohydrins **[5]**
213/06 . from hydroxy amines by reactions involving the etherification or esterification of hydroxy groups **[5]**
213/08 . by reactions not involving the formation of amino groups, hydroxy groups or etherified or esterified hydroxy groups **[5]**
213/10 . Separation; Purification; Stabilisation; Use of additives **[5]**

215/00 Compounds containing amino and hydroxy groups bound to the same carbon skeleton [5]

215/02 . having hydroxy groups and amino groups bound to acyclic carbon atoms of the same carbon skeleton **[5]**
215/04 . . the carbon skeleton being saturated **[5]**
215/06 . . . and acyclic **[5]**
215/08 . . . . with only one hydroxy group and one amino group bound to the carbon skeleton **[5]**
215/10 . . . . with one amino group and at least two hydroxy groups bound to the carbon skeleton **[5]**
215/12 . . . . the nitrogen atom of the amino group being further bound to hydrocarbon groups substituted by hydroxy groups **[5]**
215/14 . . . . the nitrogen atom of the amino group being further bound to hydrocarbon groups substituted by amino groups **[5]**
215/16 . . . . the nitrogen atom of the amino group being further bound to carbon atoms of six-membered aromatic rings **[5]**
215/18 . . . . with hydroxy groups and at least two amino groups bound to the carbon skeleton **[5]**
215/20 . . . the carbon skeleton being saturated and containing rings **[5]**
215/22 . . the carbon skeleton being unsaturated **[5]**
215/24 . . . and acyclic **[5]**
215/26 . . . and containing rings other than six-membered aromatic rings **[5]**
215/28 . . . and containing six-membered aromatic rings **[5]**
215/30 . . . . containing hydroxy groups and carbon atoms of six-membered aromatic rings bound to the same carbon atom of the carbon skeleton **[5]**
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]**
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]**
215/36 . . . . . 1-Aryl-2-amino-1,3-propane diols **[5]**
215/38 . . . . with rings other than six-membered aromatic rings being part of the carbon skeleton **[5]**
215/40 . . with quaternised nitrogen atoms bound to carbon atoms of the carbon skeleton **[5]**
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]**
215/44 . . bound to carbon atoms of the same ring or condensed ring system **[5]**
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]**
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]**
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]**
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]**
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]**

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]**
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]**
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]**
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]**
215/64 . . with rings other than six-membered aromatic rings being part of the carbon skeleton **[5]**
215/66 . . with quaternised amino groups bound to the carbon skeleton **[5]**
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]**
215/70 . . with rings other than six-membered aromatic rings being part of the carbon skeleton **[5]**
215/72 . . with quaternised amino groups bound to the carbon skeleton **[5]**
215/74 . having hydroxy groups and amino groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5]**
215/76 . . of the same non-condensed six-membered aromatic ring **[5]**
215/78 . . . containing at least two hydroxy groups bound to the carbon skeleton **[5]**
215/80 . . . containing at least two amino groups bound to the carbon skeleton **[5]**
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]**
215/84 . . having amino groups bound to carbon atoms of six-membered aromatic rings being part of condensed ring systems **[5]**
215/86 . . . being formed by two rings **[5]**
215/88 . . . being formed by at least three rings **[5]**
215/90 . . with quaternised amino groups bound to the carbon skeleton **[5]**

217/00 Compounds containing amino and etherified hydroxy groups bound to the same carbon skeleton [5]

217/02 . having etherified hydroxy groups and amino groups bound to acyclic carbon atoms of the same carbon skeleton **[5]**
217/04 . . the carbon skeleton being acyclic and saturated **[5]**
217/06 . . . having only one etherified hydroxy group and one amino group bound to the carbon skeleton, which is not further substituted **[5]**
217/08 . . . . the oxygen atom of the etherified hydroxy group being further bound to an acyclic carbon atom **[5]**
217/10 . . . . . to an acyclic carbon atom of a hydrocarbon radical containing six-membered aromatic rings **[5]**
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]**
217/14 . . . . the oxygen atom of the etherified hydroxy group being further bound to a carbon atom of a six-membered aromatic ring **[5]**
217/16 . . . . . the six-membered aromatic ring or condensed ring system containing that ring not being further substituted **[5]**
217/18 . . . . . the six-membered aromatic ring or condensed ring system containing that ring being further substituted **[5]**
217/20 . . . . . by halogen atoms, by trihalomethyl, nitro or nitroso groups, or by singly-bound oxygen atoms **[5]**
217/22 . . . . . by carbon atoms having at least two bonds to oxygen atoms **[5]**
217/24 . . . . . the six-membered aromatic ring being part of a condensed ring system containing rings other than six-membered aromatic rings **[5]**
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]**
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]**
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]**
217/32 . . . . . the six-membered aromatic ring or condensed ring system containing that ring being further substituted **[5]**
217/34 . . . . . by halogen atoms, by trihalomethyl, nitro or nitroso groups, or by singly-bound oxygen atoms **[5]**
217/36 . . . . . by carbon atoms having at least two bonds to oxygen atoms **[5]**
217/38 . . . . . the six-membered aromatic ring being part of a condensed ring system containing rings other than six-membered aromatic rings **[5]**
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]**
217/42 . . . having etherified hydroxy groups and at least two amino groups bound to the carbon skeleton **[5]**
217/44 . . the carbon skeleton being saturated and containing rings **[5]**
217/46 . . the carbon skeleton being acyclic and unsaturated **[5]**
217/48 . . the carbon skeleton being unsaturated and containing rings **[5]**
217/50 . . Ethers of hydroxy amines of undetermined structure, e.g. obtained by reactions of epoxides with hydroxy amines **[5]**
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]**

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]**

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]**

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]**

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]**

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]**

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]**

217/66 . . . with singly-bound oxygen atoms and six-membered aromatic rings bound to the same carbon atom of the carbon chain **[5]**

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]**

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]**

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]**

217/74 . . with rings other than six-membered aromatic rings being part of the carbon skeleton **[5]**

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]**

217/78 . having amino groups and etherified hydroxy groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5]**

217/80 . . having amino groups and etherified hydroxy groups bound to carbon atoms of non-condensed six-membered aromatic rings **[5]**

217/82 . . . of the same non-condensed six-membered aromatic ring **[5]**

217/84 . . . . the oxygen atom of at least one of the etherified hydroxy groups being further bound to an acyclic carbon atom **[5]**

217/86 . . . . . to an acyclic carbon atom of a hydrocarbon radical containing six-membered aromatic rings **[5]**

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]**

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]**

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]**

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]**

219/00 Compounds containing amino and esterified hydroxy groups bound to the same carbon skeleton [5]

219/02 . having esterified hydroxy groups and amino groups bound to acyclic carbon atoms of the same carbon skeleton **[5]**

219/04 . . the carbon skeleton being acyclic and saturated **[5]**

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]**

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]**

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]**

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]**

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]**

219/16 . . . having at least one of the hydroxy groups esterified by an inorganic acid or a derivative thereof **[5]**

219/18 . . the carbon skeleton being saturated and containing rings **[5]**

219/20 . . the carbon skeleton being unsaturated **[5]**

219/22 . . . and containing six-membered aromatic rings **[5]**

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]**

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]**

219/28 . . having amino groups bound to acyclic carbon atoms of the carbon skeleton **[5]**

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]**

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]**

219/34 . having amino groups and esterified hydroxy groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5]**

221/00 Preparation of compounds containing amino groups and doubly-bound oxygen atoms bound to the same carbon skeleton [5]

223/00 Compounds containing amino and −CHO groups bound to the same carbon skeleton [5]

223/02 . having amino groups bound to acyclic carbon atoms of the carbon skeleton **[5]**

223/04 . having amino groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5]**

223/06 . having amino groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5]**

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]

225/02 . having amino groups bound to acyclic carbon atoms of the carbon skeleton **[5]**

225/04 . . the carbon skeleton being saturated **[5]**

225/06 . . . and acyclic **[5]**

225/08 . . . and containing rings **[5]**

225/10 . . . . with doubly-bound oxygen atoms bound to carbon atoms not being part of rings **[5]**

225/12 . . . . with doubly-bound oxygen atoms bound to carbon atoms being part of rings **[5]**

225/14 . . the carbon skeleton being unsaturated **[5]**

225/16 . . . and containing six-membered aromatic rings **[5]**

225/18 . . . . the carbon skeleton containing also rings other than six-membered aromatic rings **[5]**

225/20 . having amino groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5]**

225/22 . having amino groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5]**

225/24 . the carbon skeleton containing carbon atoms of quinone rings **[5]**

225/26 . . having amino groups bound to carbon atoms of quinone rings or of condensed ring systems containing quinone rings **[5]**

225/28 . . . of non-condensed quinone rings **[5]**

225/30 . . . of condensed quinone ring systems formed by two rings **[5]**

225/32 . . . of condensed quinone ring systems formed by at least three rings **[5]**

225/34 . . . . Amino anthraquinones **[5]**

225/36 . . . . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**

227/00 Preparation of compounds containing amino and carboxyl groups bound to the same carbon skeleton [5]

227/02 . Formation of carboxyl groups in compounds containing amino groups, e.g. by oxidation of amino alcohols **[5]**

227/04 . Formation of amino groups in compounds containing carboxyl groups **[5]**

227/06 . . by addition or substitution reactions, without increasing the number of carbon atoms in the carbon skeleton of the acid **[5]**

227/08 . . . by reaction of ammonia or amines with acids containing functional groups **[5]**

227/10 . . with simultaneously increasing the number of carbon atoms in the carbon skeleton **[5]**

227/12 . Formation of amino and carboxyl groups **[5]**

227/14 . from compounds containing already amino and carboxyl groups or derivatives thereof **[5]**

227/16 . . by reactions not involving the amino or carboxyl groups **[5]**

227/18 . . by reactions involving amino or carboxyl groups, e.g. hydrolysis of esters or amides, by formation of halides, salts or esters **[5]**

227/20 . . . by hydrolysis of N-acylated amino acids or derivatives thereof, e.g. hydrolysis of carbamates **[5]**

227/22 . from lactams, cyclic ketones or cyclic oximes, e.g. by reaction involving Beckmann rearrangement **[5]**

227/24 . from hydantoins **[5]**

227/26 . from compounds containing carboxyl groups by reaction with HCN, or a salt thereof, and amines, or from aminonitriles **[5]**

227/28 . from natural products **[5]**

227/30 . Preparation of optical isomers **[5]**

227/32 . . by stereospecific synthesis **[5]**

227/34 . . by separation of optical isomers **[5]**

227/36 . Racemisation of optical isomers **[5]**

227/38 . Separation; Purification; Stabilisation; Use of additives (separation of optical isomers C07C 227/34) **[5]**

227/40 . . Separation; Purification **[5]**

227/42 . . . Crystallisation **[5]**

227/44 . . Stabilisation; Use of additives **[5]**

229/00 Compounds containing amino and carboxyl groups bound to the same carbon skeleton [5]

229/02 . having amino and carboxyl groups bound to acyclic carbon atoms of the same carbon skeleton **[5]**

229/04 . . the carbon skeleton being acyclic and saturated **[5]**

229/06 . . . having only one amino and one carboxyl group bound to the carbon skeleton **[5]**

229/08 . . . . the nitrogen atom of the amino group being further bound to hydrogen atoms **[5]**

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]**

229/12 . . . . . to carbon atoms of acyclic carbon skeletons **[5]**

229/14 . . . . . to carbon atoms of carbon skeletons containing rings **[5]**

229/16 . . . . . to carbon atoms of hydrocarbon radicals substituted by amino or carboxyl groups, e.g. ethylenediamine-tetra-acetic acid, iminodiacetic acids **[5]**

229/18 . . . . the nitrogen atom of the amino group being further bound to carbon atoms of six-membered aromatic rings **[5]**

229/20 . . . the carbon skeleton being further substituted by halogen atoms or by nitro or nitroso groups **[5]**

229/22 . . . the carbon skeleton being further substituted by oxygen atoms **[5]**

229/24 . . . having more than one carboxyl group bound to the carbon skeleton, e.g. aspartic acid **[5]**
229/26 . . . having more than one amino group bound to the carbon skeleton, e.g. lysine **[5]**
229/28 . . the carbon skeleton being saturated and containing rings **[5]**
229/30 . . the carbon skeleton being acyclic and unsaturated **[5]**
229/32 . . the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5]**
229/34 . . the carbon skeleton containing six-membered aromatic rings **[5]**
229/36 . . . with at least one amino group and one carboxyl group bound to the same carbon atom of the carbon skeleton **[5]**
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]**
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]**
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]**
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]**
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]**
229/48 . . with amino groups and carboxyl groups bound to carbon atoms of the same non-condensed ring **[5]**
229/50 . . with amino groups and carboxyl groups bound to carbon atoms being part of the same condensed ring system **[5]**
229/52 . having amino and carboxyl groups bound to carbon atoms of six-membered aromatic rings of the same carbon skeleton **[5]**
229/54 . . with amino and carboxyl groups bound to carbon atoms of the same non-condensed six-membered aromatic ring **[5]**
229/56 . . . with amino and carboxyl groups bound in ortho- position **[5]**
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]**
229/60 . . . with amino and carboxyl groups bound in meta- or para- positions **[5]**
229/62 . . . with amino groups and at least two carboxyl groups bound to carbon atoms of the same six-membered aromatic ring **[5]**
229/64 . . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**
229/66 . . . the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5]**
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]**
229/70 . . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**
229/72 . . . the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5]**
229/74 . . . . the condensed ring system being formed by at least three rings, e.g. amino anthraquinone carboxylic acids **[5]**
229/76 . Metal complexes of amino carboxylic acids **[5]**

231/00 Preparation of carboxylic acid amides [5]
231/02 . from carboxylic acids or from esters, anhydrides, or halides thereof by reaction with ammonia or amines **[5]**
231/04 . from ketenes by reaction with ammonia or amines **[5]**
231/06 . from nitriles by transformation of cyano groups into carboxamide groups **[5]**
231/08 . from amides by reaction at nitrogen atoms of carboxamide groups **[5]**
231/10 . from compounds not provided for in groups C07C 231/02 to C07C 231/08 **[5]**
231/12 . by reactions not involving the formation of carboxamide groups **[5]**
231/14 . by formation of carboxamide groups together with reactions not involving the carboxamide groups **[5]**
231/16 . Preparation of optical isomers **[5]**
231/18 . . by stereospecific synthesis **[5]**
231/20 . . by separation of optical isomers **[5]**
231/22 . Separation; Purification; Stabilisation; Use of additives (separation of optical isomers C07C 231/20) **[5]**
231/24 . . Separation; Purification **[5]**

233/00 Carboxylic acid amides [5]
233/01 . having carbon atoms of carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**
233/02 . . having nitrogen atoms of carboxamide groups bound to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5]**
233/03 . . . with carbon atoms of carboxamide groups bound to hydrogen atoms **[5]**
233/04 . . . with carbon atoms of carboxamide groups bound to carbon atoms of an acyclic saturated carbon skeleton **[5]**
233/05 . . . . having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**
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]**
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]**
233/08 . . . with carbon atoms of carboxamide groups bound to acyclic carbon atoms of a saturated carbon skeleton containing rings **[5]**
233/09 . . . with carbon atoms of carboxamide groups bound to carbon atoms of an acyclic unsaturated carbon skeleton **[5]**
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]**
233/11 . . . with carbon atoms of carboxamide groups bound to carbon atoms of an unsaturated carbon skeleton containing six-membered aromatic rings **[5]**
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]**

233/13 . . . with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5]**

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]**

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]**

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]**

233/17 . . . with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5]**

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]**

233/19 . . . . having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a saturated carbon skeleton containing rings **[5]**

233/20 . . . . having the carbon atom of the carboxamide group bound to a carbon atom of an acyclic unsaturated carbon skeleton **[5]**

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]**

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]**

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]**

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]**

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]**

233/26 . . . . having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a saturated carbon skeleton containing rings **[5]**

233/27 . . . . having the carbon atom of the carboxamide group bound to a carbon atom of an acyclic unsaturated carbon skeleton **[5]**

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]**

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]**

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]**

233/31 . . . with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5]**

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]**

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]**

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]**

233/35 . . . with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5]**

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]**

233/37 . . . . having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a saturated carbon skeleton containing rings **[5]**

233/38 . . . . having the carbon atom of the carboxamide group bound to a carbon atom of an acyclic unsaturated carbon skeleton **[5]**

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]**

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]**

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]**

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]**

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]**

233/44 . . . . having the carbon atom of the carboxamide group bound to a carbon atom of an unsaturated carbon skeleton **[5]**

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]**

233/46 . . . with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5]**

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]**

233/48 . . . . having the carbon atom of the carboxamide group bound to an acyclic carbon atom of a saturated carbon skeleton containing rings **[5]**

233/49 . . . . having the carbon atom of the carboxamide group bound to a carbon atom of an acyclic unsaturated carbon skeleton **[5]**

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]**

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]**

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]**

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]**

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]**

233/55 . . . . having the carbon atom of the carboxamide group bound to a carbon atom of an unsaturated carbon skeleton **[5]**

233/56 . . having carbon atoms of carboxamide groups bound to carbon atoms of carboxyl groups, e.g. oxamides **[5]**

233/57 . having carbon atoms of carboxamide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

233/58 . . having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5]**

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]**

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]**

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]**

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]**

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]**

233/64 . having carbon atoms of carboxamide groups bound to carbon atoms of six-membered aromatic rings **[5]**

233/65 . . having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5]**

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]**

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]**

233/68 . . . with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5]**

233/69 . . . . of an acyclic saturated carbon skeleton **[5]**

233/70 . . . . of a saturated carbon skeleton containing rings **[5]**

233/71 . . . . of an acyclic unsaturated carbon skeleton **[5]**

233/72 . . . . of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5]**

233/73 . . . . of a carbon skeleton containing six-membered aromatic rings **[5]**

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]**

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]**

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]**

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]**

233/78 . . . with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5]**

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]**

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]**

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]**

233/82 . . . with the substituted hydrocarbon radical bound to the nitrogen atom of the carboxamide group by an acyclic carbon atom **[5]**

233/83 . . . . of an acyclic saturated carbon skeleton **[5]**

233/84 . . . . of a saturated carbon skeleton containing rings **[5]**

233/85 . . . . of an acyclic unsaturated carbon skeleton **[5]**

233/86 . . . . of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5]**

233/87 . . . . of a carbon skeleton containing six-membered aromatic rings **[5]**

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]**

233/89 . having nitrogen atoms of carboxamide groups quaternised **[5]**

233/90 . having nitrogen atoms of carboxamide groups further acylated **[5]**

233/91 . . with carbon atoms of the carboxamide groups bound to acyclic carbon atoms **[5]**

233/92 . . with at least one carbon atom of the carboxamide groups bound to a carbon atom of a six-membered aromatic ring **[5]**

235/00 Carboxylic acid amides, the carbon skeleton of the acid part being further substituted by oxygen atoms [5]

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]**

235/04 . . the carbon skeleton being acyclic and saturated **[5]**

235/06 . . . having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

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]**

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]**

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]**

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]**

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]**

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]**

235/20 . . . . having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

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]**

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]**

235/26 . . the carbon skeleton being saturated and containing rings **[5]**

235/28 . . the carbon skeleton being acyclic and unsaturated **[5]**

235/30 . . the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5]**

235/32 . . the carbon skeleton containing six-membered aromatic rings **[5]**

235/34 . . . having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

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]**

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]**

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]**

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]**

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]**

235/46 . . . having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

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]**

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]**

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]**

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]**

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]**

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]**

235/60 . . . . having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

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]**

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]**

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]**

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]**

235/70 . having carbon atoms of carboxamide groups and doubly-bound oxygen atoms bound to the same carbon skeleton **[5]**

235/72 . . with the carbon atoms of the carboxamide groups bound to acyclic carbon atoms **[5]**

235/74 . . . of a saturated carbon skeleton **[5]**

235/76 . . . of an unsaturated carbon skeleton **[5]**

235/78 . . . . the carbon skeleton containing rings **[5]**

235/80 . . . having carbon atoms of carboxamide groups and keto groups bound to the same carbon atom, e.g. acetoacetamides **[5]**

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]**

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]**

235/86 . having the nitrogen atom of at least one of the carboxamide groups quaternised **[5]**

235/88 . having the nitrogen atom of at least one of the carboxamide groups further acylated **[5]**

237/00 Carboxylic acid amides, the carbon skeleton of the acid part being further substituted by amino groups [5]

237/02 . having the carbon atoms of the carboxamide groups bound to acyclic carbon atoms of the carbon skeleton **[5]**

237/04 . . the carbon skeleton being acyclic and saturated **[5]**

237/06 . . . having the nitrogen atoms of the carboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

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]**

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]**

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]**

237/14 . . the carbon skeleton being saturated and containing rings **[5]**

237/16 . . the carbon skeleton being acyclic and unsaturated **[5]**

237/18 . . the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5]**

237/20 . . the carbon skeleton containing six-membered aromatic rings **[5]**

237/22 . . having nitrogen atoms of amino groups bound to the carbon skeleton of the acid part, further acylated **[5]**

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]**

237/26 . . of a ring being part of a condensed ring system formed by at least four rings, e.g. tetracycline **[5]**

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]**

237/30 . . having the nitrogen atom of the carboxamide group bound to hydrogen atoms or to acyclic carbon atoms **[5]**

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]**

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]**

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]**

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]**

237/40 . . having the nitrogen atom of the carboxamide group bound to a carbon atom of a six-membered aromatic ring **[5]**

237/42 . . having nitrogen atoms of amino groups bound to the carbon skeleton of the acid part, further acylated **[5]**

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]**

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]**

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]**

237/50 . having the nitrogen atom of at least one of the carboxamide groups quaternised **[5]**

237/52 . having the nitrogen atom of at least one of the carboxamide groups further acylated **[5]**

239/00 Compounds containing nitrogen-to-halogen bonds; Hydroxylamino compounds or ethers or esters thereof [5]

239/02 . Compounds containing nitrogen-to-halogen bonds **[5]**

239/04 . . N-halogenated amines **[5]**

239/06 . . N-halogenated carboxamides **[5]**

239/08 . Hydroxylamino compounds or their ethers or esters **[5]**

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]**

239/12 . . having nitrogen atoms of hydroxylamino groups further bound to carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5]**

239/14 . . having nitrogen atoms of hydroxylamino groups further bound to carbon atoms of hydrocarbon radicals substituted by doubly-bound oxygen atoms **[5]**

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]**

239/18 . . having nitrogen atoms of hydroxylamino groups further bound to carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5]**

239/20 . . having oxygen atoms of hydroxylamino groups etherified **[5]**

239/22 . . having oxygen atoms of hydroxylamino groups esterified **[5]**

241/00 Preparation of compounds containing chains of nitrogen atoms singly-bound to each other, e.g. hydrazines, triazanes [5]

241/02 . Preparation of hydrazines **[5]**

241/04 . Preparation of hydrazides **[5]**

243/00 Compounds containing chains of nitrogen atoms singly-bound to each other, e.g. hydrazines, triazanes [5]

243/02 . N-nitro compounds **[5]**
243/04 . N-nitroso compounds **[5]**
243/06 . . N-nitroso-amines **[5]**
243/08 . . N-nitroso-carboxamides **[5]**
243/10 . Hydrazines **[5]**
243/12 . . having nitrogen atoms of hydrazine groups bound to acyclic carbon atoms **[5]**
243/14 . . . of a saturated carbon skeleton **[5]**
243/16 . . . of an unsaturated carbon skeleton **[5]**
243/18 . . . . containing rings **[5]**
243/20 . . having nitrogen atoms of hydrazine groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
243/22 . . having nitrogen atoms of hydrazine groups bound to carbon atoms of six-membered aromatic rings **[5]**
243/24 . Hydrazines having nitrogen atoms of hydrazine groups acylated by carboxylic acids **[5]**
243/26 . . with acylating carboxyl groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**
243/28 . . . to hydrogen atoms or to carbon atoms of a saturated carbon skeleton **[5]**
243/30 . . . to carbon atoms of an unsaturated carbon skeleton **[5]**
243/32 . . . . the carbon skeleton containing rings **[5]**
243/34 . . . to carbon atoms of a carbon skeleton further substituted by nitrogen atoms **[5]**
243/36 . . with acylating carboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
243/38 . . with acylating carboxyl groups bound to carbon atoms of six-membered aromatic rings **[5]**
243/40 . Hydrazines having nitrogen atoms of hydrazine groups being quaternised **[5]**
243/42 . Hydrazines having nitrogen atoms of hydrazine groups further singly-bound to hetero atoms **[5]**

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]**

245/02 . Azo compounds, i.e. compounds having the free valencies of $-N=N-$ groups attached to different atoms, e.g. diazohydroxides **[5]**
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]**
245/06 . . with nitrogen atoms of azo groups bound to carbon atoms of six-membered aromatic rings **[5]**
245/08 . . . with the two nitrogen atoms of azo groups bound to carbon atoms of six-membered aromatic rings, e.g. azobenzene **[5]**
245/10 . . . with nitrogen atoms of azo groups bound to carbon atoms of six-membered aromatic rings being part of condensed ring systems **[5]**
245/12 . Diazo compounds, i.e. compounds having the free valencies of $\rangle N_2$ groups attached to the same carbon atom **[5]**
245/14 . . having diazo groups bound to acyclic carbon atoms of a carbon skeleton **[5]**
245/16 . . . Diazomethane **[5]**
245/18 . . . the carbon skeleton being further substituted by carboxyl groups **[5]**
245/20 . Diazonium compounds **[5]**
245/22 . containing chains of three or more nitrogen atoms with one or more nitrogen-to-nitrogen double bonds **[5]**
245/24 . . Chains of only three nitrogen atoms, e.g. diazoamines **[5]**

247/00 Compounds containing azido groups [5]

247/02 . with azido groups bound to acyclic carbon atoms of a carbon skeleton **[5]**
247/04 . . being saturated **[5]**
247/06 . . . and containing rings **[5]**
247/08 . . being unsaturated **[5]**
247/10 . . . and containing rings **[5]**
247/12 . . being further substituted by carboxyl groups **[5]**
247/14 . with azido groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
247/16 . with azido groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5]**
247/18 . . being further substituted by carboxyl groups **[5]**
247/20 . with azido groups acylated by carboxylic acids **[5]**
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]**
247/24 . . with at least one of the acylating carboxyl groups bound to a carbon atom of a six-membered aromatic ring **[5]**

249/00 Preparation of compounds containing nitrogen atoms doubly-bound to a carbon skeleton (of diazo compounds C07C 245/12) **[5]**

249/02 . of compounds containing imino groups **[5]**
249/04 . of oximes **[5]**
249/06 . . by nitrosation of hydrocarbons or substituted hydrocarbons **[5]**
249/08 . . by reaction of hydroxylamines with carbonyl compounds **[5]**
249/10 . . from nitro compounds or salts thereof **[5]**
249/12 . . by reactions not involving the formation of oxyimino groups **[5]**
249/14 . . Separation; Purification; Stabilisation; Use of additives **[5]**
249/16 . of hydrazones **[5]**

251/00 Compounds containing nitrogen atoms doubly-bound to a carbon skeleton (diazo compounds C07C 245/12) **[5]**

251/02 . containing imino groups **[5]**
251/04 . . having carbon atoms of imino groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**
251/06 . . . to carbon atoms of a saturated carbon skeleton **[5]**
251/08 . . . . being acyclic **[5]**
251/10 . . . to carbon atoms of an unsaturated carbon skeleton **[5]**
251/12 . . . . being acyclic **[5]**
251/14 . . . . containing rings other than six-membered aromatic rings **[5]**
251/16 . . . . containing six-membered aromatic rings **[5]**
251/18 . . having carbon atoms of imino groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
251/20 . . having carbon atoms of imino groups being part of rings other than six-membered aromatic rings **[5]**
251/22 . . . Quinone imines **[5]**
251/24 . . having carbon atoms of imino groups bound to carbon atoms of six-membered aromatic rings **[5]**

251/26 . . having nitrogen atoms of imino groups further bound to halogen atoms **[5]**
251/28 . . having nitrogen atoms of imino groups acylated **[5]**
251/30 . . having nitrogen atoms of imino groups quaternised **[5]**
251/32 . Oximes **[5]**
251/34 . . with oxygen atoms of oxyimino groups bound to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5]**
251/36 . . . with the carbon atoms of the oxyimino groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**
251/38 . . . . to carbon atoms of a saturated carbon skeleton **[5]**
251/40 . . . . to carbon atoms of an unsaturated carbon skeleton **[5]**
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]**
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]**
251/46 . . . . Quinone oximes **[5]**
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]**
251/50 . . having oxygen atoms of oxyimino groups bound to carbon atoms of substituted hydrocarbon radicals **[5]**
251/52 . . . of hydrocarbon radicals substituted by halogen atoms or by nitro or nitroso groups **[5]**
251/54 . . . of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5]**
251/56 . . . of hydrocarbon radicals substituted by doubly-bound oxygen atoms **[5]**
251/58 . . . of hydrocarbon radicals substituted by nitrogen atoms not being part of nitro or nitroso groups **[5]**
251/60 . . . of hydrocarbon radicals substituted by carboxyl groups **[5]**
251/62 . . having oxygen atoms of oxyimino groups esterified **[5]**
251/64 . . . by carboxylic acids **[5]**
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]**
251/68 . . . . with at least one of the esterifying carboxyl groups bound to a carbon atom of a six-membered aromatic ring **[5]**
251/70 . . Metal complexes of oximes **[5]**
251/72 . Hydrazones **[5]**
251/74 . . having doubly-bound carbon atoms of hydrazone groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**
251/76 . . . to carbon atoms of a saturated carbon skeleton **[5]**
251/78 . . . to carbon atoms of an unsaturated carbon skeleton **[5]**
251/80 . . . . the carbon skeleton containing rings **[5]**
251/82 . . having doubly-bound carbon atoms of hydrazone groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
251/84 . . having doubly-bound carbon atoms of hydrazone groups being part of rings other than six-membered aromatic rings **[5]**
251/86 . . having doubly-bound carbon atoms of hydrazone groups bound to carbon atoms of six-membered aromatic rings **[5]**
251/88 . . having also the other nitrogen atom doubly-bound to a carbon atom, e.g. azines **[5]**

253/00 **Preparation of carboxylic acid nitriles** (of cyanogen or compounds thereof C01C 3/00) **[5]**
253/02 . by reaction of nitrogen oxide with organic compounds **[5]**
253/04 . by reaction of cyanogen halides, e.g. ClCN, with organic compounds **[5]**
253/06 . from N-formylated amino compounds **[5]**
253/08 . by addition of hydrogen cyanide or salts thereof to unsaturated compounds **[5]**
253/10 . . to compounds containing carbon-to-carbon double bonds **[5]**
253/12 . . to compounds containing carbon-to-carbon triple bonds **[5]**
253/14 . by reaction of cyanides with halogen-containing compounds with replacement of halogen atoms by cyano groups **[5]**
253/16 . by reaction of cyanides with lactones or compounds containing hydroxy groups or etherified or esterified hydroxy groups **[5]**
253/18 . by reaction of ammonia or amines with compounds containing carbon-to-carbon multiple bonds other than in six-membered aromatic rings **[5]**
253/20 . by dehydratation of carboxylic acid amides **[5]**
253/22 . by reaction of ammonia with carboxylic acids with replacement of carboxyl groups by cyano groups **[5]**
253/24 . by ammoxidation of hydrocarbons or substituted hydrocarbons **[5]**
253/26 . . containing carbon-to-carbon multiple bonds, e.g. unsaturated aldehydes **[5]**
253/28 . . containing six-membered aromatic rings, e.g. styrene **[5]**
253/30 . by reactions not involving the formation of cyano groups **[5]**
253/32 . Separation; Purification; Stabilisation; Use of additives **[5]**
253/34 . . Separation; Purification **[5]**

255/00 **Carboxylic acid nitriles** (cyanogen or compounds thereof C01C 3/00) **[5]**
255/01 . having cyano groups bound to acyclic carbon atoms **[5]**
255/02 . . of an acyclic and saturated carbon skeleton **[5]**
255/03 . . . Mononitriles **[5]**
255/04 . . . containing two cyano groups bound to the carbon skeleton **[5]**
255/05 . . . containing at least three cyano groups bound to the carbon skeleton **[5]**
255/06 . . of an acyclic and unsaturated carbon skeleton **[5]**
255/07 . . . Mononitriles **[5]**
255/08 . . . . Acrylonitrile; Methacrylonitrile **[5]**
255/09 . . . containing at least two cyano groups bound to the carbon skeleton **[5]**
255/10 . . containing cyano groups and halogen atoms, or nitro or nitroso groups, bound to the same acyclic carbon skeleton **[5]**
255/11 . . containing cyano groups and singly-bound oxygen atoms bound to the same saturated acyclic carbon skeleton **[5]**

255/12 . . . containing cyano groups and hydroxy groups bound to the carbon skeleton **[5]**
255/13 . . . containing cyano groups and etherified hydroxy groups bound to the carbon skeleton **[5]**
255/14 . . . containing cyano groups and esterified hydroxy groups bound to the carbon skeleton **[5]**
255/15 . . containing cyano groups and singly-bound oxygen atoms bound to the same unsaturated acyclic carbon skeleton **[5]**
255/16 . . containing cyano groups and singly-bound oxygen atoms bound to the same carbon atom of an acyclic carbon skeleton **[5]**
255/17 . . containing cyano groups and doubly-bound oxygen atoms bound to the same acyclic carbon skeleton **[5]**
255/18 . . containing cyano groups bound to carbon atoms of carboxyl groups **[5]**
255/19 . . containing cyano groups and carboxyl groups, other than cyano groups, bound to the same saturated acyclic carbon skeleton **[5]**
255/20 . . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**
255/21 . . . the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5]**
255/22 . . . containing cyano groups and at least two carboxyl groups bound to the carbon skeleton **[5]**
255/23 . . containing cyano groups and carboxyl groups, other than cyano groups, bound to the same unsaturated acyclic carbon skeleton **[5]**
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]**
255/25 . . . Aminoacetonitriles **[5]**
255/26 . . . containing cyano groups, amino groups and singly-bound oxygen atoms bound to the carbon skeleton **[5]**
255/27 . . . containing cyano groups, amino groups and doubly-bound oxygen atoms bound to the carbon skeleton **[5]**
255/28 . . . containing cyano groups, amino groups and carboxyl groups, other than cyano groups, bound to the carbon skeleton **[5]**
255/29 . . . containing cyano groups and acylated amino groups bound to the carbon skeleton **[5]**
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]**
255/31 . . having cyano groups bound to acyclic carbon atoms of a carbon skeleton containing rings other than six-membered aromatic rings **[5]**
255/32 . . having cyano groups bound to acyclic carbon atoms of a carbon skeleton containing at least one six-membered aromatic ring **[5]**
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]**
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]**
255/35 . . . the carbon skeleton being further substituted by halogen atoms, or by nitro or nitroso groups **[5]**
255/36 . . . the carbon skeleton being further substituted by hydroxy groups **[5]**
255/37 . . . the carbon skeleton being further substituted by etherified hydroxy groups **[5]**
255/38 . . . the carbon skeleton being further substituted by esterified hydroxy groups **[5]**
255/39 . . . . with hydroxy groups esterified by derivatives of 2,2-dimethylcyclopropane carboxylic acids, e.g. chrysanthemumic acids **[5]**
255/40 . . . the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5]**
255/41 . . . the carbon skeleton being further substituted by carboxyl groups, other than cyano groups **[5]**
255/42 . . . the carbon skeleton being further substituted by singly-bound nitrogen atoms, not being further bound to other hetero atoms **[5]**
255/43 . . . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**
255/44 . . . . at least one of the singly-bound nitrogen atoms being acylated **[5]**
255/45 . having cyano groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
255/46 . . to carbon atoms of non-condensed rings **[5]**
255/47 . . to carbon atoms of rings being part of condensed ring systems **[5]**
255/48 . . to carbon atoms of 2,2-dimethylcyclopropane rings, e.g. nitrile of chrysanthemumic acids **[5]**
255/49 . having cyano groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5]**
255/50 . . to carbon atoms of non-condensed six-membered aromatic rings **[5]**
255/51 . . . containing at least two cyano groups bound to the carbon skeleton **[5]**
255/52 . . to carbon atoms of six-membered aromatic rings being part of condensed ring systems **[5]**
255/53 . . containing cyano groups and hydroxy groups bound to the carbon skeleton **[5]**
255/54 . . containing cyano groups and etherified hydroxy groups bound to the carbon skeleton **[5]**
255/55 . . containing cyano groups and esterified hydroxy groups bound to the carbon skeleton **[5]**
255/56 . . containing cyano groups and doubly-bound oxygen atoms bound to the carbon skeleton **[5]**
255/57 . . containing cyano groups and carboxyl groups, other than cyano groups, bound to the carbon skeleton **[5]**
255/58 . . containing cyano groups and singly-bound nitrogen atoms, not being further bound to other hetero atoms, bound to the carbon skeleton **[5]**
255/59 . . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**
255/60 . . . at least one of the singly-bound nitrogen atoms being acylated **[5]**
255/61 . containing cyano groups and nitrogen atoms being part of imino groups bound to the same carbon skeleton **[5]**
255/62 . containing cyano groups and oxygen atoms being part of oxyimino groups bound to the same carbon skeleton **[5]**
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]**
255/64 . . with the nitrogen atoms further bound to oxygen atoms **[5]**
255/65 . . with the nitrogen atoms further bound to nitrogen atoms **[5]**

255/66 . . . having cyano groups and nitrogen atoms being part of hydrazine or hydrazone groups bound to the same carbon skeleton **[5]**

255/67 . . . having cyano groups and azido groups bound to the same carbon skeleton **[5]**

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]

257/02 . with replacement of the other oxygen atom of the carboxyl group by halogen atoms, e.g. imino-halides **[5]**

257/04 . without replacement of the other oxygen atom of the carboxyl group, e.g. imino-ethers **[5]**

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]**

257/08 . . having carbon atoms of imino-carboxyl groups bound to carbon atoms of six-membered aromatic rings **[5]**

257/10 . with replacement of the other oxygen atom of the carboxyl group by nitrogen atoms, e.g. amidines **[5]**

257/12 . . having carbon atoms of amidino groups bound to hydrogen atoms **[5]**

257/14 . . having carbon atoms of amidino groups bound to acyclic carbon atoms **[5]**

257/16 . . having carbon atoms of amidino groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

257/18 . . having carbon atoms of amidino groups bound to carbon atoms of six-membered aromatic rings **[5]**

257/20 . . having nitrogen atoms of amidino groups acylated **[5]**

257/22 . . having nitrogen atoms of amidino groups further bound to nitrogen atoms, e.g. hydrazidines **[5]**

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]

259/02 . with replacement of the other oxygen atom of the carboxyl group by halogen atoms **[5]**

259/04 . without replacement of the other oxygen atom of the carboxyl group, e.g. hydroxamic acids **[5]**

259/06 . . having carbon atoms of hydroxamic groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

259/08 . . having carbon atoms of hydroxamic groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

259/10 . . having carbon atoms of hydroxamic groups bound to carbon atoms of six-membered aromatic rings **[5]**

259/12 . with replacement of the other oxygen atom of the carboxyl group by nitrogen atoms, e.g. N-hydroxyamidines **[5]**

259/14 . . having carbon atoms of hydroxyamidine groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

259/16 . . having carbon atoms of hydroxyamidine groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

259/18 . . having carbon atoms of hydroxyamidine groups bound to carbon atoms of six-membered aromatic rings **[5]**

259/20 . . with at least one nitrogen atom of hydroxyamidine groups bound to another nitrogen atom **[5]**

261/00 Derivatives of cyanic acid [5]

261/02 . Cyanates **[5]**

261/04 . Cyanamides (unsubstituted cyanamide C01C 3/16) **[5]**

263/00 Preparation of derivatives of isocyanic acid [5]

263/02 . by reaction of halides with isocyanic acid or its derivatives **[5]**

263/04 . from or via carbamates or carbamoyl halides **[5]**

263/06 . from or via ureas **[5]**

263/08 . from or via heterocyclic compounds, e.g. pyrolysis of furoxans **[5]**

263/10 . by reaction of amines with carbonyl halides, e.g. with phosgene **[5]**

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]**

263/14 . by catalytic reaction of nitro compounds with carbon monoxide **[5]**

263/16 . by reactions not involving the formation of isocyanate groups **[5]**

263/18 . Separation; Purification; Stabilisation; Use of additives **[5]**

263/20 . . Separation; Purification **[5]**

265/00 Derivatives of isocyanic acid [5]

265/02 . having isocyanate groups bound to acyclic carbon atoms **[5]**

265/04 . . of a saturated carbon skeleton **[5]**

265/06 . . of an unsaturated carbon skeleton **[5]**

265/08 . . . the carbon skeleton containing rings **[5]**

265/10 . having isocyanate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

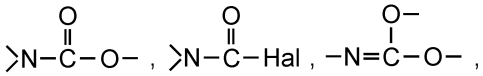
265/12 . having isocyanate groups bound to carbon atoms of six-membered aromatic rings **[5]**

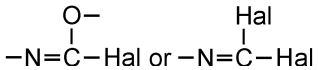
265/14 . containing at least two isocyanate groups bound to the same carbon skeleton **[5]**

265/16 . having isocyanate groups acylated **[5]**

267/00 Carbodiimides [5]

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]

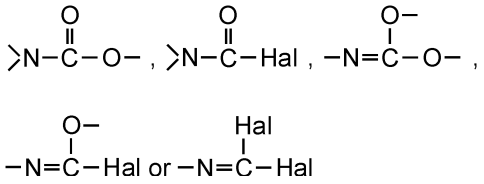
269/02 . from isocyanates with formation of carbamate groups **[5]**

269/04 . from amines with formation of carbamate groups **[5]**

269/06 . by reactions not involving the formation of carbamate groups **[5]**

269/08 . Separation; Purification; Stabilisation; Use of additives **[5]**

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]

271/02 . Carbamic acids; Salts of carbamic acids (unsubstituted carbamic acid or salts thereof C01B 21/12) **[5]**

271/04 . Carbamic acid halides **[5]**

271/06 . Esters of carbamic acids **[5]**

271/08 . . having oxygen atoms of carbamate groups bound to acyclic carbon atoms **[5]**

271/10 . . . with the nitrogen atoms of the carbamate groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

271/12 . . . . to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5]**

271/14 . . . . to carbon atoms of hydrocarbon radicals substituted by halogen atoms or by nitro or nitroso groups **[5]**

271/16 . . . . to carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5]**

271/18 . . . . to carbon atoms of hydrocarbon radicals substituted by doubly-bound oxygen atoms **[5]**

271/20 . . . . to carbon atoms of hydrocarbon radicals substituted by nitrogen atoms not being part of nitro or nitroso groups **[5]**

271/22 . . . . to carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5]**

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]**

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]**

271/28 . . . . to a carbon atom of a non-condensed six-membered aromatic ring **[5]**

271/30 . . . . to a carbon atom of a six-membered aromatic ring being part of a condensed ring system **[5]**

271/32 . . having oxygen atoms of carbamate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

271/34 . . . with the nitrogen atoms of the carbamate groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

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]**

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]**

271/40 . . having oxygen atoms of carbamate groups bound to carbon atoms of six-membered aromatic rings **[5]**

271/42 . . . with the nitrogen atoms of the carbamate groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

271/44 . . . . to hydrogen atoms or to carbon atoms of unsubstituted hydrocarbon radicals **[5]**

271/46 . . . . to carbon atoms of hydrocarbon radicals substituted by halogen atoms or by nitro or nitroso groups **[5]**

271/48 . . . . to carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5]**

271/50 . . . . to carbon atoms of hydrocarbon radicals substituted by doubly-bound oxygen atoms **[5]**

271/52 . . . . to carbon atoms of hydrocarbon radicals substituted by nitrogen atoms not being part of nitro or nitroso groups **[5]**

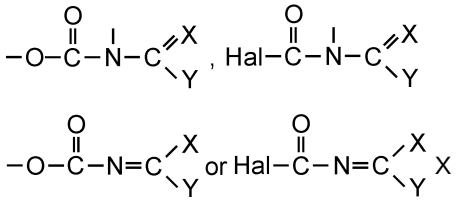
271/54 . . . . to carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5]**

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]**

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]**

271/60 . having oxygen atoms of carbamate groups bound to nitrogen atoms **[5]**

271/62 . Compounds containing any of the groups

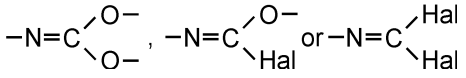


being a hetero atom, Y being any atom, e.g. N-acylcarbamates **[5]**

271/64 . . Y being a hydrogen or a carbon atom, e.g. benzoylcarbamates **[5]**

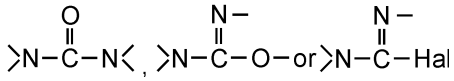
271/66 . . Y being a hetero atom **[5]**

271/68 . Compounds containing any of the groups



[5]

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]

273/02 . of urea, its salts, complexes or addition compounds **[5]**

273/04 . . from carbon dioxide and ammonia **[5]**

273/06 . . from cyanamide or calcium cyanamide **[5]**

273/08 . . from ammoniacal liquor **[5]**

273/10 . . combined with the synthesis of ammonia **[5]**

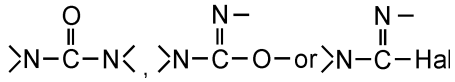
273/12 . . combined with the synthesis of melamine **[5]**

273/14 . . Separation; Purification; Stabilisation; Use of additives **[5]**

273/16 . . . Separation; Purification **[5]**

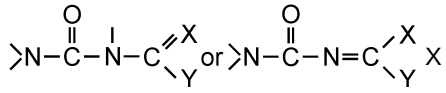
273/18 . of substituted ureas **[5]**

275/00 **Derivatives of urea, i.e. compounds containing any of the groups**



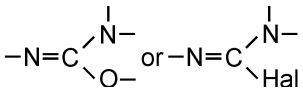
the nitrogen atoms not being part of nitro or nitroso groups [5]

275/02 . Salts; Complexes; Addition compounds **[5]**
275/04 . having nitrogen atoms of urea groups bound to acyclic carbon atoms **[5]**
275/06 . . of an acyclic and saturated carbon skeleton **[5]**
275/08 . . . being further substituted by halogen atoms, or by nitro or nitroso groups **[5]**
275/10 . . . being further substituted by singly-bound oxygen atoms **[5]**
275/12 . . . being further substituted by doubly-bound oxygen atoms **[5]**
275/14 . . . being further substituted by nitrogen atoms not being part of nitro or nitroso groups **[5]**
275/16 . . . being further substituted by carboxyl groups **[5]**
275/18 . . of a saturated carbon skeleton containing rings **[5]**
275/20 . . of an unsaturated carbon skeleton **[5]**
275/22 . . . containing rings other than six-membered aromatic rings **[5]**
275/24 . . . containing six-membered aromatic rings **[5]**
275/26 . having nitrogen atoms of urea groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
275/28 . having nitrogen atoms of urea groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5]**
275/30 . . being further substituted by halogen atoms, or by nitro or nitroso groups **[5]**
275/32 . . being further substituted by singly-bound oxygen atoms **[5]**
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]**
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]**
275/38 . . being further substituted by doubly-bound oxygen atoms **[5]**
275/40 . . being further substituted by nitrogen atoms not being part of nitro or nitroso groups **[5]**
275/42 . . being further substituted by carboxyl groups **[5]**
275/44 . having nitrogen atoms of urea groups doubly-bound to carbon atoms **[5]**
275/46 . containing any of the groups



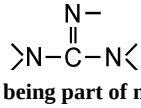
being a hetero atom, Y being any atom, e.g. acylureas **[5]**

275/48 . . Y being a hydrogen or a carbon atom **[5]**
275/50 . . . Y being a hydrogen or an acyclic carbon atom **[5]**
275/52 . . . Y being a carbon atom of a ring other than a six-membered aromatic ring **[5]**
275/54 . . . Y being a carbon atom of a six-membered aromatic ring, e.g. benzoylureas **[5]**
275/56 . . . X being a nitrogen atom **[5]**
275/58 . . Y being a hetero atom **[5]**
275/60 . . . Y being an oxygen atom, e.g. allophanic acids **[5]**
275/62 . . . Y being a nitrogen atom, e.g. biuret **[5]**
275/64 . having nitrogen atoms of urea groups singly-bound to oxygen atoms **[5]**
275/66 . having nitrogen atoms of urea groups bound to halogen atoms or to nitro or nitroso groups **[5]**
275/68 . . N-nitroso ureas **[5]**
275/70 . Compounds containing any of the groups



e.g. isoureas **[5]**

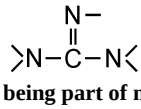
277/00 **Preparation of guanidine or its derivatives, i.e. compounds containing the group**



the singly-bound nitrogen atoms not being part of nitro or nitroso groups [5]

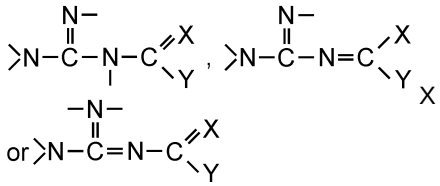
277/02 . of guanidine from cyanamide, calcium cyanamide or dicyandiamides **[5]**
277/04 . of guanidine from ammonium thiocyanate **[5]**
277/06 . Purification or separation of guanidine **[5]**
277/08 . of substituted guanidines **[5]**

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]

279/02 . Guanidine; Salts, complexes or addition compounds thereof **[5]**
279/04 . having nitrogen atoms of guanidine groups bound to acyclic carbon atoms of a carbon skeleton **[5]**
279/06 . . being further substituted by halogen atoms, or by nitro or nitroso groups **[5]**
279/08 . . being further substituted by singly-bound oxygen atoms **[5]**
279/10 . . being further substituted by doubly-bound oxygen atoms **[5]**
279/12 . . being further substituted by nitrogen atoms not being part of nitro or nitroso groups **[5]**
279/14 . . being further substituted by carboxyl groups **[5]**
279/16 . having nitrogen atoms of guanidine groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
279/18 . having nitrogen atoms of guanidine groups bound to carbon atoms of six-membered aromatic rings **[5]**
279/20 . containing any of the groups



being a hetero atom, Y being any atom, e.g. acylguanidines **[5]**

279/22 . . Y being a hydrogen or a carbon atom, e.g. benzoylguanidines **[5]**
279/24 . . Y being a hetero atom **[5]**
279/26 . . . X and Y being nitrogen atoms, i.e. biguanides **[5]**
279/28 . having nitrogen atoms of guanidine groups bound to cyano groups, e.g. cyanoguanidines, dicyandiamides **[5]**

279/30 . having nitrogen atoms of guanidine groups bound to nitro or nitroso groups **[5]**

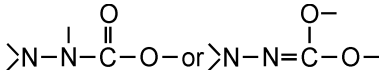
279/32 . . N-nitroguanidines **[5]**

279/34 . . . N-nitroguanidine **[5]**

279/36 . . . Substituted N-nitroguanidines **[5]**

281/00 Derivatives of carbonic acid containing functional groups covered by groups C07C 269/00 to 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]

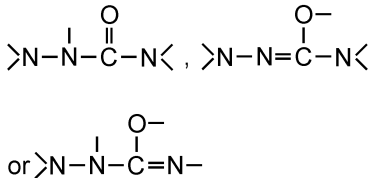
281/02 . Compounds containing any of the groups



e.g. carbazates **[5]**

281/04 . . the other nitrogen atom being further doubly-bound to a carbon atom **[5]**

281/06 . Compounds containing any of the groups



e.g. semicarbazides **[5]**

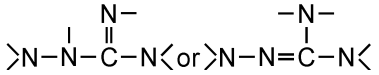
281/08 . . the other nitrogen atom being further doubly-bound to a carbon atom, e.g. semicarbazones **[5]**

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]**

281/12 . . . the carbon atom being part of a ring other than a six-membered aromatic ring **[5]**

281/14 . . . the carbon atom being further bound to a carbon atom of a six-membered aromatic ring **[5]**

281/16 . Compounds containing any of the groups



e.g. aminoguanidine **[5]**

281/18 . . the other nitrogen atom being further doubly-bound to a carbon atom, e.g. guanylhydrazones **[5]**

281/20 . the two nitrogen atoms of the functional groups being doubly-bound to each other, e.g. azoformamide **[5]**

291/00 Compounds containing carbon and nitrogen and having functional groups not covered by groups C07C 201/00 to C07C 281/00 [5]

291/02 . containing nitrogen-oxide bonds **[5]**

291/04 . . containing amino-oxide bonds **[5]**

291/06 . . Nitrile oxides **[5]**

291/08 . . Azoxy compounds **[5]**

291/10 . Isocyanides **[5]**

291/12 . Fulminates **[5]**

291/14 . containing at least one carbon atom bound to a nitro or nitroso group and doubly-bound to a hetero atom **[5]**

Compounds containing carbon together with sulfur, selenium or tellurium, with or without hydrogen, halogens, oxygen or nitrogen [5]

301/00 Esters of sulfurous acid [5]

301/02 . having sulfite groups bound to carbon atoms of six-membered aromatic rings **[5]**

303/00 Preparation of esters or amides of sulfuric acids; Preparation of sulfonic acids or of their esters, halides, anhydrides or amides [5]

303/02 . of sulfonic acids or halides thereof **[5]**

303/04 . . by substitution of hydrogen atoms by sulfo or halosulfonyl groups **[5]**

303/06 . . . by reaction with sulfuric acid or sulfur trioxide **[5]**

303/08 . . . by reaction with halogenosulfonic acids **[5]**

303/10 . . . by reaction with sulfur dioxide and halogen or by reaction with sulfuryl halides **[5]**

303/12 . . . by reaction with thionylhalides **[5]**

303/14 . . by sulfoxidation, i.e. by reaction with sulfur dioxide and oxygen with formation of sulfo or halosulfonyl groups **[5]**

303/16 . . by oxidation of thiols, sulfides, hydropolysulfides, or polysulfides with formation of sulfo or halosulfonyl groups **[5]**

303/18 . . by reaction of sulfides with compounds having functional groups with formation of sulfo or halosulfonyl groups **[5]**

303/20 . . by addition of sulfurous acid or salts thereof to compounds having carbon-to-carbon multiple bonds **[5]**

303/22 . . from sulfonic acids by reactions not involving the formation of sulfo or halosulfonyl groups **[5]**

303/24 . of esters of sulfuric acids **[5]**

303/26 . of esters of sulfonic acids **[5]**

303/28 . . by reaction of hydroxy compounds with sulfonic acids or derivatives thereof **[5]**

303/30 . . by reactions not involving the formation of esterified sulfo groups **[5]**

303/32 . of salts of sulfonic acids **[5]**

303/34 . of amides of sulfuric acids **[5]**

303/36 . of amides of sulfonic acids **[5]**

303/38 . . by reaction of ammonia or amines with sulfonic acids, or with esters, anhydrides, or halides thereof **[5]**

303/40 . . by reactions not involving the formation of sulfonamide groups **[5]**

303/42 . Separation; Purification; Stabilisation; Use of additives **[5]**

303/44 . . Separation; Purification **[5]**

303/46 . . . from by-products of refining mineral oils with sulfuric acid **[5]**

305/00 Esters of sulfuric acids [5]

305/02 . having oxygen atoms of sulfate groups bound to acyclic carbon atoms of a carbon skeleton **[5]**

305/04 . . being acyclic and saturated **[5]**

305/06 . . . Hydrogenosulfates **[5]**

305/08 . . . Dialkylsulfates; Substituted dialkylsulfates **[5]**

305/10 . . . being further substituted by singly-bound oxygen atoms **[5]**

305/12 . . being saturated and containing rings **[5]**

305/14 . . being acyclic and unsaturated **[5]**

305/16 . . being unsaturated and containing rings **[5]**

305/18 . . . containing six-membered aromatic rings **[5]**

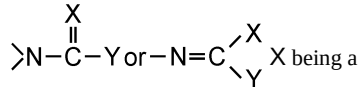
305/20 . having oxygen atoms of sulfate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
305/22 . having oxygen atoms of sulfate groups bound to carbon atoms of six-membered aromatic rings **[5]**
305/24 . . of non-condensed six-membered aromatic rings **[5]**
305/26 . Halogenosulfates, i.e. monoesters of halogenosulfuric acids **[5]**

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]

307/02 . Monoamides of sulfuric acids or esters thereof, e.g. sulfamic acids **[5]**
307/04 . Diamides of sulfuric acids **[5]**
307/06 . . having nitrogen atoms of the sulfamide groups bound to acyclic carbon atoms **[5]**
307/08 . . having nitrogen atoms of the sulfamide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
307/10 . . having nitrogen atoms of the sulfamide groups bound to carbon atoms of six-membered aromatic rings **[5]**

309/00 Sulfonic acids; **Halides, esters, or anhydrides thereof [5]**

309/01 . Sulfonic acids **[5]**
309/02 . . having sulfo groups bound to acyclic carbon atoms **[5]**
309/03 . . . of an acyclic saturated carbon skeleton **[5]**
309/04 . . . . containing only one sulfo group **[5]**
309/05 . . . . containing at least two sulfo groups bound to the carbon skeleton **[5]**
309/06 . . . . containing halogen atoms, or nitro or nitroso groups bound to the carbon skeleton **[5]**
309/07 . . . . containing oxygen atoms bound to the carbon skeleton **[5]**
309/08 . . . . . containing hydroxy groups bound to the carbon skeleton **[5]**
309/09 . . . . . containing etherified hydroxy groups bound to the carbon skeleton **[5]**
309/10 . . . . . . with the oxygen atom of at least one of the etherified hydroxy groups further bound to an acyclic carbon atom **[5]**
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]**
309/12 . . . . . containing esterified hydroxy groups bound to the carbon skeleton **[5]**
309/13 . . . . containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5]**
309/14 . . . . . containing amino groups bound to the carbon skeleton **[5]**
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]**
309/16 . . . . . containing doubly-bound nitrogen atoms bound to the carbon skeleton **[5]**
309/17 . . . . . containing carboxyl groups bound to the carbon skeleton **[5]**
309/18 . . . . . containing amino groups bound to the same carbon skeleton **[5]**
309/19 . . . of a saturated carbon skeleton containing rings **[5]**
309/20 . . . of an acyclic unsaturated carbon skeleton **[5]**
309/21 . . . . containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5]**
309/22 . . . . containing carboxyl groups bound to the carbon skeleton **[5]**
309/23 . . . of an unsaturated carbon skeleton containing rings other than six-membered aromatic rings **[5]**
309/24 . . . of a carbon skeleton containing six-membered aromatic rings **[5]**
309/25 . . having sulfo groups bound to carbon atoms of rings other than six-membered aromatic rings of a carbon skeleton **[5]**
309/26 . . . containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5]**
309/27 . . . containing carboxyl groups bound to the carbon skeleton **[5]**
309/28 . . having sulfo groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5]**
309/29 . . . of non-condensed six-membered aromatic rings **[5]**
309/30 . . . . of six-membered aromatic rings substituted by alkyl groups **[5]**
309/31 . . . . . by alkyl groups containing at least three carbon atoms **[5]**
309/32 . . . . containing at least two non-condensed six-membered aromatic rings in the carbon skeleton **[5]**
309/33 . . . of six-membered aromatic rings being part of condensed ring systems **[5]**
309/34 . . . . formed by two rings **[5]**
309/35 . . . . . Naphthalene sulfonic acids **[5]**
309/36 . . . . . substituted by alkyl groups **[5]**
309/37 . . . . . by alkyl groups containing at least three carbon atoms **[5]**
309/38 . . . . formed by at least three rings **[5]**
309/39 . . . containing halogen atoms bound to the carbon skeleton **[5]**
309/40 . . . containing nitro or nitroso groups bound to the carbon skeleton **[5]**
309/41 . . . containing singly-bound oxygen atoms bound to the carbon skeleton **[5]**
309/42 . . . . having the sulfo groups bound to carbon atoms of non-condensed six-membered aromatic rings **[5]**
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]**
309/44 . . . containing doubly-bound oxygen atoms bound to the carbon skeleton **[5]**
309/45 . . . containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5]**
309/46 . . . . having the sulfo groups bound to carbon atoms of non-condensed six-membered aromatic rings **[5]**

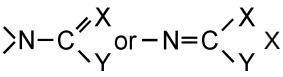
309/47 . . . . having at least one of the sulfo groups bound to a carbon atom of a six-membered aromatic ring being part of a condensed ring system **[5]**

309/48 . . . . the carbon skeleton being further substituted by halogen atoms **[5]**

309/49 . . . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**

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]**

309/51 . . . . at least one of the nitrogen atoms being part of any of the groups

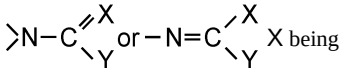


X being a hetero atom, Y being any atom **[5]**

309/52 . . . . the carbon skeleton being further substituted by doubly-bound oxygen atoms **[5]**

309/53 . . . . . the carbon skeleton containing carbon atoms of quinone rings **[5]**

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]**

309/55 . . . . . Y being a hydrogen or a carbon atom **[5]**

309/56 . . . . . Y being a hetero atom **[5]**

309/57 . . . containing carboxyl groups bound to the carbon skeleton **[5]**

309/58 . . . . Carboxylic acid groups or esters thereof **[5]**

309/59 . . . . Nitrogen analogues of carboxyl groups **[5]**

309/60 . . . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**

309/61 . . . . the carbon skeleton being further substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5]**

309/62 . . Sulfonated fats, oils or waxes of undetermined constitution **[5]**

309/63 . Esters of sulfonic acids **[5]**

309/64 . . having sulfur atoms of esterified sulfo groups bound to acyclic carbon atoms **[5]**

309/65 . . . of a saturated carbon skeleton **[5]**

309/66 . . . . Methanesulfonates **[5]**

309/67 . . . of an unsaturated carbon skeleton **[5]**

309/68 . . . of a carbon skeleton substituted by singly-bound oxygen atoms **[5]**

309/69 . . . of a carbon skeleton substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5]**

309/70 . . . of a carbon skeleton substituted by carboxyl groups **[5]**

309/71 . . having sulfur atoms of esterified sulfo groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

309/72 . . having sulfur atoms of esterified sulfo groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5]**

309/73 . . . to carbon atoms of non-condensed six-membered aromatic rings **[5]**

309/74 . . . to carbon atoms of six-membered aromatic rings being part of condensed ring systems **[5]**

309/75 . . . containing singly-bound oxygen atoms bound to the carbon skeleton **[5]**

309/76 . . . containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5]**

309/77 . . . containing carboxyl groups bound to the carbon skeleton **[5]**

309/78 . Halides of sulfonic acids **[5]**

309/79 . . having halosulfonyl groups bound to acyclic carbon atoms **[5]**

309/80 . . . of a saturated carbon skeleton **[5]**

309/81 . . . of an unsaturated carbon skeleton **[5]**

309/82 . . . of a carbon skeleton substituted by singly-bound oxygen atoms **[5]**

309/83 . . . of a carbon skeleton substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5]**

309/84 . . . of a carbon skeleton substituted by carboxyl groups **[5]**

309/85 . . having halosulfonyl groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

309/86 . . having halosulfonyl groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5]**

309/87 . . . containing singly-bound oxygen atoms bound to the carbon skeleton **[5]**

309/88 . . . containing nitrogen atoms, not being part of nitro or nitroso groups, bound to the carbon skeleton **[5]**

309/89 . . . containing carboxyl groups bound to the carbon skeleton **[5]**

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]

311/01 . Sulfonamides having sulfur atoms of sulfonamide groups bound to acyclic carbon atoms **[5]**

311/02 . . of an acyclic saturated carbon skeleton **[5]**

311/03 . . . having the nitrogen atoms of the sulfonamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

311/04 . . . . to acyclic carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5]**

311/05 . . . . to acyclic carbon atoms of hydrocarbon radicals substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5]**

311/06 . . . . to acyclic carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5]**

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]**

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]**

311/09 . . . the carbon skeleton being further substituted by at least two halogen atoms **[5]**

311/10 . . of a saturated carbon skeleton containing rings **[5]**

311/11 . . of an acyclic unsaturated carbon skeleton **[5]**

311/12 . . of an unsaturated carbon skeleton containing rings **[5]**

311/13 . . . the carbon skeleton containing six-membered aromatic rings **[5]**

311/14 . Sulfonamides having sulfur atoms of sulfonamide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

311/15 . Sulfonamides having sulfur atoms of sulfonamide groups bound to carbon atoms of six-membered aromatic rings **[5]**

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]**

311/17 . . . to an acyclic carbon atom of a hydrocarbon radical substituted by singly-bound oxygen atoms **[5]**

311/18 . . . to an acyclic carbon atom of a hydrocarbon radical substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5]**

311/19 . . . to an acyclic carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5]**

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]**

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]**

311/22 . Sulfonamides, the carbon skeleton of the acid part being further substituted by singly-bound oxygen atoms **[5]**

311/23 . . having the sulfur atoms of the sulfonamide groups bound to acyclic carbon atoms **[5]**

311/24 . . . of an acyclic saturated carbon skeleton **[5]**

311/25 . . . of a saturated carbon skeleton containing rings **[5]**

311/26 . . . of an acyclic unsaturated carbon skeleton **[5]**

311/27 . . . of an unsaturated carbon skeleton containing rings **[5]**

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]**

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]**

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]**

311/31 . . having the sulfur atoms of the sulfonamide groups bound to acyclic carbon atoms **[5]**

311/32 . . . of an acyclic saturated carbon skeleton **[5]**

311/33 . . . of a saturated carbon skeleton containing rings **[5]**

311/34 . . . of an acyclic unsaturated carbon skeleton **[5]**

311/35 . . . of an unsaturated carbon skeleton containing rings **[5]**

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]**

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]**

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]**

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]**

311/40 . . . . . to an acyclic carbon atom of a hydrocarbon radical substituted by singly-bound oxygen atoms **[5]**

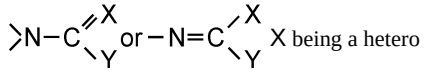
311/41 . . . . . to an acyclic carbon atom of a hydrocarbon radical substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5]**

311/42 . . . . . to an acyclic carbon atom of a hydrocarbon radical substituted by carboxyl groups **[5]**

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]**

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]**

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]**

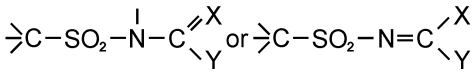
311/46 . . . Y being a hydrogen or a carbon atom **[5]**

311/47 . . . Y being a hetero atom **[5]**

311/48 . having nitrogen atoms of sulfonamide groups further bound to another hetero atom **[5]**

311/49 . . to nitrogen atoms **[5]**

311/50 . Compounds containing any of the groups



X being a hetero atom, Y being any atom **[5]**

311/51 . . Y being a hydrogen or a carbon atom **[5]**

311/52 . . Y being a hetero atom **[5]**

311/53 . . . X and Y not being nitrogen atoms, e.g. N-sulfonylcarbamic acid **[5]**

311/54 . . . either X or Y, but not both, being nitrogen atoms, e.g. N-sulfonylurea **[5]**

311/55 . . . . having sulfur atoms of the sulfonylurea groups bound to acyclic carbon atoms **[5]**

311/56 . . . . having sulfur atoms of the sulfonylurea groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

311/57 . . . . having sulfur atoms of the sulfonylurea groups bound to carbon atoms of six-membered aromatic rings **[5]**

311/58 . . . . . having nitrogen atoms of the sulfonylurea groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

311/59 . . . . . having nitrogen atoms of the sulfonylurea groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

311/60 . . . . . having nitrogen atoms of the sulfonylurea groups bound to carbon atoms of six-membered aromatic rings **[5]**

311/61 . . . . . having nitrogen atoms of the sulfonylurea groups further bound to another hetero atom **[5]**

311/62 . . . . . having nitrogen atoms of the sulfonylurea groups further acylated **[5]**

311/63 . . . . N-sulfonylisoureas **[5]**

311/64 . . . X and Y being nitrogen atoms, e.g. N-sulfonylguanidine **[5]**

311/65 . N-sulfonylisocyanates **[5]**

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]**

313/02 . Sulfinic acids; Derivatives thereof **[5]**

313/04 . . Sulfinic acids; Esters thereof **[5]**

313/06 . . Sulfinamides **[5]**

313/08 . Sulfenic acids; Derivatives thereof **[5]**

313/10 . . Sulfenic acids; Esters thereof **[5]**

313/12 . . . having sulfur atoms of sulfenic groups bound to acyclic carbon atoms **[5]**

313/14 . . . having sulfur atoms of sulfenic groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

313/16 . . . having sulfur atoms of sulfenic groups bound to carbon atoms of six-membered aromatic rings **[5]**

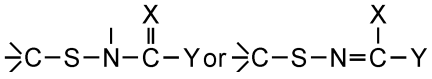
313/18 . . Sulfenamides **[5]**

313/20 . . . having sulfur atoms of sulfenamide groups bound to acyclic carbon atoms **[5]**

313/22 . . . having sulfur atoms of sulfenamide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

313/24 . . . having sulfur atoms of sulfenamide groups bound to carbon atoms of six-membered aromatic rings **[5]**

313/26 . . . Compounds containing any of the groups



X being a hetero atom, Y being any atom **[5]**

313/28 . . . . Y being a hydrogen or a carbon atom **[5]**

313/30 . . . . Y being a hetero atom **[5]**

313/32 . . . . . X and Y not being nitrogen atoms, e.g. N-sulfenylcarbamic acid **[5]**

313/34 . . . . . either X or Y, but not both, being nitrogen atoms, e.g. N-sulfenylureas **[5]**

313/36 . . . having nitrogen atoms of sulfenamide groups further bound to other hetero atoms **[5]**

313/38 . . . N-sulfenylisocyanates **[5]**

315/00 **Preparation of sulfones**; **Preparation of sulfoxides [5]**

315/02 . by formation of sulfone or sulfoxide groups by oxidation of sulfides, or by formation of sulfone groups by oxidation of sulfoxides **[5]**

315/04 . by reactions not involving the formation of sulfone or sulfoxide groups **[5]**

315/06 . Separation; Purification; Stabilisation; Use of additives **[5]**

317/00 **Sulfones**; **Sulfoxides [5]**

317/02 . having sulfone or sulfoxide groups bound to acyclic carbon atoms **[5]**

317/04 . . of an acyclic saturated carbon skeleton **[5]**

317/06 . . of a saturated carbon skeleton containing rings **[5]**

317/08 . . of an acyclic unsaturated carbon skeleton **[5]**

317/10 . . of an unsaturated carbon skeleton containing rings **[5]**

317/12 . having sulfone or sulfoxide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

317/14 . having sulfone or sulfoxide groups bound to carbon atoms of six-membered aromatic rings **[5]**

317/16 . having sulfone or sulfoxide groups and singly-bound oxygen atoms bound to the same carbon skeleton **[5]**

317/18 . . with sulfone or sulfoxide groups bound to acyclic carbon atoms of the carbon skeleton **[5]**

317/20 . . with sulfone or sulfoxide groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5]**

317/22 . . with sulfone or sulfoxide groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5]**

317/24 . having sulfone or sulfoxide groups and doubly-bound oxygen atoms bound to the same carbon skeleton **[5]**

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]**

317/28 . . with sulfone or sulfoxide groups bound to acyclic carbon atoms of the carbon skeleton **[5]**

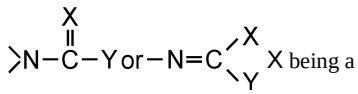
317/30 . . with sulfone or sulfoxide groups bound to carbon atoms of rings other than six-membered aromatic rings of the carbon skeleton **[5]**

317/32 . . with sulfone or sulfoxide groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5]**

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]**

317/36 . . . . with the nitrogen atoms of the amino groups bound to hydrogen atoms or to carbon atoms **[5]**

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]**

317/40 . . . . . Y being a hydrogen or a carbon atom **[5]**

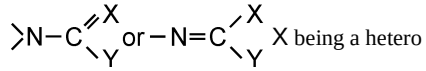
317/42 . . . . . Y being a hetero atom **[5]**

317/44 . having sulfone or sulfoxide groups and carboxyl groups bound to the same carbon skeleton **[5]**

317/46 . . the carbon skeleton being further substituted by singly-bound oxygen atoms **[5]**

317/48 . . the carbon skeleton being further substituted by singly-bound nitrogen atoms, not being part of nitro or nitroso groups **[5]**

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]**

319/00 **Preparation of thiols, sulfides, hydropolysulfides or polysulfides [5]**

319/02 . of thiols **[5]**

319/04 . . by addition of hydrogen sulfide or its salts to unsaturated compounds **[5]**

319/06 . . from sulfides, hydropolysulfides or polysulfides **[5]**

319/08 . . by replacement of hydroxy groups or etherified or esterified hydroxy groups **[5]**

319/10 . . . by replacement of hydroxy groups or etherified or esterified hydroxy groups bound to carbon atoms of six-membered aromatic rings **[5]**

319/12 . . by reactions not involving the formation of mercapto groups **[5]**

319/14 . of sulfides **[5]**

319/16 . . by addition of hydrogen sulfide or its salts to unsaturated compounds **[5]**
319/18 . . by addition of thiols to unsaturated compounds **[5]**
319/20 . . by reactions not involving the formation of sulfide groups **[5]**
319/22 . of hydropolysulfides or polysulfides **[5]**
319/24 . . by reactions involving the formation of sulfur-to-sulfur bonds **[5]**
319/26 . Separation; Purification; Stabilisation; Use of additives **[5]**
319/28 . . Separation; Purification **[5]**
319/30 . . . from the by-products of refining mineral oils **[5]**

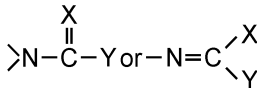
321/00 Thiols, sulfides, hydropolysulfides or polysulfides [5]
321/02 . Thiols having mercapto groups bound to acyclic carbon atoms **[5]**
321/04 . . of an acyclic saturated carbon skeleton **[5]**
321/06 . . of a saturated carbon skeleton containing rings **[5]**
321/08 . . of an acyclic unsaturated carbon skeleton **[5]**
321/10 . . of an unsaturated carbon skeleton containing rings **[5]**
321/12 . Sulfides, hydropolysulfides, or polysulfides having thio groups bound to acyclic carbon atoms **[5]**
321/14 . . of an acyclic saturated carbon skeleton **[5]**
321/16 . . of a saturated carbon skeleton containing rings **[5]**
321/18 . . of an acyclic unsaturated carbon skeleton **[5]**
321/20 . . of an unsaturated carbon skeleton containing rings **[5]**
321/22 . Thiols, sulfides, hydropolysulfides, or polysulfides having thio groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**
321/24 . Thiols, sulfides, hydropolysulfides, or polysulfides having thio groups bound to carbon atoms of six-membered aromatic rings **[5]**
321/26 . . Thiols **[5]**
321/28 . . Sulfides, hydropolysulfides, or polysulfides having thio groups bound to carbon atoms of six-membered aromatic rings **[5]**
321/30 . . . Sulfides having the sulfur atom of at least one thio group bound to two carbon atoms of six-membered aromatic rings **[5]**

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]
323/01 . containing thio groups and halogen atoms, or nitro or nitroso groups bound to the same carbon skeleton **[5]**
323/02 . . having sulfur atoms of thio groups bound to acyclic carbon atoms of the carbon skeleton **[5]**
323/03 . . . the carbon skeleton being acyclic and saturated **[5]**
323/04 . . . the carbon skeleton being saturated and containing rings **[5]**
323/05 . . . the carbon skeleton being acyclic and unsaturated **[5]**
323/06 . . . the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5]**
323/07 . . . the carbon skeleton containing six-membered aromatic rings **[5]**
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]**
323/09 . . having sulfur atoms of thio groups bound to carbon atoms of six-membered aromatic rings of the carbon skeleton **[5]**
323/10 . containing thio groups and singly-bound oxygen atoms bound to the same carbon skeleton **[5]**
323/11 . . having the sulfur atoms of the thio groups bound to acyclic carbon atoms of the carbon skeleton **[5]**
323/12 . . . the carbon skeleton being acyclic and saturated **[5]**
323/13 . . . the carbon skeleton being saturated and containing rings **[5]**
323/14 . . . the carbon skeleton being acyclic and unsaturated **[5]**
323/15 . . . the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5]**
323/16 . . . the carbon skeleton containing six-membered aromatic rings **[5]**
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]**
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]**
323/19 . . . with singly-bound oxygen atoms bound to acyclic carbon atoms of the carbon skeleton **[5]**
323/20 . . . with singly-bound oxygen atoms bound to carbon atoms of the same non-condensed six-membered aromatic ring **[5]**
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]**
323/22 . containing thio groups and doubly-bound oxygen atoms bound to the same carbon skeleton **[5]**
323/23 . containing thio groups and nitrogen atoms, not being part of nitro or nitroso groups, bound to the same carbon skeleton **[5]**
323/24 . . having the sulfur atoms of the thio groups bound to acyclic carbon atoms of the carbon skeleton **[5]**
323/25 . . . the carbon skeleton being acyclic and saturated **[5]**
323/26 . . . the carbon skeleton being saturated and containing rings **[5]**
323/27 . . . the carbon skeleton being acyclic and unsaturated **[5]**
323/28 . . . the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5]**
323/29 . . . the carbon skeleton containing six-membered aromatic rings **[5]**
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]**
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]**
323/32 . . . having at least one of the nitrogen atoms bound to an acyclic carbon atom of the carbon skeleton **[5]**
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]**
323/34 . . . . the thio group being a mercapto group **[5]**
323/35 . . . . the thio group being a sulfide group **[5]**
323/36 . . . . . the sulfur atom of the sulfide group being further bound to an acyclic carbon atom **[5]**

323/37 . . . . . the sulfur atom of the sulfide group being further bound to a carbon atom of a six-membered aromatic ring **[5]**

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]**

323/39 . . at least one of the nitrogen atoms being part of any of the groups



atom, Y being any atom **[5]**

323/40 . . . Y being a hydrogen or a carbon atom **[5]**

323/41 . . . . Y being a hydrogen or an acyclic carbon atom **[5]**

323/42 . . . . Y being a carbon atom of a six-membered aromatic ring **[5]**

323/43 . . . Y being a hetero atom **[5]**

323/44 . . . . X or Y being nitrogen atoms **[5]**

323/45 . . having at least one of the nitrogen atoms doubly-bound to the carbon skeleton **[5]**

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]**

323/47 . . . to oxygen atoms **[5]**

323/48 . . . to nitrogen atoms **[5]**

323/49 . . . to sulfur atoms **[5]**

323/50 . containing thio groups and carboxyl groups bound to the same carbon skeleton **[5]**

323/51 . . having the sulfur atoms of the thio groups bound to acyclic carbon atoms of the carbon skeleton **[5]**

323/52 . . . the carbon skeleton being acyclic and saturated **[5]**

323/53 . . . the carbon skeleton being saturated and containing rings **[5]**

323/54 . . . the carbon skeleton being acyclic and unsaturated **[5]**

323/55 . . . the carbon skeleton being unsaturated and containing rings other than six-membered aromatic rings **[5]**

323/56 . . . the carbon skeleton containing six-membered aromatic rings **[5]**

323/57 . . . the carbon skeleton being further substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5]**

323/58 . . . . with amino groups bound to the carbon skeleton **[5]**

323/59 . . . . . with acylated amino groups bound to the carbon skeleton **[5]**

323/60 . . . with the carbon atom of at least one of the carboxyl groups bound to nitrogen atoms **[5]**

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]**

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]**

323/63 . . . the carbon skeleton being further substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5]**

323/64 . containing thio groups and sulfur atoms, not being part of thio groups, bound to the same carbon skeleton **[5]**

323/65 . . containing sulfur atoms of sulfone or sulfoxide groups bound to the carbon skeleton **[5]**

323/66 . . containing sulfur atoms of sulfo, esterified sulfo or halosulfonyl groups, bound to the carbon skeleton **[5]**

323/67 . . containing sulfur atoms of sulfonamide groups, bound to the carbon skeleton **[5]**

325/00 Thioaldehydes; **Thioketones**; **Thioquinones**; **Oxides thereof** **[5]**

325/02 . Thioketones; Oxides thereof **[5]**

325/04 . Thioquinones; Oxides thereof **[5]**

327/00 Thiocarboxylic acids **[5]**

327/02 . Monothiocarboxylic acids **[5]**

327/04 . . having carbon atoms of thiocarboxyl groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

327/06 . . . to hydrogen atoms or to carbon atoms of an acyclic saturated carbon skeleton **[5]**

327/08 . . . to carbon atoms of a saturated carbon skeleton containing rings **[5]**

327/10 . . . to carbon atoms of an acyclic unsaturated carbon skeleton **[5]**

327/12 . . . to carbon atoms of an unsaturated carbon skeleton containing rings **[5]**

327/14 . . having carbon atoms of thiocarboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

327/16 . . having carbon atoms of thiocarboxyl groups bound to carbon atoms of six-membered aromatic rings **[5]**

327/18 . Dithiocarboxylic acids **[5]**

327/20 . Esters of monothiocarboxylic acids **[5]**

327/22 . . having carbon atoms of esterified thiocarboxyl groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

327/24 . . having carbon atoms of esterified thiocarboxyl groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

327/26 . . having carbon atoms of esterified thiocarboxyl groups bound to carbon atoms of six-membered aromatic rings **[5]**

327/28 . . having sulfur atoms of esterified thiocarboxyl groups bound to carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5]**

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]**

327/32 . . having sulfur atoms of esterified thiocarboxyl groups bound to carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5]**

327/34 . . . with amino groups bound to the same hydrocarbon radicals **[5]**

327/36 . Esters of dithiocarboxylic acids **[5]**

327/38 . Amides of thiocarboxylic acids **[5]**

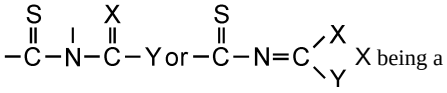
327/40 . . having carbon atoms of thiocarboxamide groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

327/42 . . . to hydrogen atoms or to carbon atoms of a saturated carbon skeleton **[5]**

327/44 . . . to carbon atoms of an unsaturated carbon skeleton **[5]**

327/46 . . having carbon atoms of thiocarboxamide groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

327/48 . . having carbon atoms of thiocarboxamide groups bound to carbon atoms of six-membered aromatic rings **[5]**

327/50 . . Compounds containing any of the groups  X being a hetero atom, Y being any atom **[5]**

327/52 . . . Y being a hydrogen or a carbon atom **[5]**

327/54 . . . Y being a hetero atom **[5]**

327/56 . . having nitrogen atoms of thiocarboxamide groups further bound to another hetero atom **[5]**

327/58 . Derivatives of thiocarboxylic acids, the doubly-bound oxygen atoms being replaced by nitrogen atoms, e.g. imino-thio ethers **[5]**

327/60 . Thiocarboxylic acids having sulfur atoms of thiocarboxyl groups further doubly-bound to oxygen atoms **[5]**

329/00 Thiocarbonic acids; **Halides, esters or anhydrides thereof [5]**

329/02 . Monothiocarbonic acids; Derivatives thereof **[5]**

329/04 . . Esters of monothiocarbonic acids **[5]**

329/06 . . . having sulfur atoms of thiocarbonic groups bound to acyclic carbon atoms **[5]**

329/08 . . . having sulfur atoms of thiocarbonic groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

329/10 . . . having sulfur atoms of thiocarbonic groups bound to carbon atoms of six-membered aromatic rings **[5]**

329/12 . Dithiocarbonic acids; Derivatives thereof **[5]**

329/14 . . Esters of dithiocarbonic acids **[5]**

329/16 . . . having sulfur atoms of dithiocarbonic groups bound to acyclic carbon atoms **[5]**

329/18 . . . having sulfur atoms of dithiocarbonic groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

329/20 . . . having sulfur atoms of dithiocarbonic groups bound to carbon atoms of six-membered aromatic rings **[5]**

331/00 Derivatives of thiocyanic acid or of isothiocyanic acid [5]

331/02 . Thiocyanates **[5]**

331/04 . . having sulfur atoms of thiocyanate groups bound to acyclic carbon atoms **[5]**

331/06 . . having sulfur atoms of thiocyanate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

331/08 . . having sulfur atoms of thiocyanate groups bound to carbon atoms of six-membered aromatic rings **[5]**

331/10 . . having sulfur atoms of thiocyanate groups bound to carbon atoms of hydrocarbon radicals substituted by singly-bound oxygen atoms **[5]**

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]**

331/14 . . having sulfur atoms of thiocyanate groups bound to carbon atoms of hydrocarbon radicals substituted by carboxyl groups **[5]**

331/16 . Isothiocyanates **[5]**

331/18 . . having isothiocyanate groups bound to acyclic carbon atoms **[5]**

331/20 . . . of a saturated carbon skeleton **[5]**

331/22 . . . of an unsaturated carbon skeleton **[5]**

331/24 . . . . the carbon skeleton containing six-membered aromatic rings **[5]**

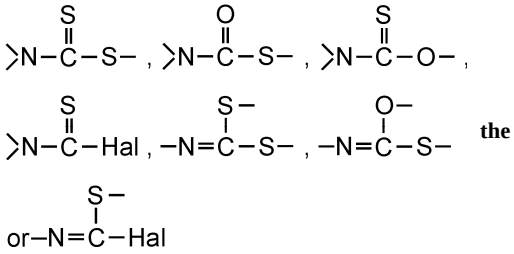
331/26 . . having isothiocyanate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

331/28 . . having isothiocyanate groups bound to carbon atoms of six-membered aromatic rings **[5]**

331/30 . . containing at least two isothiocyanate groups bound to the same carbon skeleton **[5]**

331/32 . . having isothiocyanate groups acylated **[5]**

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]

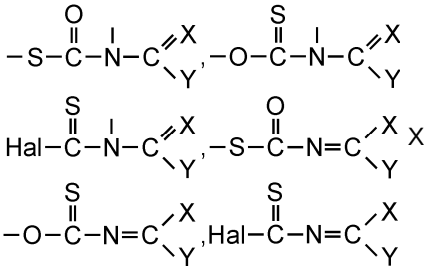
333/02 . Monothiocarbamic acids; Derivatives thereof **[5]**

333/04 . . having nitrogen atoms of thiocarbamic groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

333/06 . . having nitrogen atoms of thiocarbamic groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

333/08 . . having nitrogen atoms of thiocarbamic groups bound to carbon atoms of six-membered aromatic rings **[5]**

333/10 . . having nitrogen atoms of thiocarbamic groups being part of any of the groups



being a hetero atom, Y being any atom, e.g., N-acyl-thiocarbamates **[5]**

333/12 . . having nitrogen atoms of thiocarbamic groups bound to other hetero atoms **[5]**

333/14 . Dithiocarbamic acids; Derivatives thereof **[5]**

333/16 . . Salts of dithiocarbamic acids **[5]**

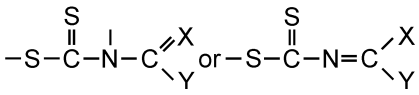
333/18 . . Esters of dithiocarbamic acids **[5]**

333/20 . . . having nitrogen atoms of dithiocarbamate groups bound to hydrogen atoms or to acyclic carbon atoms **[5]**

333/22 . . . having nitrogen atoms of dithiocarbamate groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

333/24 . . . having nitrogen atoms of dithiocarbamate groups bound to carbon atoms of six-membered aromatic rings **[5]**

333/26 . . . containing any of the groups



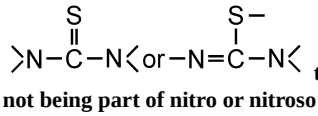
X being a hetero atom, Y being any atom, e.g. N-acyldithiocarbamates **[5]**

333/28 . . . having nitrogen atoms of dithiocarbamate groups bound to other hetero atoms **[5]**

333/30 . . having sulfur atoms of dithiocarbamic groups bound to other sulfur atoms **[5]**

333/32 . . . Thiuramsulfides; Thiurampolysulfides **[5]**

335/00 Thioureas, i.e. compounds containing any of the groups



the nitrogen atoms not being part of nitro or nitroso groups [5]

335/02 . Thiourea **[5]**

335/04 . Derivatives of thiourea **[5]**

335/06 . . having nitrogen atoms of thiourea groups bound to acyclic carbon atoms **[5]**

335/08 . . . of a saturated carbon skeleton **[5]**

335/10 . . . of an unsaturated carbon skeleton **[5]**

335/12 . . . . the carbon skeleton containing six-membered aromatic rings **[5]**

335/14 . . having nitrogen atoms of thiourea groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

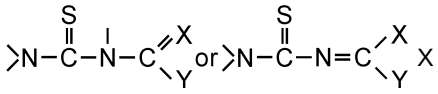
335/16 . . having nitrogen atoms of thiourea groups bound to carbon atoms of six-membered aromatic rings of a carbon skeleton **[5]**

335/18 . . . being further substituted by singly-bound oxygen atoms **[5]**

335/20 . . . being further substituted by nitrogen atoms, not being part of nitro or nitroso groups **[5]**

335/22 . . . being further substituted by carboxyl groups **[5]**

335/24 . . containing any of the groups



being a hetero atom, Y being any atom **[5]**

335/26 . . . Y being a hydrogen or a carbon atom, e.g. benzoylthioureas **[5]**

335/28 . . . Y being a hetero atom, e.g. thiobiuret **[5]**

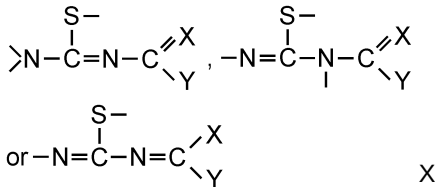
335/30 . Isothioureas **[5]**

335/32 . . having sulfur atoms of isothiourea groups bound to acyclic carbon atoms **[5]**

335/34 . . having sulfur atoms of isothiourea groups bound to carbon atoms of rings other than six-membered aromatic rings **[5]**

335/36 . . having sulfur atoms of isothiourea groups bound to carbon atoms of six-membered aromatic rings **[5]**

335/38 . . containing any of the groups



being a hetero atom, Y being any atom **[5]**

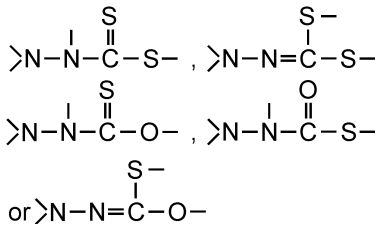
335/40 . having nitrogen atoms of thiourea or isothiourea groups further bound to other hetero atoms **[5]**

335/42 . . Sulfonylthioureas; Sulfonylisothioureas **[5]**

335/44 . . Sulfenylthioureas; Sulfenylisothioureas **[5]**

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]

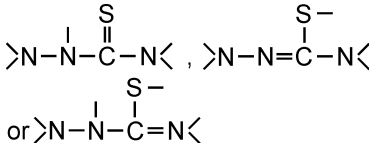
337/02 . Compounds containing any of the groups



e.g. thiocarbazates **[5]**

337/04 . . the other nitrogen atom being further doubly-bound to a carbon atom **[5]**

337/06 . Compounds containing any of the groups



e.g. thiosemicarbazides **[5]**

337/08 . . the other nitrogen atom being further doubly-bound to a carbon atom, e.g. thiosemicarbazones **[5]**

337/10 . the two nitrogen atoms of the functional group being doubly-bound to each other **[5]**

381/00 Compounds containing carbon and sulfur and having functional groups not covered by groups C07C 301/00 to C07C 337/00 [5]

381/02 . Thiosulfates **[5]**

381/04 . Thiosulfonates **[5]**

381/06 . Compounds containing sulfur atoms only bound to two nitrogen atoms **[5]**

381/08 . . having at least one of the nitrogen atoms acylated **[5]**

381/10 . Compounds containing sulfur atoms doubly-bound to nitrogen atoms **[5]**

381/12 . Sulfonium compounds **[5]**

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]**

391/00 Compounds containing selenium [5]

391/02 . having selenium atoms bound to carbon atoms of six-membered aromatic rings **[5]**

395/00 Compounds containing tellurium [5]

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]

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]

403/02 . having side-chains containing only carbon and hydrogen atoms **[5]**
403/04 . having side-chains substituted by halogen atoms **[5]**
403/06 . having side-chains substituted by singly-bound oxygen atoms **[5]**
403/08 . . by hydroxy groups **[5]**
403/10 . . by etherified hydroxy groups **[5]**
403/12 . . by esterified hydroxy groups **[5]**
403/14 . having side-chains substituted by doubly-bound oxygen atoms **[5]**
403/16 . . not being part of −CHO groups **[5]**
403/18 . having side-chains substituted by nitrogen atoms **[5]**
403/20 . having side-chains substituted by carboxyl groups **[5]**
403/22 . having side-chains substituted by sulfur atoms **[5]**
403/24 . having side-chains substituted by six-membered non-aromatic rings, e.g. beta-carotene **[5]**

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]

407/00 Preparation of peroxy compounds [5]

409/00 Peroxy compounds [5]

409/02 . the −O−O− group being bound between a carbon atom, not further substituted by oxygen atoms, and hydrogen, i.e. hydroperoxides **[5]**
409/04 . . the carbon atom being acyclic **[5]**
409/06 . . . Compounds containing rings other than six-membered aromatic rings **[5]**
409/08 . . . Compounds containing six-membered aromatic rings **[5]**
409/10 . . . . Cumene hydroperoxide **[5]**
409/12 . . . . with two alpha,alpha-dialkylmethyl-hydroperoxy groups bound to carbon atoms of the same six-membered aromatic ring **[5]**
409/14 . . the carbon atom belonging to a ring other than a six-membered aromatic ring **[5]**
409/16 . the −O−O− group being bound between two carbon atoms not further substituted by oxygen atoms, i.e. peroxides **[5]**
409/18 . . at least one of the carbon atoms belonging to a ring other than a six-membered aromatic ring **[5]**
409/20 . the −O−O− group being bound to a carbon atom further substituted by singly-bound oxygen atoms **[5]**
409/22 . . having two −O−O− groups bound to the carbon atom **[5]**
409/24 . the −O−O− group being bound between a 〉C=O group and hydrogen, i.e. peroxy acids **[5]**
409/26 . . Peracetic acid **[5]**
409/28 . . a 〉C=O group being bound to a carbon atom of a ring other than a six-membered aromatic ring **[5]**
409/30 . . a 〉C=O group being bound to a carbon atom of a six-membered aromatic ring **[5]**
409/32 . the −O−O− group being bound between two 〉C=O groups **[5]**
409/34 . . both belonging to carboxylic acids **[5]**
409/36 . . . Diacetyl peroxide **[5]**
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]**
409/40 . containing nitrogen atoms **[5]**
409/42 . containing sulfur atoms **[5]**
409/44 . . with sulfur atoms directly bound to the −O−O− groups, e.g. persulfonic acids **[5]**

C07D HETEROCYCLIC COMPOUNDS [2]

Notes

(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]**

(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]**

(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; **[2]**
- "bridged" means the presence of at least one fusion other than ortho, peri or spiro; **[2]**
- two rings are "condensed" if they share at least one ring member, i.e. "spiro" and "bridged" are considered as condensed; **[2]**
- "condensed ring system" is a ring system in which all rings are condensed among themselves; **[2]**
- "number of relevant rings" in a condensed ring system equals the number of scissions necessary to convert the ring system into one acyclic chain; **[2]**
- "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. **[2]**

(4) Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C to C07K and within these subclasses. **[8]**

(5) Therapeutic activity of compounds is further classified in subclass A61P. **[7]**

(6) In this subclass, 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 to 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; **[2]**

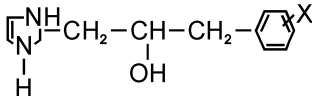
(b) compounds having two or more hetero rings covered by different main groups neither condensed among themselves nor condensed with a common carbocyclic ring system are classified in the last appropriate place in one of the groups C07D 401/00 to C07D 421/00; **[2]**

(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 to C07D 519/00. **[2]**

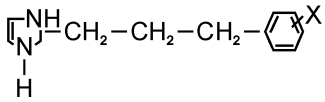
(7) In this subclass:

– 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; **[2]**

– 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 $-COOCH_3$. **[2]**

Subclass Index

Heterocyclic compounds having only nitrogen as ring hetero atom [2]

201/00 Preparation, separation, purification, or stabilisation of unsubstituted lactams [2]

201/02 . Preparation of lactams **[2]**
201/04 . . from or via oximes by Beckmann rearrangement **[2]**
201/06 . . . from ketones by simultaneous oxime formation and rearrangement **[2]**
201/08 . . from carboxylic acids or derivatives thereof, e.g. hydroxy carboxylic acids, lactones, nitriles **[2]**
201/10 . . from cycloaliphatic compounds by simultaneous nitrosylation and rearrangement **[2]**
201/12 . . by depolymerising polyamides **[2]**
201/14 . Preparation of salts or adducts of lactams **[2]**
201/16 . Separation or purification (separation of inorganic salts C01) **[2]**
201/18 . Stabilisation **[2]**

203/00 Heterocyclic compounds containing three-membered rings with one nitrogen atom as the only ring hetero atom [2]

203/02 . Preparation by ring-closure **[2]**
203/04 . not condensed with other rings **[2]**
203/06 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
203/08 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring nitrogen atom **[2]**
203/10 . . . . Radicals substituted by singly bound oxygen atoms **[2]**
203/12 . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2]**
203/14 . . . . with carbocyclic rings directly attached to the ring nitrogen atom **[2]**
203/16 . . . with acylated ring nitrogen atoms **[2]**
203/18 . . . . by carboxylic acids, or by sulfur or nitrogen analogues thereof **[2]**
203/20 . . . . by carbonic acid, or by sulfur or nitrogen analogues thereof, e.g. carbamates **[2]**
203/22 . . . with hetero atoms directly attached to the ring nitrogen atom **[2]**
203/24 . . . . Sulfur atoms **[2]**
203/26 . condensed with carbocyclic rings or ring systems **[2]**

205/00 Heterocyclic compounds containing four-membered rings with one nitrogen atom as the only ring hetero atom [2]

205/02 . not condensed with other rings **[2]**
205/04 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
205/06 . . having one double bond between ring members or between a ring member and a non-ring member **[2]**
205/08 . . . with one oxygen atom directly attached in position 2, e.g. beta-lactams **[2]**
205/085 . . . . with a nitrogen atom directly attached in position 3 **[5]**
205/09 . . . . with a sulfur atom directly attached in position 4 **[5]**
205/095 . . . . . and with a nitrogen atom directly attached in position 3 **[5]**
205/10 . . having two double bonds between ring members or between ring members and non-ring members **[2]**
205/12 . condensed with carbocyclic rings or ring systems **[2]**

207/00 Heterocyclic compounds containing five-membered rings not condensed with other rings, with one nitrogen atom as the only ring hetero atom [2]

Note

Pyrrolidines having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00. **[2]**

207/02 . with only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2]**
207/04 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
207/06 . . . with radicals, containing only hydrogen and carbon atoms, attached to ring carbon atoms **[2]**
207/08 . . . with hydrocarbon radicals, substituted by hetero atoms, attached to ring carbon atoms **[2]**
207/09 . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical **[3]**
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]**
207/12 . . . . Oxygen or sulfur atoms **[2]**

207/14 . . . . Nitrogen atoms not forming part of a nitro radical **[2]**
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]**
207/18 . . having one double bond between ring members or between a ring member and a non-ring member **[2]**
207/20 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
207/24 . . . . Oxygen or sulfur atoms **[2]**
207/26 . . . . . 2-Pyrrolidones **[2]**
207/263 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms **[3]**
207/267 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to the ring nitrogen atom **[3]**
207/27 . . . . . with substituted hydrocarbon radicals directly attached to the ring nitrogen atom **[3]**
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]**
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]**
207/28 . . . . . 2-Pyrrolidone-5- carboxylic acids; Functional derivatives thereof, e.g. esters, nitriles **[2,3]**
207/30 . . having two double bonds between ring members or between ring members and non-ring members **[2]**
207/32 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
207/323 . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to the ring nitrogen atoms **[3]**
207/325 . . . . with substituted hydrocarbon radicals directly attached to the ring nitrogen atom **[3]**
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]**
207/33 . . . . with substituted hydrocarbon radicals, directly attached to ring carbon atoms **[3]**
207/333 . . . . . Radicals substituted by oxygen or sulfur atoms **[3]**
207/335 . . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical **[3]**
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]**
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]**
207/36 . . . . Oxygen or sulfur atoms **[2]**
207/38 . . . . . 2-Pyrrolones **[2]**
207/40 . . . . . 2,5-Pyrrolidine-diones **[2]**
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]**
207/408 . . . . . Radicals containing only hydrogen and carbon atoms attached to ring carbon atoms **[3]**
207/412 . . . . . Acyclic radicals containing more than six carbon atoms **[3]**
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]**
207/42 . . . . Nitro radicals **[2]**
207/44 . . having three double bonds between ring members or between ring members and non-ring members **[2]**
207/444 . . . having two doubly-bound oxygen atoms directly attached in positions 2 and 5 **[3]**
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]**
207/452 . . . . . with hydrocarbon radicals, substituted by hetero atoms, directly attached to the ring nitrogen atom **[3]**
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]**
207/46 . with hetero atoms directly attached to the ring nitrogen atom **[2]**
207/48 . . Sulfur atoms **[2]**
207/50 . . Nitrogen atoms **[2]**

209/00 Heterocyclic compounds containing five-membered rings, condensed with other rings, with one nitrogen atom as the only ring hetero atom [2]

209/02 . condensed with one carbocyclic ring **[2]**
209/04 . . Indoles; Hydrogenated indoles **[2]**
209/06 . . . Preparation of indole from coal-tar **[2]**
209/08 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to carbon atoms of the hetero ring **[2]**
209/10 . . . with substituted hydrocarbon radicals attached to carbon atoms of the hetero ring **[2]**
209/12 . . . . Radicals substituted by oxygen atoms **[2]**
209/14 . . . . Radicals substituted by nitrogen atoms, not forming part of a nitro radical **[2]**
209/16 . . . . . Tryptamines **[2]**

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]**
209/20 . . . . . substituted additionally by nitrogen atoms, e.g. tryptophane **[2]**
209/22 . . . . . with an aralkyl radical attached to the ring nitrogen atom **[2]**
209/24 . . . . . with an alkyl or cycloalkyl radical attached to the ring nitrogen atom **[2]**
209/26 . . . . . with an acyl radical attached to the ring nitrogen atom **[2]**
209/28 . . . . . 1-(4-Chlorobenzoyl)-2-methyl-indolyl-3-acetic acid, substituted in position 5 by an oxygen or nitrogen atom; Esters thereof **[2]**
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]**
209/32 . . . . Oxygen atoms **[2]**
209/34 . . . . . in position 2 **[2]**
209/36 . . . . . in position 3, e.g. adrenochrome **[2]**
209/38 . . . . . in positions 2 and 3, e.g. isatin **[2]**
209/40 . . . . Nitrogen atoms, not forming part of a nitro radical, e.g. isatin semicarbazone **[2]**
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]**
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]**
209/44 . . Iso-indoles; Hydrogenated iso-indoles **[2]**
209/46 . . . with an oxygen atom in position 1 **[2]**
209/48 . . . with oxygen atoms in positions 1 and 3, e.g. phthalimide **[2]**
209/49 . . . . and having in the molecule an acyl radical containing a saturated three-membered ring, e.g. chrysanthemumic acid esters **[5]**
209/50 . . . with oxygen and nitrogen atoms in positions 1 and 3 **[2]**
209/52 . . condensed with a ring other than six-membered **[2]**
209/54 . . Spiro-condensed **[2]**
209/56 . Ring systems containing three or more rings **[2]**
209/58 . . [b]- or [c]-condensed **[2]**
209/60 . . . Naphtho [b] pyrroles; Hydrogenated naphtho [b] pyrroles **[2]**
209/62 . . . Naphtho [c] pyrroles; Hydrogenated naphtho [c] pyrroles **[2]**
209/64 . . . . with an oxygen atom in position 1 **[2]**
209/66 . . . . with oxygen atoms in positions 1 and 3 **[2]**
209/68 . . . . with oxygen and nitrogen atoms in positions 1 and 3 **[2]**
209/70 . . . containing carbocyclic rings other than six-membered **[2]**
209/72 . . . 4,7-Endo-alkylene-iso-indoles **[2]**
209/74 . . . . with an oxygen atom in position 1 **[2]**
209/76 . . . . with oxygen atoms in positions 1 and 3 **[2]**
209/78 . . . . with oxygen and nitrogen atoms in positions 1 and 3 **[2]**
209/80 . . [b, c]- or [b, d]-condensed **[2]**
209/82 . . . Carbazoles; Hydrogenated carbazoles **[2]**
209/84 . . . . Separation, e.g. from tar; Purification **[2]**
209/86 . . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the ring system **[2]**
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]**
209/90 . . . Benzo [c, d] indoles; Hydrogenated benzo [c, d] indoles **[2]**
209/92 . . . . Naphthostyrils **[2]**
209/94 . . . containing carbocyclic rings other than six-membered **[4]**
209/96 . . Spiro-condensed ring systems **[2]**

211/00 Heterocyclic compounds containing hydrogenated pyridine rings, not condensed with other rings [2]

Notes

(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]**

(2) Piperidines having only hydrogen atoms attached to ring carbon atoms are classified in group C07D 295/00. **[2]**

211/02 . Preparation by ring-closure or hydrogenation **[2]**
211/04 . with only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2]**
211/06 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
211/08 . . . with hydrocarbon or substituted hydrocarbon radicals directly attached to ring carbon atoms **[2,3]**
211/10 . . . . with radicals containing only carbon and hydrogen atoms attached to ring carbon atoms **[2,3]**
211/12 . . . . . with only hydrogen atoms attached to the ring nitrogen atom **[2,3]**
211/14 . . . . . with hydrocarbon or substituted hydrocarbon radicals attached to the ring nitrogen atom **[2]**
211/16 . . . . . with acylated ring nitrogen atom **[2]**
211/18 . . . . with substituted hydrocarbon radicals attached to ring carbon atoms **[2]**
211/20 . . . . . with hydrocarbon radicals, substituted by singly bound oxygen or sulfur atoms (bound to the same carbon atom C07D 211/30) **[2]**
211/22 . . . . . by oxygen atoms **[2]**
211/24 . . . . . by sulfur atoms to which a second hetero atom is attached **[2]**
211/26 . . . . . with hydrocarbon radicals, substituted by nitrogen atoms **[2]**
211/28 . . . . . to which a second hetero atom is attached **[2]**
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]**
211/32 . . . . . by oxygen atoms **[2]**
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]**

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]**
211/38 . . . . Halogen atoms or nitro radicals **[2]**
211/40 . . . . Oxygen atoms **[2]**
211/42 . . . . . attached in position 3 or 5 **[2]**
211/44 . . . . . attached in position 4 **[2]**
211/46 . . . . . having a hydrogen atom as the second substituent in position 4 **[2]**
211/48 . . . . . having an acyclic carbon atom attached in position 4 **[2]**
211/50 . . . . . Aroyl radical **[2]**
211/52 . . . . . having an aryl radical as the second substituent in position 4 **[2]**
211/54 . . . . Sulfur atoms **[2]**
211/56 . . . . Nitrogen atoms (nitro radicals C07D 211/38) **[2]**
211/58 . . . . . attached in position 4 **[2]**
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]**
211/62 . . . . . attached in position 4 **[2]**
211/64 . . . . . having an aryl radical as the second substituent in position 4 **[2]**
211/66 . . . . . having a hetero atom as the second substituent in position 4 **[2]**
211/68 . . having one double bond between ring members or between a ring member and a non-ring member **[2]**
211/70 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
211/74 . . . . Oxygen atoms **[2]**
211/76 . . . . . attached in position 2 or 6 **[2]**
211/78 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**
211/80 . . having two double bonds between ring members or between ring members and non-ring members **[2]**
211/82 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
211/86 . . . . Oxygen atoms **[2]**
211/88 . . . . . attached in positions 2 and 6, e.g. glutarimide **[2]**
211/90 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**
211/92 . with a hetero atom directly attached to the ring nitrogen atom **[2]**
211/94 . . Oxygen atom, e.g. piperidine N-oxide **[2]**
211/96 . . Sulfur atom **[2]**
211/98 . . Nitrogen atom **[2]**

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]

213/02 . having three double bonds between ring members or between ring members and non-ring members **[2]**
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]**
213/06 . . . containing only hydrogen and carbon atoms in addition to the ring nitrogen atom **[2]**
213/08 . . . . Preparation by ring-closure **[2]**
213/09 . . . . . involving the use of ammonia, amines, amine salts, or nitriles **[3]**
213/10 . . . . . from acetaldehyde or cyclic polymers thereof **[3]**
213/12 . . . . . from unsaturated compounds **[3]**
213/127 . . . . Preparation from compounds containing pyridine rings **[3]**
213/133 . . . . Preparation by dehydrogenation of hydrogenated pyridine compounds **[3]**
213/14 . . . . Preparation from compounds containing heterocyclic oxygen **[2]**
213/16 . . . . containing only one pyridine ring **[2]**
213/18 . . . . . Salts thereof **[2]**
213/20 . . . . . Quaternary compounds thereof **[2]**
213/22 . . . . containing two or more pyridine rings directly linked together, e.g. bipyridyl **[2]**
213/24 . . . with substituted hydrocarbon radicals attached to ring carbon atoms **[2]**
213/26 . . . . Radicals substituted by halogen atoms or nitro radicals **[2]**
213/28 . . . . Radicals substituted by singly-bound oxygen or sulfur atoms (bound to the same carbon atom C07D 213/44) **[2]**
213/30 . . . . . Oxygen atoms **[2]**
213/32 . . . . . Sulfur atoms **[2]**
213/34 . . . . . to which a second hetero atom is attached **[2]**
213/36 . . . . Radicals substituted by singly-bound nitrogen atoms (nitro radicals C07D 213/26) **[2]**
213/38 . . . . . having only hydrogen or hydrocarbon radicals attached to the substituent nitrogen atom **[2]**
213/40 . . . . . Acylated substituent nitrogen atom **[2]**
213/42 . . . . . having hetero atoms attached to the substituent nitrogen atom (nitro radicals C07D 213/26) **[2]**
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]**
213/46 . . . . . Oxygen atoms **[2]**
213/48 . . . . . Aldehydo radicals **[2]**
213/50 . . . . . Ketonic radicals **[2]**
213/51 . . . . . Acetal radicals **[2]**
213/52 . . . . . Sulfur atoms **[2]**
213/53 . . . . . Nitrogen atoms **[2]**
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]**
213/55 . . . . . Acids; Esters **[2]**

213/56 . . . . . Amides **[2]**
213/57 . . . . . Nitriles **[2]**
213/58 . . . . . Amidines **[2]**
213/59 . . . . . with at least one of the bonds being to sulfur **[2]**
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]**
213/61 . . . . Halogen atoms or nitro radicals **[2]**
213/62 . . . . Oxygen or sulfur atoms **[2]**
213/63 . . . . . One oxygen atom **[2]**
213/64 . . . . . attached in position 2 or 6 **[2]**
213/643 . . . . . 2-Phenoxypyridines; Derivatives thereof **[5]**
213/647 . . . . . and having in the molecule an acyl radical containing a saturated three-membered ring, e.g. chrysanthemumic acid esters **[5]**
213/65 . . . . . attached in position 3 or 5 **[2]**
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]**
213/67 . . . . . 2-Methyl-3-hydroxy-4,5-bis (hydroxy-methyl) pyridine, i.e. pyridoxine **[2]**
213/68 . . . . . attached in position 4 **[2]**
213/69 . . . . . Two or more oxygen atoms **[2]**
213/70 . . . . . Sulfur atoms **[4]**
213/71 . . . . . to which a second hetero atom is attached **[4]**
213/72 . . . . Nitrogen atoms (nitro radicals C07D 213/61) **[2]**
213/73 . . . . . Unsubstituted amino or imino radicals **[2]**
213/74 . . . . . Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals **[2]**
213/75 . . . . . Amino or imino radicals, acylated by carboxylic or carbonic acids, or by sulfur or nitrogen analogues thereof, e.g. carbamates **[2]**
213/76 . . . . . to which a second hetero atom is attached (nitro radicals C07D 213/61) **[2]**
213/77 . . . . . Hydrazine radicals **[2]**
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]**
213/79 . . . . . Acids; Esters **[2]**
213/80 . . . . . in position 3 **[2]**
213/803 . . . . . Processes of preparation **[3]**
213/807 . . . . . by oxidation of pyridines or condensed pyridines **[3]**
213/81 . . . . . Amides; Imides **[2]**
213/82 . . . . . in position 3 **[2]**
213/83 . . . . . Thioacids; Thioesters; Thioamides; Thioimides **[2]**
213/84 . . . . . Nitriles **[2]**
213/85 . . . . . in position 3 **[2]**
213/86 . . . . . Hydrazides; Thio or imino analogues thereof **[2]**
213/87 . . . . . in position 3 **[2]**
213/88 . . . . . Nicotinoylhydrazones **[2]**
213/89 . . with hetero atoms directly attached to the ring nitrogen atom **[2]**
213/90 . having more than three double bonds between ring members or between ring members and non-ring members **[2]**

215/00 Heterocyclic compounds containing quinoline or hydrogenated quinoline ring systems [2]

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]**
215/04 . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to the ring carbon atoms **[2]**
215/06 . . . having only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to the ring nitrogen atom **[2]**
215/08 . . . with acylated ring nitrogen atom **[2]**
215/10 . . . Quaternary compounds **[2]**
215/12 . . with substituted hydrocarbon radicals attached to ring carbon atoms **[2]**
215/14 . . . Radicals substituted by oxygen atoms **[2]**
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]**
215/18 . . . Halogen atoms or nitro radicals **[2]**
215/20 . . . Oxygen atoms (quinophthalones C09B 25/00) **[2]**
215/22 . . . . attached in position 2 or 4 **[2]**
215/227 . . . . . only one oxygen atom which is attached in position 2 **[5]**
215/233 . . . . . only one oxygen atom which is attached in position 4 **[5]**
215/24 . . . . attached in position 8 **[2]**
215/26 . . . . . Alcohols; Ethers thereof **[2]**
215/28 . . . . . with halogen atoms or nitro radicals in positions 5, 6 or 7 **[2]**
215/30 . . . . . Metal salts; Chelates **[2]**
215/32 . . . . . Esters **[2]**
215/34 . . . . . Carbamates **[2]**
215/36 . . . Sulfur atoms (C07D 215/24 takes precedence) **[2]**
215/38 . . . Nitrogen atoms (nitro radicals C07D 215/18) **[2]**
215/40 . . . . attached in position 8 **[2]**
215/42 . . . . attached in position 4 **[2]**
215/44 . . . . . with aryl radicals attached to said nitrogen atoms **[2]**
215/46 . . . . . with hydrocarbon radicals, substituted by nitrogen atoms, attached to said nitrogen atoms **[2]**
215/48 . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**
215/50 . . . . attached in position 4 **[2]**
215/52 . . . . . with aryl radicals attached in position 2 **[2]**
215/54 . . . . attached in position 3 **[2]**
215/56 . . . . . with oxygen atoms in position 4 **[2]**
215/58 . with hetero atoms directly attached to the ring nitrogen atom **[2]**
215/60 . . N-oxides **[2]**

217/00 Heterocyclic compounds containing isoquinoline or hydrogenated isoquinoline ring systems [2]

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]**
217/04 . . with hydrocarbon or substituted hydrocarbon radicals attached to the ring nitrogen atom **[2]**
217/06 . . with the ring nitrogen atom acylated by carboxylic or carbonic acids, or with sulfur or nitrogen analogues thereof, e.g. carbamates **[2]**
217/08 . . with a hetero atom directly attached to the ring nitrogen atom **[2]**
217/10 . . Quaternary compounds **[2]**
217/12 . with radicals, substituted by hetero atoms, attached to carbon atoms of the nitrogen-containing ring **[2]**
217/14 . . other than aralkyl radicals **[2]**
217/16 . . . substituted by oxygen atoms **[2]**
217/18 . . Aralkyl radicals **[2]**
217/20 . . . with oxygen atoms directly attached to the aromatic ring of said aralkyl radical, e.g. papaverine **[2]**
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]**
217/24 . . Oxygen atoms **[2]**
217/26 . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**

219/00 Heterocyclic compounds containing acridine or hydrogenated acridine ring systems [2]

219/02 . with only hydrogen, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the ring system **[2]**
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]**
219/06 . . Oxygen atoms **[2]**
219/08 . . Nitrogen atoms (acridine dyes C09B 15/00) **[2]**
219/10 . . . attached in position 9 **[2]**
219/12 . . . . Aminoalkyl-amino radicals attached in position 9 **[2]**
219/14 . with hydrocarbon radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom **[2]**
219/16 . with acyl radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom **[2]**

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 to C07D 219/00 [2]

221/02 . condensed with carbocyclic rings or ring systems **[2]**
221/04 . . Ortho- or peri-condensed ring systems **[2]**
221/06 . . . Ring systems of three rings **[2]**
221/08 . . . . Aza-anthracenes (acridine C07D 219/00) **[2]**
221/10 . . . . Aza-phenanthrenes **[2]**
221/12 . . . . . Phenanthridines **[2]**
221/14 . . . . Aza-phenalenes, e.g. 1,8-naphthalimide **[2]**
221/16 . . . . containing carbocyclic rings other than six-membered **[2]**
221/18 . . . Ring systems of four or more rings **[2]**
221/20 . . Spiro-condensed ring systems **[2]**
221/22 . . Bridged ring systems **[2]**
221/24 . . . Camphidines **[2]**
221/26 . . . Benzomorphans **[2]**
221/28 . . . Morphinans **[2]**

223/00 Heterocyclic compounds containing seven-membered rings having one nitrogen atom as the only ring hetero atom [2]

Note

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. **[2]**

223/02 . not condensed with other rings **[2]**
223/04 . . with only hydrogen atoms, halogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
223/08 . . . Oxygen atoms **[2]**
223/10 . . . . attached in position 2 **[2]**
223/12 . . . Nitrogen atoms not forming part of a nitro radical **[2]**
223/14 . condensed with carbocyclic rings or ring systems **[2]**
223/16 . . Benzazepines; Hydrogenated benzazepines **[2]**
223/18 . . Dibenzazepines; Hydrogenated dibenzazepines **[2]**
223/20 . . . Dibenz [b, e] azepines; Hydrogenated dibenz [b, e] azepines **[2]**
223/22 . . . Dibenz [b, f] azepines; Hydrogenated dibenz [b, f] azepines **[2]**
223/24 . . . . with hydrocarbon radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom **[2]**
223/26 . . . . . having a double bond between positions 10 and 11 **[2]**
223/28 . . . . . having a single bond between positions 10 and 11 **[2]**
223/30 . . . . with hetero atoms directly attached to the ring nitrogen atom **[2]**
223/32 . . containing carbocyclic rings other than six-membered **[2]**

225/00 Heterocyclic compounds containing rings of more than seven members having one nitrogen atom as the only ring hetero atom [2]

Note

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. **[3]**

225/02 . not condensed with other rings **[2]**
225/04 . condensed with carbocyclic rings or ring systems **[2]**
225/06 . . condensed with one six-membered ring **[2]**
225/08 . . condensed with two six-membered rings **[2]**

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 to C07D 225/00 [2]

Note

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. **[3]**

227/02 . with only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2]**
227/04 . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to ring carbon atoms **[2]**
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]**
227/08 . . . Oxygen atoms **[2]**
227/087 . . . . One doubly-bound oxygen atom in position 2, e.g. lactams **[3]**
227/093 . . . . Two doubly-bound oxygen atoms attached to the carbon atoms adjacent to the ring nitrogen atom, e.g. dicarboxylic acid imides **[3]**
227/10 . . . Nitrogen atoms not forming part of a nitro radical **[2]**
227/12 . with hetero atoms directly attached to the ring nitrogen atom **[2]**

229/00 Heterocyclic compounds containing rings of less than five members having two nitrogen atoms as the only ring hetero atoms [2]

229/02 . containing three-membered rings **[3]**

231/00 Heterocyclic compounds containing 1,2-diazole or hydrogenated 1,2-diazole rings [2]

231/02 . not condensed with other rings **[2]**
231/04 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
231/06 . . having one double bond between ring members or between a ring member and a non-ring member **[2]**
231/08 . . . with oxygen or sulfur atoms directly attached to ring carbon atoms **[2]**
231/10 . . having two or three double bonds between ring members or between ring members and non-ring members **[2]**
231/12 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
231/16 . . . . Halogen atoms or nitro radicals **[2]**
231/18 . . . . One oxygen or sulfur atom **[2]**
231/20 . . . . . One oxygen atom attached in position 3 or 5 **[2]**
231/22 . . . . . with aryl radicals attached to ring nitrogen atoms **[2]**
231/24 . . . . . having sulfone or sulfonic acid radicals in the molecule **[2]**
231/26 . . . . . 1-Phenyl-3-methyl-5- pyrazolones, unsubstituted or substituted on the phenyl ring **[2]**
231/28 . . . . Two oxygen or sulfur atoms **[2]**
231/30 . . . . . attached in position 3 and 5 **[2]**
231/32 . . . . . Oxygen atoms **[2]**
231/34 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached in position 4 **[2]**
231/36 . . . . . with hydrocarbon radicals, substituted by hetero atoms, attached in position 4 **[2]**
231/38 . . . . Nitrogen atoms (nitro radicals C07D 231/16) **[2]**
231/40 . . . . . Acylated on said nitrogen atom **[2]**
231/42 . . . . . Benzene-sulfonamido pyrazoles **[2]**
231/44 . . . . Oxygen and nitrogen or sulfur and nitrogen atoms **[2]**
231/46 . . . . . Oxygen atom in position 3 or 5 and nitrogen atom in position 4 **[2]**
231/48 . . . . . with hydrocarbon radicals attached to said nitrogen atom **[2]**
231/50 . . . . . Acylated on said nitrogen atom **[2]**
231/52 . . . . . Oxygen atom in position 3 and nitrogen atom in position 5, or vice-versa **[2]**
231/54 . condensed with carbocyclic rings or ring systems **[2]**
231/56 . . Benzopyrazoles; Hydrogenated benzopyrazoles **[2]**

233/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, not condensed with other rings [2]

233/02 . having no double bonds between ring members or between ring members and non-ring members **[2]**
233/04 . having one double bond between ring members or between a ring member and a non-ring member **[2]**
233/06 . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2]**
233/08 . . . with alkyl radicals, containing more than four carbon atoms, directly attached to ring carbon atoms **[2]**
233/10 . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring nitrogen atoms **[2]**
233/12 . . . . with substituted hydrocarbon radicals attached to ring nitrogen atoms **[2]**
233/14 . . . . . Radicals substituted by oxygen atoms **[2]**
233/16 . . . . . Radicals substituted by nitrogen atoms **[2]**
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]**
233/20 . . with substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
233/22 . . . Radicals substituted by oxygen atoms **[2]**
233/24 . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2]**
233/26 . . . Radicals substituted by carbon atoms having three bonds to hetero atoms **[2]**
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]**
233/30 . . . Oxygen or sulfur atoms **[2]**
233/32 . . . . One oxygen atom **[2]**
233/34 . . . . . Ethylene-urea **[2]**
233/36 . . . . . with hydrocarbon radicals, substituted by nitrogen atoms, attached to ring nitrogen atoms **[2]**
233/38 . . . . . with acyl radicals or hetero atoms directly attached to ring nitrogen atoms **[2]**

233/40 . . . . Two or more oxygen atoms **[2]**
233/42 . . . . Sulfur atoms **[2]**
233/44 . . . Nitrogen atoms not forming part of a nitro radical **[2]**
233/46 . . . . with only hydrogen atoms attached to said nitrogen atoms **[2]**
233/48 . . . . with acyclic hydrocarbon or substituted acyclic hydrocarbon radicals, attached to said nitrogen atoms **[2]**
233/50 . . . . with carbocyclic radicals directly attached to said nitrogen atoms **[2]**
233/52 . . . . with hetero atoms directly attached to said nitrogen atoms **[2]**
233/54 . having two double bonds between ring members or between ring members and non-ring members **[2]**
233/56 . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring carbon atoms **[2]**
233/58 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring nitrogen atoms **[2]**
233/60 . . . with hydrocarbon radicals, substituted by oxygen or sulfur atoms, attached to ring nitrogen atoms **[2]**
233/61 . . . with hydrocarbon radicals, substituted by nitrogen atoms not forming part of a nitro radical, attached to ring nitrogen atoms **[3]**
233/62 . . . with triarylmethyl radicals attached to ring nitrogen atoms (triarylmethane dyes C09B 11/26) **[2]**
233/64 . . with substituted hydrocarbon radicals attached to ring carbon atoms, e.g. histidine **[2]**
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]**
233/68 . . . Halogen atoms **[2]**
233/70 . . . One oxygen atom **[2]**
233/72 . . . Two oxygen atoms, e.g. hydantoin **[2]**
233/74 . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to other ring members **[2]**
233/76 . . . . with substituted hydrocarbon radicals attached to the third ring carbon atom **[2]**
233/78 . . . . . Radicals substituted by oxygen atoms **[2]**
233/80 . . . . with hetero atoms or acyl radicals directly attached to ring nitrogen atoms **[2]**
233/82 . . . . . Halogen atoms **[2]**
233/84 . . . Sulfur atoms **[2]**
233/86 . . . Oxygen and sulfur atoms, e.g. thiohydantoin **[2]**
233/88 . . . Nitrogen atoms, e.g. allantoin (nitro radicals C07D 233/91) **[2]**
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]**
233/91 . . . Nitro radicals **[2]**
233/92 . . . . attached in position 4 or 5 **[2]**
233/93 . . . . . with hydrocarbon radicals, substituted by halogen atoms, attached to other ring members **[2]**
233/94 . . . . . with hydrocarbon radicals, substituted by oxygen or sulfur atoms, attached to other ring members **[2]**
233/95 . . . . . with hydrocarbon radicals, substituted by nitrogen atoms, attached to other ring members **[2]**
233/96 . having three double bonds between ring members or between ring members and non-ring members **[2]**

235/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, condensed with other rings [2]

235/02 . condensed with carbocyclic rings or ring systems **[2]**
235/04 . . Benzimidazoles; Hydrogenated benzimidazoles **[2]**
235/06 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2 **[2]**
235/08 . . . . Radicals containing only hydrogen and carbon atoms **[2]**
235/10 . . . . Radicals substituted by halogen atoms or nitro radicals **[2]**
235/12 . . . . Radicals substituted by oxygen atoms **[2]**
235/14 . . . . Radicals substituted by nitrogen atoms (by nitro radicals C07D 235/10) **[2]**
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]**
235/18 . . . with aryl radicals directly attached in position 2 **[2]**
235/20 . . . Two benzimidazolyl-2 radicals linked together directly or via a hydrocarbon or substituted hydrocarbon radical **[2]**
235/22 . . . with hetero atoms directly attached to ring nitrogen atoms (C07D 235/10 takes precedence) **[2]**
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]**
235/26 . . . . Oxygen atoms **[2]**
235/28 . . . . Sulfur atoms **[2]**
235/30 . . . . Nitrogen atoms not forming part of a nitro radical **[2]**
235/32 . . . . . Benzimidazole-2-carbamic acids, unsubstituted or substituted; Esters thereof; Thio-analogues thereof **[2]**

237/00 Heterocyclic compounds containing 1,2-diazine or hydrogenated 1,2-diazine rings [2]

237/02 . not condensed with other rings **[2]**
237/04 . . having less than three double bonds between ring members or between ring members and non-ring members **[2]**
237/06 . . having three double bonds between ring members or between ring members and non-ring members **[2]**
237/08 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
237/12 . . . . Halogen atoms or nitro radicals **[2]**
237/14 . . . . Oxygen atoms **[2]**
237/16 . . . . . Two oxygen atoms **[2]**
237/18 . . . . Sulfur atoms **[2]**

237/20 . . . . Nitrogen atoms (nitro radicals C07D 237/12) **[2]**
237/22 . . . . Nitrogen and oxygen atoms **[2]**
237/24 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**
237/26 . condensed with carbocyclic rings or ring systems **[2]**
237/28 . . Cinnolines **[2]**
237/30 . . Phthalazines **[2]**
237/32 . . . with oxygen atoms directly attached to carbon atoms of the nitrogen-containing ring **[2]**
237/34 . . . with nitrogen atoms directly attached to carbon atoms of the nitrogen-containing ring, e.g. hydrazine radicals **[2]**
237/36 . . Benzo-cinnolines **[2]**

239/00 Heterocyclic compounds containing 1,3-diazine or hydrogenated 1,3-diazine rings [2]

239/02 . not condensed with other rings **[2]**
239/04 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
239/06 . . having one double bond between ring members or between a ring member and a non-ring member **[2]**
239/08 . . . with hetero atoms directly attached in position 2 **[2]**
239/10 . . . . Oxygen or sulfur atoms **[2]**
239/12 . . . . Nitrogen atoms not forming part of a nitro radical **[2]**
239/14 . . . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to said nitrogen atoms **[2]**
239/16 . . . . . acylated on said nitrogen atoms **[2]**
239/18 . . . . . with hetero atoms attached to said nitrogen atoms, except nitro radicals, e.g. hydrazine radicals **[2]**
239/20 . . having two double bonds between ring members or between ring members and non-ring members **[2]**
239/22 . . . with hetero atoms directly attached to ring carbon atoms **[2]**
239/24 . . having three or more double bonds between ring members or between ring members and non-ring members **[2]**
239/26 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
239/30 . . . . Halogen atoms or nitro radicals **[2]**
239/32 . . . . One oxygen, sulfur or nitrogen atom **[2]**
239/34 . . . . . One oxygen atom **[2]**
239/36 . . . . . as doubly bound oxygen atom or as unsubstituted hydroxy radical **[2]**
239/38 . . . . . One sulfur atom **[2]**
239/40 . . . . . as doubly bound sulfur atom or as unsubstituted mercapto radical **[2]**
239/42 . . . . . One nitrogen atom (nitro radicals C07D 239/30; benzenesulfonamido-pyrimidines C07D 239/69) **[2]**
239/46 . . . . Two or more oxygen, sulfur or nitrogen atoms (benzenesulfonamido- pyrimidines C07D 239/69) **[2]**
239/47 . . . . . One nitrogen atom and one oxygen or sulfur atom, e.g. cytosine **[3]**
239/48 . . . . . Two nitrogen atoms **[2]**
239/49 . . . . . with an aralkyl radical, or substituted aralkyl radical, attached in position 5, e.g. trimethoprim **[3]**
239/50 . . . . . Three nitrogen atoms **[2]**
239/52 . . . . . Two oxygen atoms **[2]**
239/54 . . . . . as doubly bound oxygen atoms or as unsubstituted hydroxy radicals **[2]**
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]**
239/553 . . . . . with halogen atoms or nitro radicals directly attached to ring carbon atoms, e.g. fluorouracil **[5]**
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]**
239/56 . . . . . One oxygen atom and one sulfur atom **[2]**
239/58 . . . . . Two sulfur atoms **[2]**
239/60 . . . . . Three or more oxygen or sulfur atoms **[2]**
239/62 . . . . . Barbituric acids **[2]**
239/64 . . . . . Salts of organic bases; Organic double compounds **[2]**
239/66 . . . . . Thiobarbituric acids **[2]**
239/68 . . . . . Salts of organic bases; Organic double compounds **[2]**
239/69 . . . . Benzenesulfonamido-pyrimidines **[3]**
239/70 . condensed with carbocyclic rings or ring systems **[2]**
239/72 . . Quinazolines; Hydrogenated quinazolines **[2]**
239/74 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to ring carbon atoms of the hetero ring **[2]**
239/76 . . . . N-oxides **[2]**
239/78 . . . with hetero atoms directly attached in position 2 **[2]**
239/80 . . . . Oxygen atoms **[2]**
239/82 . . . . . with an aryl radical attached in position 4 **[2]**
239/84 . . . . Nitrogen atoms **[2]**
239/86 . . . with hetero atoms directly attached in position 4 **[2]**
239/88 . . . . Oxygen atoms **[2]**
239/90 . . . . . with acyclic radicals attached in position 2 or 3 **[2]**
239/91 . . . . . with aryl or aralkyl radicals attached in position 2 or 3 **[2]**
239/92 . . . . . with hetero atoms directly attached to nitrogen atoms of the hetero ring **[2]**
239/93 . . . . Sulfur atoms **[2]**
239/94 . . . . Nitrogen atoms **[2]**
239/95 . . . with hetero atoms directly attached in positions 2 and 4 **[2]**
239/96 . . . . Two oxygen atoms **[2]**

241/00 Heterocyclic compounds containing 1,4-diazine or hydrogenated 1,4-diazine rings [2]

Note

Piperazines with only hydrogen atoms directly attached to ring carbon atoms are classified in group C07D 295/00. **[2]**

241/02 . not condensed with other rings **[2]**
241/04 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
241/06 . . having one or two double bonds between ring members or between ring members and non-ring members **[2]**
241/08 . . . with oxygen atoms directly attached to ring carbon atoms **[2]**
241/10 . . having three double bonds between ring members or between ring members and non-ring members **[2]**
241/12 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
241/16 . . . . Halogen atoms; Nitro radicals **[2]**
241/18 . . . . Oxygen or sulfur atoms **[2]**
241/20 . . . . Nitrogen atoms (nitro radicals C07D 241/16) **[2]**
241/22 . . . . . Benzenesulfonamido pyrazines **[2]**
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]**
241/26 . . . . . with nitrogen atoms directly attached to ring carbon atoms **[2]**
241/28 . . . . . in which said hetero-bound carbon atoms have double bonds to oxygen, sulfur or nitrogen atoms **[2,5]**
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]**
241/32 . . . . . (Amino-pyrazinoyl) guanidines **[2,5]**
241/34 . . . . . (Amino-pyrazine carbonamido) guanidines **[2,5]**
241/36 . condensed with carbocyclic rings or ring systems **[2]**
241/38 . . with only hydrogen or carbon atoms directly attached to the ring nitrogen atoms **[2]**
241/40 . . . Benzopyrazines **[2]**
241/42 . . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring **[2]**
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]**
241/46 . . . Phenazines **[2]**
241/48 . . . . with hydrocarbon radicals, substituted by nitrogen atoms, directly attached to the ring nitrogen atoms **[2]**
241/50 . . with hetero atoms directly attached to ring nitrogen atoms **[2]**
241/52 . . . Oxygen atoms **[2]**
241/54 . . . Nitrogen atoms **[2]**

243/00 Heterocyclic compounds containing seven-membered rings having two nitrogen atoms as the only ring hetero atoms [2]

243/02 . having the nitrogen atoms in positions 1 and 2 **[2]**
243/04 . having the nitrogen atoms in positions 1 and 3 **[2]**
243/06 . having the nitrogen atoms in positions 1 and 4 **[2]**
243/08 . . not condensed with other rings **[2]**
243/10 . . condensed with carbocyclic rings or ring systems **[2]**
243/12 . . . 1,5-Benzodiazepines; Hydrogenated 1,5-benzodiazepines **[2]**
243/14 . . . 1,4-Benzodiazepines; Hydrogenated 1,4-benzodiazepines **[2]**
243/16 . . . . substituted in position 5 by aryl radicals **[2]**
243/18 . . . . . substituted in position 2 by nitrogen, oxygen or sulfur atoms **[2]**
243/20 . . . . . Nitrogen atoms **[2]**
243/22 . . . . . Sulfur atoms **[2]**
243/24 . . . . . Oxygen atoms **[2]**
243/26 . . . . . Preparation from compounds already containing the benzodiazepine skeleton **[2]**
243/28 . . . . . Preparation including building-up the benzodiazepine skeleton from compounds containing no hetero rings **[2]**
243/30 . . . . . Preparation including building-up the benzodiazepine skeleton from compounds already containing hetero rings **[2]**
243/32 . . . . . containing a phthalimide or hydrogenated phthalimide ring system **[2]**
243/34 . . . . . containing a quinazoline or hydrogenated quinazoline ring system **[2]**
243/36 . . . . . containing an indole or hydrogenated indole ring system **[2]**
243/38 . . . [b, e]- or [b, f]-condensed with six-membered rings **[2]**

245/00 Heterocyclic compounds containing rings of more than seven members having two nitrogen atoms as the only ring hetero atoms [2]

245/02 . not condensed with other rings **[2]**
245/04 . condensed with carbocyclic rings or ring systems **[2]**
245/06 . . condensed with one six-membered ring **[2]**

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 to C07D 245/00 [2]

247/02 . having the nitrogen atoms in positions 1 and 3 **[2]**

249/00 Heterocyclic compounds containing five-membered rings having three nitrogen atoms as the only ring hetero atoms [2]

249/02 . not condensed with other rings **[2]**
249/04 . . 1,2,3-Triazoles; Hydrogenated 1,2,3-triazoles **[2]**
249/06 . . . with aryl radicals directly attached to ring atoms **[2]**
249/08 . . 1,2,4-Triazoles; Hydrogenated 1,2,4-triazoles **[2]**

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]**
249/12 . . . . Oxygen or sulfur atoms **[2]**
249/14 . . . . Nitrogen atoms **[2]**
249/16 . condensed with carbocyclic rings or ring systems **[2]**
249/18 . . Benzotriazoles **[2]**
249/20 . . . with aryl radicals directly attached in position 2 **[2]**
249/22 . . Naphthotriazoles **[2]**
249/24 . . . with stilbene radicals directly attached in position 2 **[2]**

251/00 Heterocyclic compounds containing 1,3,5-triazine rings [2]

251/02 . not condensed with other rings **[2]**
251/04 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
251/06 . . . with hetero atoms directly attached to ring nitrogen atoms **[2]**
251/08 . . having one double bond between ring members or between a ring member and a non-ring member **[2]**
251/10 . . having two double bonds between ring members or between ring members and non-ring members **[2]**
251/12 . . having three double bonds between ring members or between ring members and non-ring members **[2]**
251/14 . . . with hydrogen or carbon atoms directly attached to at least one ring carbon atom **[2]**
251/16 . . . . to only one ring carbon atom **[2]**
251/18 . . . . . with nitrogen atoms directly attached to the two other ring carbon atoms, e.g. guanamines **[2]**
251/20 . . . . . with no nitrogen atoms directly attached to a ring carbon atom **[2]**
251/22 . . . . to two ring carbon atoms **[2]**
251/24 . . . . to three ring carbon atoms **[2]**
251/26 . . . with only hetero atoms directly attached to ring carbon atoms **[2]**
251/28 . . . . Only halogen atoms, e.g. cyanuric chloride **[2]**
251/30 . . . . Only oxygen atoms **[2]**
251/32 . . . . . Cyanuric acid; Isocyanuric acid **[2]**
251/34 . . . . . Cyanuric or isocyanuric esters **[2]**
251/36 . . . . . having halogen atoms directly attached to ring nitrogen atoms **[2]**
251/38 . . . . Sulfur atoms **[2]**
251/40 . . . . Nitrogen atoms **[2]**
251/42 . . . . . One nitrogen atom **[2]**
251/44 . . . . . with halogen atoms attached to the two other ring carbon atoms **[2]**
251/46 . . . . . with oxygen or sulfur atoms attached to the two other ring carbon atoms **[2]**
251/48 . . . . . Two nitrogen atoms **[2]**
251/50 . . . . . with a halogen atom attached to the third ring carbon atom **[2]**
251/52 . . . . . with an oxygen or sulfur atom attached to the third ring carbon atom **[2]**
251/54 . . . . . Three nitrogen atoms **[2]**
251/56 . . . . . Preparation of melamine **[2]**
251/58 . . . . . from cyanamide, dicyanamide or calcium cyanamide **[2]**
251/60 . . . . . from urea or from carbon dioxide and ammonia **[2]**
251/62 . . . . . Purification of melamine **[2]**
251/64 . . . . . Condensation products of melamine with aldehydes; Derivatives thereof (polycondensation products C08G) **[2]**
251/66 . . . . . Derivatives of melamine in which a hetero atom is directly attached to a nitrogen atom of melamine **[2]**
251/68 . . . . . Triazinylamino stilbenes **[2]**
251/70 . . . . . Other substituted melamines **[2]**
251/72 . condensed with carbocyclic rings or ring systems **[2]**

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]

253/02 . not condensed with other rings **[2]**
253/04 . . 1,2,3-Triazines **[2]**
253/06 . . 1,2,4-Triazines **[2]**
253/065 . . . having three double bonds between ring members or between ring members and non-ring members **[5]**
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]**
253/075 . . . . . Two hetero atoms, in positions 3 and 5 **[5]**
253/08 . condensed with carbocyclic rings or ring systems **[2]**
253/10 . . Condensed 1,2,4-triazines; Hydrogenated condensed 1,2,4-triazines **[5]**

255/00 Heterocyclic compounds containing rings having three nitrogen atoms as the only ring hetero atoms, not provided for by groups C07D 249/00 to C07D 253/00 [2]

255/02 . not condensed with other rings **[2]**
255/04 . condensed with carbocyclic rings or ring systems **[2]**

257/00 Heterocyclic compounds containing rings having four nitrogen atoms as the only ring hetero atoms [2]

257/02 . not condensed with other rings **[2]**
257/04 . . Five-membered rings **[2]**
257/06 . . . with nitrogen atoms directly attached to the ring carbon atom **[2]**
257/08 . . Six-membered rings **[2]**
257/10 . condensed with carbocyclic rings or ring systems **[2]**
257/12 . . Six-membered rings having four nitrogen atoms **[2]**

259/00 Heterocyclic compounds containing rings having more than four nitrogen atoms as the only ring hetero atoms [2]

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]

261/02 . not condensed with other rings **[2]**
261/04 . . having one double bond between ring members or between a ring member and a non-ring member **[2]**
261/06 . . having two or more double bonds between ring members or between ring members and non-ring members **[2]**

261/08 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
261/12 . . . . Oxygen atoms **[2]**
261/14 . . . . Nitrogen atoms **[2]**
261/16 . . . . . Benzene-sulfonamido isoxazoles **[2]**
261/18 . . . . Carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen **[2]**
261/20 . condensed with carbocyclic rings or ring systems **[2]**

263/00 Heterocyclic compounds containing 1,3-oxazole or hydrogenated 1,3-oxazole rings [2]

263/02 . not condensed with other rings **[2]**
263/04 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
263/06 . . . with hydrocarbon radicals, substituted by oxygen atoms, attached to ring carbon atoms **[2]**
263/08 . . having one double bond between ring members or between a ring member and a non-ring member **[2]**
263/10 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
263/12 . . . . with radicals containing only hydrogen and carbon atoms **[2]**
263/14 . . . . with radicals substituted by oxygen atoms **[2]**
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]**
263/18 . . . . Oxygen atoms **[2]**
263/20 . . . . . attached in position 2 **[2]**
263/22 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to other ring carbon atoms **[2]**
263/24 . . . . . with hydrocarbon radicals, substituted by oxygen atoms, attached to other ring carbon atoms **[2]**
263/26 . . . . . with hetero atoms or acyl radicals directly attached to the ring nitrogen atom **[2]**
263/28 . . . . Nitrogen atoms not forming part of a nitro radical **[2]**
263/30 . . having two or three double bonds between ring members or between ring members and non-ring members **[2]**
263/32 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
263/36 . . . . One oxygen atom **[2]**
263/38 . . . . . attached in position 2 **[2]**
263/40 . . . . . attached in position 4 **[2]**
263/42 . . . . . attached in position 5 **[2]**
263/44 . . . . Two oxygen atoms **[2]**
263/46 . . . . Sulfur atoms **[2]**
263/48 . . . . Nitrogen atoms not forming part of a nitro radical **[2]**
263/50 . . . . . Benzene-sulfonamido oxazoles **[2]**
263/52 . condensed with carbocyclic rings or ring systems **[2]**
263/54 . . Benzoxazoles; Hydrogenated benzoxazoles **[2]**
263/56 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2 **[2]**
263/57 . . . . Aryl or substituted aryl radicals **[5]**
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]**
263/60 . . Naphthoxazoles; Hydrogenated naphthoxazoles **[2]**
263/62 . . having two or more ring systems containing condensed 1,3-oxazole rings **[2]**
263/64 . . . linked in positions 2 and 2' by chains containing six-membered aromatic rings or ring systems containing such rings **[5]**

265/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom and one oxygen atom as the only ring hetero atoms [2]

Note

Morpholines having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00. **[2]**

265/02 . 1,2-Oxazines; Hydrogenated 1,2-oxazines **[2]**
265/04 . 1,3-Oxazines; Hydrogenated 1,3-oxazines **[2]**
265/06 . . not condensed with other rings **[2]**
265/08 . . . having one double bond between ring members or between a ring member and a non-ring member **[2]**
265/10 . . . . with oxygen atoms directly attached to ring carbon atoms **[2]**
265/12 . . condensed with carbocyclic rings or ring systems **[2]**
265/14 . . . condensed with one six-membered ring **[2]**
265/16 . . . . with only hydrogen or carbon atoms directly attached in positions 2 and 4 **[2]**
265/18 . . . . with hetero atoms directly attached in position 2 **[2]**
265/20 . . . . with hetero atoms directly attached in position 4 **[2]**
265/22 . . . . . Oxygen atoms **[2]**
265/24 . . . . with hetero atoms directly attached in positions 2 and 4 **[2]**
265/26 . . . . . Two oxygen atoms, e.g. isatoic anhydride **[2]**
265/28 . 1,4-Oxazines; Hydrogenated 1,4-oxazines **[2]**
265/30 . . not condensed with other rings **[2]**
265/32 . . . with oxygen atoms directly attached to ring carbon atoms **[2]**
265/33 . . . . Two oxygen atoms, in positions 3 and 5 **[5]**
265/34 . . condensed with carbocyclic rings **[2]**
265/36 . . . condensed with one six-membered ring **[2]**
265/38 . . . [b, e]-condensed with two six-membered rings **[2]**

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]

267/02 . Seven-membered rings **[2]**
267/04 . . having the hetero atoms in positions 1 and 2 **[2]**
267/06 . . having the hetero atoms in positions 1 and 3 **[2]**
267/08 . . having the hetero atoms in positions 1 and 4 **[2]**
267/10 . . . not condensed with other rings **[2]**
267/12 . . . condensed with carbocyclic rings or ring systems **[2]**
267/14 . . . . condensed with one six-membered ring **[2]**
267/16 . . . . condensed with two six-membered rings **[2]**
267/18 . . . . . [b, e]-condensed **[2]**
267/20 . . . . . [b, f]-condensed **[2]**
267/22 . Eight-membered rings **[2]**

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 to C07D 267/00 [2]

269/02 . having the hetero atoms in positions 1 and 3 **[2]**

271/00 Heterocyclic compounds containing five-membered rings having two nitrogen atoms and one oxygen atom as the only ring hetero atoms [2]

271/02 . not condensed with other rings **[2]**
271/04 . . 1,2,3-Oxadiazoles; Hydrogenated 1,2,3-oxadiazoles **[2]**
271/06 . . 1,2,4-Oxadiazoles; Hydrogenated 1,2,4-oxadiazoles **[2]**
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]**
271/08 . . 1,2,5-Oxadiazoles; Hydrogenated 1,2,5-oxadiazoles **[2]**
271/10 . . 1,3,4-Oxadiazoles; Hydrogenated 1,3,4-oxadiazoles **[2]**
271/107 . . . with two aryl or substituted aryl radicals attached in positions 2 and 5 **[5]**
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]**
271/12 . condensed with carbocyclic rings or ring systems **[2]**

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 to C07D 271/00 [2]

273/01 . having one nitrogen atom **[3]**
273/02 . having two nitrogen atoms and only one oxygen atom **[2]**
273/04 . . Six-membered rings **[2]**
273/06 . . Seven-membered rings **[2]**
273/08 . having two nitrogen atoms and more than one oxygen atom **[3]**

Heterocyclic compounds having nitrogen and sulfur as the only ring hetero atoms [2]

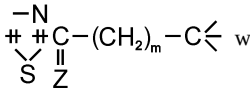
275/00 Heterocyclic compounds containing 1, 2-thiazole or hydrogenated 1,2-thiazole rings [2]

275/02 . not condensed with other rings **[2]**
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]**
275/04 . condensed with carbocyclic rings or ring systems **[2]**
275/06 . . with hetero atoms directly attached to the ring sulfur atom **[2]**

277/00 Heterocyclic compounds containing 1,3-thiazole or hydrogenated 1,3-thiazole rings [2]

277/02 . not condensed with other rings **[2]**
277/04 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
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]**
277/08 . . having one double bond between ring members or between a ring member and a non-ring member **[2]**
277/10 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
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]**
277/14 . . . . Oxygen atoms **[2]**
277/16 . . . . Sulfur atoms **[2]**
277/18 . . . . Nitrogen atoms **[2]**
277/20 . . having two or three double bonds between ring members or between ring members and non-ring members **[2]**
277/22 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
277/24 . . . . Radicals substituted by oxygen atoms **[2]**
277/26 . . . . Radicals substituted by sulfur atoms **[2]**
277/28 . . . . Radicals substituted by nitrogen atoms **[2]**
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]**
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]**
277/34 . . . . Oxygen atoms **[2]**
277/36 . . . . Sulfur atoms **[2]**
277/38 . . . . Nitrogen atoms **[2]**
277/40 . . . . . Unsubstituted amino or imino radicals **[2]**
277/42 . . . . . Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals **[2]**
277/44 . . . . . Acylated amino or imino radicals **[2]**
277/46 . . . . . by carboxylic acids, or sulfur or nitrogen analogues thereof **[2]**
277/48 . . . . . by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof, e.g. carbonylguanidines **[2]**
277/50 . . . . . Nitrogen atoms bound to hetero atoms (nitro radicals C07D 277/58) **[2]**
277/52 . . . . . to sulfur atoms, e.g. sulfonamides **[2]**
277/54 . . . . Nitrogen and either oxygen or sulfur atoms **[2]**
277/56 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**
277/58 . . . . Nitro radicals **[2]**

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]**

277/593 . . . . Z being doubly bound oxygen or doubly bound nitrogen, which nitrogen is part of a possibly substituted oximino radical **[5]**

277/60 . condensed with carbocyclic rings or ring systems **[2]**

277/62 . . Benzothiazoles **[2]**

277/64 . . . with only hydrocarbon or substituted hydrocarbon radicals attached in position 2 **[2]**

277/66 . . . . with aromatic rings or ring systems directly attached in position 2 **[2]**

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]**

277/70 . . . . Sulfur atoms **[2]**

277/72 . . . . . 2-Mercaptobenzothiazole **[2]**

277/74 . . . . . Sulfur atoms substituted by carbon atoms **[2]**

277/76 . . . . . Sulfur atoms attached to a second hetero atom **[2]**

277/78 . . . . . to a second sulfur atom **[2]**

277/80 . . . . . to a nitrogen atom **[2]**

277/82 . . . . Nitrogen atoms **[2]**

277/84 . . Naphthothiazoles **[2]**

279/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom and one sulfur atom as the only ring hetero atoms [2]

Note

Thiomorpholines having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00. **[2]**

279/02 . 1,2-Thiazines; Hydrogenated 1,2-thiazines **[2]**

279/04 . 1,3-Thiazines; Hydrogenated 1,3-thiazines **[2]**

279/06 . . not condensed with other rings **[2]**

279/08 . . condensed with carbocyclic rings or ring systems **[2]**

279/10 . 1,4-Thiazines; Hydrogenated 1,4-thiazines **[2]**

279/12 . . not condensed with other rings **[2]**

279/14 . . condensed with carbocyclic rings or ring systems **[2]**

279/16 . . . condensed with one six-membered ring **[2]**

279/18 . . . [b, e]-condensed with two six-membered rings **[2]**

279/20 . . . . with hydrogen atoms directly attached to the ring nitrogen atom **[2]**

279/22 . . . . with carbon atoms directly attached to the ring nitrogen atom **[2]**

279/24 . . . . . with hydrocarbon radicals, substituted by amino radicals, attached to the ring nitrogen atom **[2]**

279/26 . . . . . without other substituents attached to the ring system **[2]**

279/28 . . . . . with other substituents attached to the ring system **[2]**

279/30 . . . . . with acyl radicals attached to the ring nitrogen atom **[2]**

279/32 . . . . with hetero atoms directly attached to the ring nitrogen atom **[2]**

279/34 . . . . with hetero atoms directly attached to the ring sulfur atom **[2]**

279/36 . . . [b, e]-condensed, at least one with a further condensed benzene ring **[2]**

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]

281/02 . Seven-membered rings **[2]**

281/04 . . having the hetero atoms in positions 1 and 4 **[2]**

281/06 . . . not condensed with other rings **[2]**

281/08 . . . condensed with carbocyclic rings or ring systems **[2]**

281/10 . . . . condensed with one six-membered ring **[2]**

281/12 . . . . condensed with two six-membered rings **[2]**

281/14 . . . . . [b, e]-condensed **[2]**

281/16 . . . . . [b, f]-condensed **[2]**

281/18 . Eight-membered rings **[2]**

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 to C07D 281/00 [2]

283/02 . having the hetero atoms in positions 1 and 3 **[2]**

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 to C07D 283/00 [2]

285/01 . Five-membered rings **[5]**

285/02 . . Thiadiazoles; Hydrogenated thiadiazoles **[2,5]**

285/04 . . . not condensed with other rings **[2,5]**

285/06 . . . . 1,2,3-Thiadiazoles; Hydrogenated 1,2,3-thiadiazoles **[2,5]**

285/08 . . . . 1,2,4-Thiadiazoles; Hydrogenated 1,2,4-thiadiazoles **[2,5]**

285/10 . . . . 1,2,5-Thiadiazoles; Hydrogenated 1,2,5-thiadiazoles **[2,5]**

285/12 . . . . 1,3,4-Thiadiazoles; Hydrogenated 1,3,4-thiadiazoles **[2,5]**

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]**

285/13 . . . . . Oxygen atoms **[5]**

285/135 . . . . . Nitrogen atoms **[5]**

285/14 . . . condensed with carbocyclic rings or ring systems **[2,5]**

285/15 . Six-membered rings **[5]**

285/16 . . Thiadiazines; Hydrogenated thiadiazines **[2,5]**

285/18 . . . 1,2,4-Thiadiazines; Hydrogenated 1,2,4-thiadiazines **[2,5]**

285/20 . . . . condensed with carbocyclic rings or ring systems **[2,5]**

285/22 . . . . . condensed with one six-membered ring **[2,5]**

285/24 . . . . . with oxygen atoms directly attached to the ring sulfur atom **[2,5]**

285/26 . . . . . substituted in position 6 or 7 by sulfamoyl or substituted sulfamoyl radicals **[2,5]**

285/28 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached in position 3 **[2,5]**
285/30 . . . . . with hydrocarbon radicals, substituted by hetero atoms, attached in position 3 **[2,5]**
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]**
285/34 . . . 1,3,5-Thiadiazines; Hydrogenated 1,3,5-thiadiazines **[2,5]**
285/36 . Seven-membered rings **[2]**
285/38 . Eight-membered rings **[2]**

291/00 Heterocyclic compounds containing rings having nitrogen, oxygen and sulfur atoms as the only ring hetero atoms [2]

291/02 . not condensed with other rings **[2]**
291/04 . . Five-membered rings **[2]**
291/06 . . Six-membered rings **[2]**
291/08 . condensed with carbocyclic rings or ring systems **[2]**

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]

293/02 . not condensed with other rings **[2]**
293/04 . . Five-membered rings **[2]**
293/06 . . . Selenazoles; Hydrogenated selenazoles **[2]**
293/08 . . Six-membered rings **[2]**
293/10 . condensed with carbocyclic rings or ring systems **[2]**
293/12 . . Selenazoles; Hydrogenated selenazoles **[2]**

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]

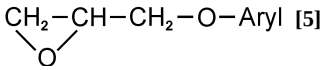
295/02 . containing only hydrogen and carbon atoms in addition to the ring hetero elements **[2]**
295/023 . . Preparation; Separation; Stabilisation; Use of additives **[5]**
295/027 . . containing only one hetero ring **[5]**
295/03 . . . with the ring nitrogen atoms directly attached to acyclic carbon atoms **[5]**
295/033 . . . with the ring nitrogen atoms directly attached to carbocyclic rings **[5]**
295/037 . . with quaternary ring nitrogen atoms **[5]**
295/04 . with substituted hydrocarbon radicals attached to ring nitrogen atoms **[2]**
295/06 . . substituted by halogen atoms or nitro radicals **[2]**
295/067 . . . with the ring nitrogen atoms and the substituents attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5]**
295/073 . . . with the ring nitrogen atoms and the substituents separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5]**
295/08 . . substituted by singly bound oxygen or sulfur atoms **[2]**
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]**
295/088 . . . . to an acyclic saturated chain **[5]**
295/092 . . . . with aromatic radicals attached to the chain **[5]**
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]**
295/10 . . substituted by doubly bound oxygen or sulfur atoms (acylated ring nitrogen atoms C07D 295/16) **[2]**
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]**
295/108 . . . . to an acyclic saturated chain **[5]**
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]**
295/116 . . . . with the doubly bound oxygen or sulfur atoms directly attached to a carbocyclic ring **[5]**
295/12 . . substituted by singly or doubly bound nitrogen atoms (nitro radicals C07D 295/06) **[2]**
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]**
295/13 . . . . to an acyclic saturated chain **[5]**
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]**
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]**
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]**
295/15 . . . . to an acyclic saturated chain **[5]**
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]**
295/16 . acylated on ring nitrogen atoms **[2]**
295/18 . . by radicals derived from carboxylic acids, or sulfur or nitrogen analogues thereof **[2]**
295/182 . . . Radicals derived from carboxylic acids **[5]**
295/185 . . . . from aliphatic carboxylic acids **[5]**
295/192 . . . . from aromatic carboxylic acids **[5]**
295/194 . . . Radicals derived from thio- or thiono carboxylic acids **[5]**
295/195 . . . Radicals derived from nitrogen analogues of carboxylic acids **[5]**
295/20 . . by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof **[2]**
295/205 . . . Radicals derived from carbonic acid **[5]**
295/21 . . . Radicals derived from sulfur analogues of carbonic acid **[5]**
295/215 . . . Radicals derived from nitrogen analogues of carbonic acid **[5]**

295/22 . with hetero atoms directly attached to ring nitrogen atoms **[2]**
295/24 . . Oxygen atoms **[5]**
295/26 . . Sulfur atoms **[5]**
295/28 . . Nitrogen atoms **[5]**
295/30 . . . non-acylated **[5]**
295/32 . . . acylated with carboxylic or carbonic acids, or their nitrogen or sulfur analogues **[5]**

Heterocyclic compounds having oxygen atoms, with or without sulfur, selenium, or tellurium atoms, as ring hetero atoms [2]

301/00 Preparation of oxiranes [2]
301/02 . Synthesis of the oxirane ring **[2]**
301/03 . . by oxidation of unsaturated compounds, or of mixtures of unsaturated and saturated compounds **[3]**
301/04 . . . with air or molecular oxygen **[2,3]**
301/06 . . . . in the liquid phase **[2,3]**
301/08 . . . . in the gaseous phase **[2,3]**
301/10 . . . . . with catalysts containing silver or gold **[2,3]**
301/12 . . . with hydrogen peroxide or inorganic peroxides or peracids **[2,3]**
301/14 . . . with organic peracids, or salts, anhydrides or esters thereof **[2,3]**
301/16 . . . . formed in situ, e.g. from carboxylic acids and hydrogen peroxide **[2,3]**
301/18 . . . . . from polybasic carboxylic acids **[2,3]**
301/19 . . . with organic hydroperoxides **[3]**
301/22 . . by oxidation of saturated compounds with air or molecular oxygen (of mixtures of unsaturated and saturated compounds C07D 301/04) **[2]**
301/24 . . by splitting-off Hal−Y from compounds containing the radical Hal−C−C−OY **[2]**
301/26 . . . Y being hydrogen **[2]**
301/27 . Condensation of epihalohydrins or halohydrins with compounds containing active hydrogen atoms (macromolecular compounds C08) **[3]**
301/28 . . by reaction with hydroxyl radicals **[2,3]**
301/30 . . by reaction with carboxyl radicals **[2,3]**
301/32 . Separation; Purification **[2]**
301/36 . Use of additives, e.g. for stabilisation **[3]**

303/00 Compounds containing three-membered rings having one oxygen atom as the only ring hetero atom [2]
303/02 . Compounds containing oxirane rings **[2]**
303/04 . . containing only hydrogen and carbon atoms in addition to the ring oxygen atoms **[2]**
303/06 . . . in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings **[2]**
303/08 . . with hydrocarbon radicals, substituted by halogen atoms, nitro radicals or nitroso radicals **[2]**
303/10 . . . in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings (steroids C07J) **[2]**
303/12 . . with hydrocarbon radicals, substituted by singly or doubly bound oxygen atoms **[2]**
303/14 . . . by free hydroxyl radicals **[2]**
303/16 . . . by esterified hydroxyl radicals **[2]**
303/17 . . . . containing oxirane rings condensed with carbocyclic ring systems having three or more relevant rings **[3]**
303/18 . . . by etherified hydroxyl radicals **[2]**
303/20 . . . . Ethers with hydroxy compounds containing no oxirane rings **[2]**
303/22 . . . . . with monohydroxy compounds **[2]**
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]

303/24 . . . . . with polyhydroxy compounds **[2]**
303/26 . . . . . having one or more free hydroxyl radicals **[2]**
303/27 . . . . . having all hydroxyl radicals etherified with oxirane containing compounds **[3]**
303/28 . . . . Ethers with hydroxy compounds containing oxirane rings **[2]**
303/30 . . . . . Ethers of oxirane-containing polyhydroxy compounds in which all hydroxyl radicals are etherified with oxirane-containing hydroxy compounds **[2]**
303/31 . . . . in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings **[3]**
303/32 . . . by aldehydo- or ketonic radicals **[2]**
303/34 . . with hydrocarbon radicals, substituted by sulfur, selenium, or tellurium atoms **[2]**
303/36 . . with hydrocarbon radicals, substituted by nitrogen atoms (nitro, nitroso radicals C07D 303/08) **[2]**
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]**
303/40 . . . by ester radicals **[2]**
303/42 . . . . Acyclic compounds having a chain of seven or more carbon atoms, e.g. epoxidised fats **[2]**
303/44 . . . . Esterified with oxirane-containing hydroxy compounds **[2]**
303/46 . . . by amide or nitrile radicals **[2]**
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]**

305/00 Heterocyclic compounds containing four-membered rings having one oxygen atom as the only ring hetero atoms [2]
305/02 . not condensed with other rings **[2]**
305/04 . . having no double bonds between ring members or between ring members and non-ring members **[2]**
305/06 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring atoms **[2]**
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]**
305/10 . . having one or more double bonds between ring members or between ring members and non-ring members **[2]**
305/12 . . . Beta-lactones **[2]**
305/14 . condensed with carbocyclic rings or ring systems **[2]**

307/00 Heterocyclic compounds containing five-membered rings having one oxygen atom as the only ring hetero atom [2]

307/02 . not condensed with other rings **[2]**

307/04 . . having no double bonds between ring members or between ring members and non-ring members **[2]**

307/06 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2]**

307/08 . . . . Preparation of tetrahydrofuran **[2]**

307/10 . . . with substituted hydrocarbon radicals attached to ring carbon atoms **[2]**

307/12 . . . . Radicals substituted by oxygen atoms **[2]**

307/14 . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2]**

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]**

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]**

307/20 . . . . Oxygen atoms **[2]**

307/22 . . . . Nitrogen atoms not forming part of a nitro radical **[2]**

307/24 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**

307/26 . . having one double bond between ring members or between a ring member and a non-ring member **[2]**

307/28 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**

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]**

307/32 . . . . Oxygen atoms **[2]**

307/33 . . . . . in position 2, the oxygen atom being in its keto or unsubstituted enol form **[5]**

307/34 . . having two or three double bonds between ring members or between ring members and non-ring members **[2]**

307/36 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2]**

307/38 . . . with substituted hydrocarbon radicals attached to ring carbon atoms **[2]**

307/40 . . . . Radicals substituted by oxygen atoms **[2]**

307/42 . . . . . Singly bound oxygen atoms (two oxygen atoms bound to the same carbon atom C07D 307/46) **[2]**

307/44 . . . . . Furfuryl alcohol **[2]**

307/45 . . . . . Oxygen atoms acylated by a cyclopropane containing carboxylic acyl radical, e.g. chrysanthemumates **[3]**

307/46 . . . . . Doubly bound oxygen atoms, or two oxygen atoms singly bound to the same carbon atom **[2]**

307/48 . . . . . Furfural **[2]**

307/50 . . . . . Preparation from natural products **[2]**

307/52 . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2]**

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]**

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]**

307/58 . . . . One oxygen atom, e.g. butenolide **[2]**

307/60 . . . . Two oxygen atoms, e.g. succinic anhydride **[2]**

307/62 . . . . Three oxygen atoms, e.g. ascorbic acid **[2]**

307/64 . . . . Sulfur atoms **[2]**

307/66 . . . . Nitrogen atoms (nitro radicals C07D 307/70) **[2]**

307/68 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**

307/70 . . . . Nitro radicals **[2]**

307/71 . . . . . attached in position 5 **[2]**

307/72 . . . . . with hydrocarbon radicals, substituted by nitrogen-containing radicals, attached in position 2 **[2]**

307/73 . . . . . by amino or imino, or substituted amino or imino radicals **[2]**

307/74 . . . . . by hydrazino or hydrazono or such substituted radicals **[2]**

307/75 . . . . . having carboxylic acyl radicals or their thio or nitrogen analogues directly attached to the hydrazino or hydrazono radical, e.g. hydrazides **[2]**

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]**

307/77 . ortho- or peri-condensed with carbocyclic rings or ring systems **[2]**

307/78 . . Benzo [b] furans; Hydrogenated benzo [b] furans **[2]**

307/79 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring **[2]**

307/80 . . . . Radicals substituted by oxygen atoms **[2]**

307/81 . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2]**

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]**

307/83 . . . . Oxygen atoms **[2]**

307/84 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**

307/85 . . . . . attached in position 2 **[2]**

307/86 . . . with an oxygen atom directly attached in position 7 **[2]**

307/87 . . Benzo [c] furans; Hydrogenated benzo [c] furans **[2]**

307/88 . . . with one oxygen atom directly attached in position 1 or 3 **[2]**

307/885 . . . . 3,3-Diphenylphthalides **[5]**

307/89 . . . with two oxygen atoms directly attached in positions 1 and 3 **[2]**
307/90 . . . with an oxygen atom in position 1 and a nitrogen atom in position 3, or vice versa **[2]**
307/91 . . Dibenzofurans; Hydrogenated dibenzofurans **[2]**
307/92 . . Naphthofurans; Hydrogenated naphthofurans **[2]**
307/93 . . condensed with a ring other than six-membered **[2]**
307/935 . . . Not further condensed cyclopenta [b] furans or hydrogenated cyclopenta [b] furans **[3]**
307/937 . . . . with hydrocarbon or substituted hydrocarbon radicals directly attached in position 2, e.g. prostacyclins **[5]**
307/94 . spiro-condensed with carbocyclic rings or ring systems, e.g. griseofulvins **[2]**

309/00 Heterocyclic compounds containing six-membered rings having one oxygen atom as the only ring hetero atom, not condensed with other rings [2]

309/02 . having no double bonds between ring members or between ring members and non-ring members **[2]**
309/04 . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2]**
309/06 . . . Radicals substituted by oxygen atoms **[2]**
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]**
309/10 . . . Oxygen atoms **[2]**
309/12 . . . . only hydrogen atoms and one oxygen atom directly attached to ring carbon atoms, e.g. tetrahydropyranyl ethers **[2]**
309/14 . . . Nitrogen atoms not forming part of a nitro radical **[2]**
309/16 . having one double bond between ring members or between a ring member and a non-ring member **[2]**
309/18 . . containing only hydrogen and carbon atoms in addition to the ring hetero atom **[2]**
309/20 . . with hydrogen atoms and substituted hydrocarbon radicals directly attached to ring carbon atoms **[2]**
309/22 . . . Radicals substituted by oxygen atoms **[2]**
309/24 . . . . Methylol radicals **[2]**
309/26 . . . . Carboxaldehyde radicals **[2]**
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]**
309/30 . . . Oxygen atoms, e.g. delta-lactones **[2]**
309/32 . having two double bonds between ring members or between ring members and non-ring members **[2]**
309/34 . having three or more double bonds between ring members or between ring members and non-ring members **[2]**
309/36 . . with oxygen atoms directly attached to ring carbon atoms **[2]**
309/38 . . . one oxygen atom in position 2 or 4, e.g. pyrones **[2]**
309/40 . . . Oxygen atoms attached in positions 3 and 4, e.g. maltol **[2]**

311/00 Heterocyclic compounds containing six-membered rings having one oxygen atom as the only hetero atom, condensed with other rings [2]

311/02 . ortho- or peri-condensed with carbocyclic rings or ring systems **[2]**
311/04 . . Benzo [b] pyrans, not hydrogenated in the carbocyclic ring **[2]**
311/06 . . . with oxygen or sulfur atoms directly attached in position 2 **[2]**
311/08 . . . . not hydrogenated in the hetero ring **[2]**
311/10 . . . . . unsubstituted **[2]**
311/12 . . . . . substituted in position 3 and unsubstituted in position 7 **[2]**
311/14 . . . . . substituted in position 6 and unsubstituted in position 7 **[2]**
311/16 . . . . . substituted in position 7 **[2]**
311/18 . . . . . substituted otherwise than in position 3 or 7 (substituted in position 4 by oxygen or sulfur C07D 311/42) **[2]**
311/20 . . . . hydrogenated in the hetero ring **[2]**
311/22 . . . with oxygen or sulfur atoms directly attached in position 4 **[2]**
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]**
311/26 . . . . with aromatic rings attached in position 2 or 3 **[2]**
311/28 . . . . . with aromatic rings attached in position 2 only **[2]**
311/30 . . . . . not hydrogenated in the hetero ring, e.g. flavones **[2]**
311/32 . . . . . 2, 3-Dihydro derivatives, e.g. flavanones **[2]**
311/34 . . . . . with aromatic rings attached in position 3 only **[2]**
311/36 . . . . . not hydrogenated in the hetero ring, e.g. isoflavones **[2]**
311/38 . . . . . 2, 3-Dihydro derivatives, e.g. isoflavanones **[2]**
311/40 . . . . . Separation, e.g. from natural material; Purification **[2]**
311/42 . . . with oxygen or sulfur atoms in positions 2 and 4 **[2]**
311/44 . . . . with one hydrogen atom in position 3 **[2]**
311/46 . . . . . unsubstituted in the carbocyclic ring **[2]**
311/48 . . . . . with two such benzopyran radicals linked together by a carbon chain **[2]**
311/50 . . . . . with elements other than carbon and hydrogen in position 3 **[2]**
311/52 . . . . . Enol-esters or -ethers, or sulfur analogues thereof **[2]**
311/54 . . . . . substituted in the carbocyclic ring **[2]**
311/56 . . . . without hydrogen atoms in position 3 **[2]**
311/58 . . . other than with oxygen or sulfur atoms in position 2 or 4 **[2]**
311/60 . . . . with aryl radicals attached in position 2 **[2]**
311/62 . . . . . with oxygen atoms directly attached in position 3, e.g. anthocyanidins **[2]**
311/64 . . . . with oxygen atoms directly attached in position 8 **[2]**
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]**
311/68 . . . . with nitrogen atoms directly attached in position 4 **[2]**
311/70 . . . . with two hydrocarbon radicals attached in position 2 and elements other than carbon and hydrogen in position 6 **[2]**
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]**

311/74 . . Benzo [b] pyrans, hydrogenated in the carbocyclic ring **[2]**
311/76 . . Benzo [c] pyrans **[2]**
311/78 . . Ring systems having three or more relevant rings **[2]**
311/80 . . . Dibenzopyrans; Hydrogenated dibenzopyrans **[2]**
311/82 . . . . Xanthenes **[2]**
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]**
311/86 . . . . . Oxygen atoms, e.g. xanthones **[2]**
311/88 . . . . . Nitrogen atoms **[2]**
311/90 . . . . . with hydrocarbon radicals, substituted by amino radicals, directly attached in position 9 **[2]**
311/92 . . . Naphthopyrans; Hydrogenated naphthopyrans **[2]**
311/94 . . condensed with rings other than six-membered or with ring systems containing such rings **[2,5]**
311/96 . spiro-condensed with carbocyclic rings or ring systems **[2]**

313/00 Heterocyclic compounds containing rings of more than six members having one oxygen atom as the only ring hetero atom [2]

313/02 . Seven-membered rings **[2]**
313/04 . . not condensed with other rings **[2]**
313/06 . . condensed with carbocyclic rings or ring systems **[2]**
313/08 . . . condensed with one six-membered ring **[2]**
313/10 . . . condensed with two six-membered rings **[2]**
313/12 . . . . [b, e]-condensed **[2]**
313/14 . . . . [b, f]-condensed **[2]**
313/16 . Eight-membered rings **[2]**
313/18 . . not condensed with other rings **[2]**
313/20 . . condensed with carbocyclic rings or ring systems **[2]**

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 to C07D 313/00 [2]

317/00 Heterocyclic compounds containing five-membered rings having two oxygen atoms as the only ring hetero atoms [2]

317/02 . having the hetero atoms in positions 1 and 2 **[2]**
317/04 . . not condensed with other rings **[2]**
317/06 . . condensed with carbocyclic rings or ring systems **[2]**
317/08 . having the hetero atoms in positions 1 and 3 **[2]**
317/10 . . not condensed with other rings **[2]**
317/12 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2]**
317/14 . . . with substituted hydrocarbon radicals attached to ring carbon atoms **[2]**
317/16 . . . . Radicals substituted by halogen atoms or nitro radicals **[2]**
317/18 . . . . Radicals substituted by singly bound oxygen or sulfur atoms **[2]**
317/20 . . . . . Free hydroxyl or mercaptan **[2]**
317/22 . . . . . etherified **[2]**
317/24 . . . . . esterified **[2]**
317/26 . . . . Radicals substituted by doubly bound oxygen or sulfur atoms or by two such atoms singly bound to the same carbon atom **[2]**
317/28 . . . . Radicals substituted by nitrogen atoms (nitro radicals C07D 317/16) **[2]**
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]**
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]**
317/34 . . . . Oxygen atoms **[2]**
317/36 . . . . . Alkylene carbonates; Substituted alkylene carbonates **[2]**
317/38 . . . . . Ethylene carbonate **[2]**
317/40 . . . . . Vinylene carbonate; Substituted vinylene carbonates **[2]**
317/42 . . . . Halogen atoms or nitro radicals **[2]**
317/44 . . ortho- or peri-condensed with carbocyclic rings or ring systems **[2]**
317/46 . . . condensed with one six-membered ring **[2]**
317/48 . . . . Methylenedioxybenzenes or hydrogenated methylenedioxybenzenes, unsubstituted on the hetero ring **[2]**
317/50 . . . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to atoms of the carbocyclic ring **[2]**
317/52 . . . . . Radicals substituted by halogen atoms or nitro radicals **[2]**
317/54 . . . . . Radicals substituted by oxygen atoms **[2]**
317/56 . . . . . Radicals substituted by sulfur atoms **[2]**
317/58 . . . . . Radicals substituted by nitrogen atoms (nitro radicals C07D 317/52) **[2]**
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]**
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]**
317/64 . . . . . Oxygen atoms **[2]**
317/66 . . . . . Nitrogen atoms not forming part of a nitro radical **[2]**
317/68 . . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**
317/70 . . . condensed with ring systems containing two or more relevant rings **[2]**
317/72 . . spiro-condensed with carbocyclic rings **[2]**

319/00 Heterocyclic compounds containing six-membered rings having two oxygen atoms as the only ring hetero atoms [2]

319/02 . 1,2-Dioxanes; Hydrogenated 1,2-dioxanes **[2]**
319/04 . 1,3-Dioxanes; Hydrogenated 1,3-dioxanes **[2]**
319/06 . . not condensed with other rings **[2]**
319/08 . . condensed with carbocyclic rings or ring systems **[2]**
319/10 . 1,4-Dioxanes; Hydrogenated 1,4-dioxanes **[2]**

319/12 . . not condensed with other rings **[2]**
319/14 . . condensed with carbocyclic rings or ring systems **[2]**
319/16 . . . condensed with one six-membered ring **[2]**
319/18 . . . . Ethylenedioxybenzenes, not substituted on the hetero ring **[2]**
319/20 . . . . with substituents attached to the hetero ring **[2]**
319/22 . . . condensed with one naphthalene or hydrogenated naphthalene ring system **[2]**
319/24 . . . [b, e]-condensed with two six-membered rings **[2]**

321/00 Heterocyclic compounds containing rings having two oxygen atoms as the only ring hetero atoms, not provided for by groups C07D 317/00 to C07D 319/00 [2]

321/02 . Seven-membered rings **[2]**
321/04 . . not condensed with other rings **[2]**
321/06 . . . 1, 3-Dioxepines; Hydrogenated 1,3-dioxepines **[2]**
321/08 . . . 1, 4-Dioxepines; Hydrogenated 1,4-dioxepines **[2]**
321/10 . . condensed with carbocyclic rings or ring systems **[2]**
321/12 . Eight-membered rings **[2]**

323/00 Heterocyclic compounds containing more than two oxygen atoms as the only ring hetero atoms [2]

323/02 . Five-membered rings **[2]**
323/04 . Six-membered rings **[2]**
323/06 . . Trioxane **[2]**

325/00 Heterocyclic compounds containing rings having oxygen as the only ring hetero atom according to more than one of groups C07D 303/00 to C07D 323/00 [2]

327/00 Heterocyclic compounds containing rings having oxygen and sulfur atoms as the only ring hetero atoms [2]

327/02 . one oxygen atom and one sulfur atom **[2]**
327/04 . . Five-membered rings **[2]**
327/06 . . Six-membered rings **[2]**
327/08 . . . [b, e]-condensed with two six-membered carbocyclic rings **[2]**
327/10 . two oxygen atoms and one sulfur atom, e.g. cyclic sulfates **[2]**

329/00 Heterocyclic compounds containing rings having oxygen and selenium or oxygen and tellurium atoms as the only ring hetero atoms [2]

<u>Heterocyclic compounds having sulfur, selenium, or tellurium atoms as the only ring hetero atoms</u> [2]

331/00 Heterocyclic compounds containing rings of less than five members, having one sulfur atom as the only ring hetero atom [2]

331/02 . Three-membered rings **[2]**
331/04 . Four-membered rings **[2]**

333/00 Heterocyclic compounds containing five-membered rings having one sulfur atom as the only ring hetero atom [2]

333/02 . not condensed with other rings **[2]**
333/04 . . not substituted on the ring sulfur atom **[2]**
333/06 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring carbon atoms **[2]**
333/08 . . . . Hydrogen atoms or radicals containing only hydrogen and carbon atoms **[2]**
333/10 . . . . . Thiophene **[2]**
333/12 . . . . Radicals substituted by halogen atoms or nitro or nitroso radicals **[2]**
333/14 . . . . Radicals substituted by singly bound hetero atoms other than halogen **[2]**
333/16 . . . . . by oxygen atoms **[2]**
333/18 . . . . . by sulfur atoms **[2]**
333/20 . . . . . by nitrogen atoms (nitro, nitroso radicals C07D 333/12) **[2]**
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]**
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]**
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]**
333/28 . . . . Halogen atoms **[2]**
333/30 . . . . Hetero atoms other than halogen **[2]**
333/32 . . . . . Oxygen atoms **[2]**
333/34 . . . . . Sulfur atoms **[2]**
333/36 . . . . . Nitrogen atoms (nitro, nitroso radicals C07D 333/42) **[2]**
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]**
333/40 . . . . . Thiophene-2-carboxylic acid **[2]**
333/42 . . . . with nitro or nitroso radicals directly attached to ring carbon atoms **[2]**
333/44 . . . . . attached in position 5 **[2]**
333/46 . . substituted on the ring sulfur atom **[2]**
333/48 . . . by oxygen atoms **[2]**
333/50 . condensed with carbocyclic rings or ring systems **[2]**
333/52 . . Benzo [b] thiophenes; Hydrogenated benzo [b] thiophenes **[2]**
333/54 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring **[2]**
333/56 . . . . Radicals substituted by oxygen atoms **[2]**
333/58 . . . . Radicals substituted by nitrogen atoms **[2]**
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]**
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]**
333/64 . . . . Oxygen atoms **[2]**
333/66 . . . . Nitrogen atoms not forming part of a nitro radical **[2]**
333/68 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**
333/70 . . . . . attached in position 2 **[2]**

333/72 . . Benzo [c] thiophenes; Hydrogenated benzo [c] thiophenes **[2]**
333/74 . . Naphthothiophenes **[2]**
333/76 . . Dibenzothiophenes **[2]**
333/78 . . condensed with rings other than six-membered or with ring systems containing such rings **[2,5]**
333/80 . . . Seven-membered rings **[2]**

335/00 Heterocyclic compounds containing six-membered rings having one sulfur atom as the only ring hetero atom [2]

335/02 . not condensed with other rings **[2]**
335/04 . condensed with carbocyclic rings or ring systems **[2]**
335/06 . . Benzothiopyrans; Hydrogenated benzothiopyrans **[2]**
335/08 . . Naphthothiopyrans; Hydrogenated naphthothiopyrans **[2]**
335/10 . . Dibenzothiopyrans; Hydrogenated dibenzothiopyrans **[2]**
335/12 . . . Thioxanthenes **[2]**
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]**
335/16 . . . . . Oxygen atoms, e.g. thioxanthones **[2]**
335/18 . . . . . Nitrogen atoms **[2]**
335/20 . . . . with hydrocarbon radicals, substituted by amino radicals, directly attached in position 9 **[2]**

337/00 Heterocyclic compounds containing rings of more than six members having one sulfur atom as the only ring hetero atom [2]

337/02 . Seven-membered rings **[2]**
337/04 . . not condensed with other rings **[2]**
337/06 . . condensed with carbocyclic rings or ring systems **[2]**
337/08 . . . condensed with one six-membered ring **[2]**
337/10 . . . condensed with two six-membered rings **[2]**
337/12 . . . . [b, e]-condensed **[2]**
337/14 . . . . [b, f]-condensed **[2]**
337/16 . Eight-membered rings **[2]**

339/00 Heterocyclic compounds containing rings having two sulfur atoms as the only ring hetero atoms [2]

339/02 . Five-membered rings **[2]**
339/04 . . having the hetero atoms in positions 1 and 2, e.g. lipoic acid **[2]**
339/06 . . having the hetero atoms in positions 1 and 3, e.g. cyclic dithiocarbonates **[2]**
339/08 . Six-membered rings **[2]**

341/00 Heterocyclic compounds containing rings having three or more sulfur atoms as the only ring hetero atoms [2]

343/00 Heterocyclic compounds containing rings having sulfur and selenium or sulfur and tellurium atoms as the only ring hetero atoms [2]

345/00 Heterocyclic compounds containing rings having selenium or tellurium atoms as the only ring hetero atoms [2]

347/00 Heterocyclic compounds containing rings having halogen atoms as ring hetero atoms [2]

Heterocyclic compounds containing two or more hetero rings [2]

Note

Groups C07D 401/00 to C07D 421/00 cover compounds containing two or more relevant hetero rings at least two of which are covered by different main groups of groups C07D 203/00 to C07D 347/00, neither condensed among themselves nor condensed with a common carbocyclic ring or ring system. **[2]**

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]

401/02 . containing two hetero rings **[2]**
401/04 . . directly linked by a ring-member-to-ring- member bond **[2]**
401/06 . . linked by a carbon chain containing only aliphatic carbon atoms **[2]**
401/08 . . linked by a carbon chain containing alicyclic rings **[2]**
401/10 . . linked by a carbon chain containing aromatic rings **[2]**
401/12 . . linked by a chain containing hetero atoms as chain links **[2]**
401/14 . containing three or more hetero rings **[2]**

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]

403/02 . containing two hetero rings **[2]**
403/04 . . directly linked by a ring-member-to-ring- member bond **[2]**
403/06 . . linked by a carbon chain containing only aliphatic carbon atoms **[2]**
403/08 . . linked by a carbon chain containing alicyclic rings **[2]**
403/10 . . linked by a carbon chain containing aromatic rings **[2]**
403/12 . . linked by a chain containing hetero atoms as chain links **[2]**
403/14 . containing three or more hetero rings **[2]**

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]

405/02 . containing two hetero rings **[2]**
405/04 . . directly linked by a ring-member-to-ring- member bond **[2]**
405/06 . . linked by a carbon chain containing only aliphatic carbon atoms **[2]**
405/08 . . linked by a carbon chain containing alicyclic rings **[2]**
405/10 . . linked by a carbon chain containing aromatic rings **[2]**
405/12 . . linked by a chain containing hetero atoms as chain links **[2]**
405/14 . containing three or more hetero rings **[2]**

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]

407/02 . containing two hetero rings **[2]**

407/04 . . directly linked by a ring-member-to-ring- member bond **[2]**
407/06 . . linked by a carbon chain containing only aliphatic carbon atoms **[2]**
407/08 . . linked by a carbon chain containing alicyclic rings **[2]**
407/10 . . linked by a carbon chain containing aromatic rings **[2]**
407/12 . . linked by a chain containing hetero atoms as chain links **[2]**
407/14 . containing three or more hetero rings **[2]**

409/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having sulfur atoms as the only ring hetero atoms [2]

409/02 . containing two hetero rings **[2]**
409/04 . . directly linked by a ring-member-to-ring- member bond **[2]**
409/06 . . linked by a carbon chain containing only aliphatic carbon atoms **[2]**
409/08 . . linked by a carbon chain containing alicyclic rings **[2]**
409/10 . . linked by a carbon chain containing aromatic rings **[2]**
409/12 . . linked by a chain containing hetero atoms as chain links **[2]**
409/14 . containing three or more hetero rings **[2]**

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]

411/02 . containing two hetero rings **[2]**
411/04 . . directly linked by a ring-member-to-ring- member bond **[2]**
411/06 . . linked by a carbon chain containing only aliphatic carbon atoms **[2]**
411/08 . . linked by a carbon chain containing alicyclic rings **[2]**
411/10 . . linked by a carbon chain containing aromatic rings **[2]**
411/12 . . linked by a chain containing hetero atoms as chain links **[2]**
411/14 . containing three or more hetero rings **[2]**

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]

413/02 . containing two hetero rings **[2]**
413/04 . . directly linked by a ring-member-to-ring- member bond **[2]**
413/06 . . linked by a carbon chain containing only aliphatic carbon atoms **[2]**
413/08 . . linked by a carbon chain containing alicyclic rings **[2]**
413/10 . . linked by a carbon chain containing aromatic rings **[2]**
413/12 . . linked by a chain containing hetero atoms as chain links **[2]**
413/14 . containing three or more hetero rings **[2]**

415/00 Heterocyclic compounds containing the thiamine skeleton [2]

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]

417/02 . containing two hetero rings **[2]**
417/04 . . directly linked by a ring-member-to-ring- member bond **[2]**
417/06 . . linked by a carbon chain containing only aliphatic carbon atoms **[2]**
417/08 . . linked by a carbon chain containing alicyclic rings **[2]**
417/10 . . linked by a carbon chain containing aromatic rings **[2]**
417/12 . . linked by a chain containing hetero atoms as chain links **[2]**
417/14 . containing three or more hetero rings **[2]**

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]

419/02 . containing two hetero rings **[2]**
419/04 . . directly linked by a ring-member-to-ring- member bond **[2]**
419/06 . . linked by a carbon chain containing only aliphatic carbon atoms **[2]**
419/08 . . linked by a carbon chain containing alicyclic rings **[2]**
419/10 . . linked by a carbon chain containing aromatic rings **[2]**
419/12 . . linked by a chain containing hetero atoms as chain links **[2]**
419/14 . containing three or more hetero rings **[2]**

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]

421/02 . containing two hetero rings **[2]**
421/04 . . directly linked by a ring-member-to-ring- member bond **[2]**
421/06 . . linked by a carbon chain containing only aliphatic carbon atoms **[2]**
421/08 . . linked by a carbon chain containing alicyclic rings **[2]**
421/10 . . linked by a carbon chain containing aromatic rings **[2]**
421/12 . . linked by a chain containing hetero atoms as chain links **[2]**
421/14 . containing three or more hetero rings **[2]**

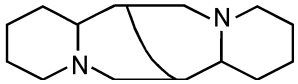
Heterocyclic compounds containing condensed hetero ring systems [2]

Notes

(1) Groups C07D 451/00 to C07D 517/00 cover 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]**

(2) For the purpose of classification in groups C07D 451/00 to C07D 519/00, the degree of hydrogenation of the ring system is not taken into consideration. **[2]**

(3) For the purpose of classification in groups C07D 451/00 to C07D 463/00, C07D 473/00 to C07D 477/00, C07D 489/00, C07D 499/00 to 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. **[3,5]**

(4) In groups C07D 471/00, C07D 487/00, C07D 491/00 to C07D 498/00 or C07D 513/00 to C07D 517/00, the subdivision is based on the number of relevant hetero rings. **[3]**

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]

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]**

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]**

451/06 . . . Oxygen atoms **[2]**

451/08 . . . . Diarylmethoxy radicals **[2]**

451/10 . . . . acylated by aliphatic or araliphatic carboxylic acids, e.g. atropine, scopolamine **[2]**

451/12 . . . . acylated by aromatic or heteroaromatic carboxylic acids, e.g. cocaine **[2]**

451/14 . containing 9-azabicyclo [3.3.1] nonane ring systems, e.g. granatane, 2-aza-adamantane; Cyclic acetals thereof **[2]**

453/00 Heterocyclic compounds containing quinuclidine or iso-quinuclidine ring systems, e.g. quinine alkaloids [2]

453/02 . containing not further condensed quinuclidine ring systems **[2]**

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]**

453/06 . containing iso-quinuclidine ring systems **[2]**

455/00 Heterocyclic compounds containing quinolizine ring systems, e.g. emetine alkaloids, protoberberine; Alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine [2]

455/02 . containing not further condensed quinolizine ring systems **[2]**

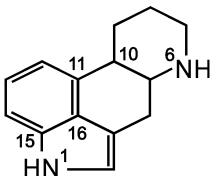
455/03 . containing quinolizine ring systems directly condensed with at least one six-membered carbocyclic ring, e.g. protoberberine; Alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine **[3]**

455/04 . . containing a quinolizine ring system condensed with only one six-membered carbocyclic ring, e.g. julolidine **[2,3]**

455/06 . . . containing benzo [a] quinolizine ring systems **[2,3]**

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]**

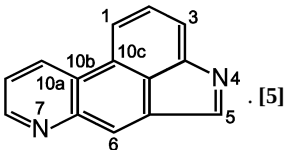
457/00 Heterocyclic compounds containing indolo [4, 3-f, g] quinoline ring systems, e.g. derivatives of ergoline, of the formula:



, e.g. lysergic acid (compounds of the cyclic peptide type derived from ergotamane C07D 519/02) **[2]**

Note

The numbering may be different according to the RING INDEX and given by the formula:



. **[5]**

457/02 . with hydrocarbon or substituted hydrocarbon radicals, attached in position 8 **[2]**

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]**

457/06 . . Lysergic acid amides **[2]**

457/08 . . . in which the amide nitrogen is a member of a heterocyclic ring **[2]**

457/10 . with hetero atoms directly attached in position 8 **[2]**

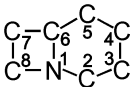
457/12 . . Nitrogen atoms **[2]**

457/14 . containing indolo [4, 3-f, g] quinoline ring systems condensed with carbocyclic rings or ring systems **[3]**

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]

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]**

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]

463/02 . Preparation (by microbiological processes C12P 17/18) **[6]**

463/04 . . by forming the ring or condensed ring systems **[6]**

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]**

463/08 . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6]**

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]**

463/12 . . with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached in position 7 **[6]**

463/14 . . with hetero atoms directly attached in position 7 **[6]**

463/16 . . . Nitrogen atoms **[6]**

463/18 . . . . further acylated by radicals derived from carboxylic acids or by nitrogen or sulfur analogues thereof **[6]**

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]**

463/22 . . . . . further substituted by nitrogen atoms **[6]**

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 to C07D 463/00 [2,5]

471/02 . in which the condensed system contains two hetero rings **[2]**

471/04 . . Ortho-condensed systems (carbacephams, e.g. homothienamycins, C07D 463/00) **[2,5]**

471/06 . . Peri-condensed systems **[2]**

471/08 . . Bridged systems **[2]**

471/10 . . Spiro-condensed systems **[2]**

471/12 . in which the condensed system contains three hetero rings **[2]**

471/14 . . Ortho-condensed systems **[2]**

471/16 . . Peri-condensed systems **[2]**

471/18 . . Bridged systems **[2]**

471/20 . . Spiro-condensed systems **[2]**

471/22 . in which the condensed systems contains four or more hetero rings **[2]**

473/00 Heterocyclic compounds containing purine ring systems [2]

473/02 . with oxygen, sulfur, or nitrogen atoms directly attached in positions 2 and 6 **[2]**

473/04 . . two oxygen atoms **[2]**

473/06 . . . with radicals containing only hydrogen and carbon atoms, attached in position 1 or 3 **[2]**

473/08 . . . . with methyl radicals in positions 1 and 3, e.g. theophylline **[2]**

473/10 . . . . with methyl radicals in positions 3 and 7, e.g. theobromine **[2]**

473/12 . . . . with methyl radicals in positions 1, 3, and 7, e.g. caffeine **[2]**

473/14 . . . . with two methyl radicals in positions 1 and 3 and two methyl radicals in positions 7, 8, or 9 **[2]**

473/16 . . two nitrogen atoms **[2]**

473/18 . . one oxygen and one nitrogen atom, e.g. guanine **[2]**

473/20 . . two sulfur atoms **[2]**

473/22 . . one oxygen and one sulfur atom **[2]**

473/24 . . one nitrogen and one sulfur atom **[2]**

473/26 . with an oxygen, sulfur, or nitrogen atom directly attached in position 2 or 6, but not in both **[2]**

473/28 . . Oxygen atom **[2]**

473/30 . . . attached in position 6, e.g. hypoxanthine **[2]**

473/32 . . Nitrogen atom **[2]**

473/34 . . . attached in position 6, e.g. adenine **[2]**

473/36 . . Sulfur atom **[2]**

473/38 . . . attached in position 6 **[2]**

473/40 . with halogen atoms or perhalogeno-alkyl radicals directly attached in position 2 or 6 **[2]**

475/00 Heterocyclic compounds containing pteridine ring systems [2]

475/02 . with an oxygen atom directly attached in position 4 **[2]**

475/04 . . with a nitrogen atom directly attached in position 2 **[2]**

475/06 . with a nitrogen atom directly attached in position 4 **[2]**

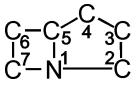
475/08 . . with a nitrogen atom directly attached in position 2 **[2]**

475/10 . . with an aromatic or hetero-aromatic ring directly attached in position 2 **[2]**

475/12 . containing pteridine ring systems condensed with carbocyclic rings or ring systems **[3]**

475/14 . . Benz [g] pteridines, e.g. riboflavin **[3]**

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]

477/02 . Preparation (by microbiological processes C12P 17/18) **[6]**

477/04 . . by forming the ring or condensed ring systems **[6]**

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]**

477/08 . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6]**

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]**

477/12 . . with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 6 **[6]**

477/14 . . . with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 3 **[6]**

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]**

477/18 . . . . Oxygen atoms **[6]**

477/20 . . . . Sulfur atoms **[6]**

477/22 . . . . Nitrogen atoms **[6]**

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]**

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]**

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 to C07D 477/00 [2,5]

487/02 . in which the condensed system contains two hetero rings **[2]**

487/04 . . Ortho-condensed systems (carbapenams, e.g. thienamycins, C07D 477/00) **[2,5]**

487/06 . . Peri-condensed systems **[2]**

487/08 . . Bridged systems **[2]**

487/10 . . Spiro-condensed systems **[2]**

487/12 . in which the condensed system contains three hetero rings **[2]**

487/14 . . Ortho-condensed systems **[2]**

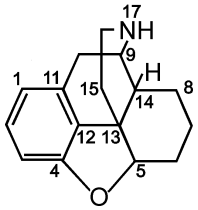
487/16 . . Peri-condensed systems **[2]**

487/18 . . Bridged systems **[2]**

487/20 . . Spiro-condensed systems **[2]**

487/22 . in which the condensed system contains four or more hetero rings **[2]**

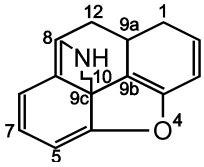
489/00 Heterocyclic compounds containing 4aH-8, 9 c-Iminoethano-phenanthro [4, 5-b, c, d] furan ring systems, e.g. derivatives of [4, 5-epoxy]-morphinan of the formula:



[2]

Note

The numbering may be different according to the RING INDEX and given by the formula:



. **[5]**

489/02 . with oxygen atoms attached in positions 3 and 6, e.g. morphine, morphinone **[2]**

489/04 . . Salts; Organic complexes **[2]**

489/06 . with a hetero atom directly attached in position 14 **[2]**

489/08 . . Oxygen atom **[2]**

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]**

489/10 . . with a bridge between positions 6 and 14 **[2,3]**

489/12 . . . the bridge containing only two carbon atoms **[2,3]**

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 to C07D 459/00, C07D 463/00, C07D 477/00 or C07D 489/00 [2]

491/02 . in which the condensed system contains two hetero rings **[2]**

491/04 . . Ortho-condensed systems **[2]**

491/044 . . . with only one oxygen atom as ring hetero atom in the oxygen-containing ring **[3]**

491/048 . . . . the oxygen-containing ring being five-membered **[3]**

491/052 . . . . the oxygen-containing ring being six-membered **[3]**

491/056 . . . with two or more oxygen atoms as ring hetero atoms in the oxygen-containing ring **[3]**

491/06 . . Peri-condensed systems **[2]**

491/08 . . Bridged systems **[2]**

491/10 . . Spiro-condensed systems **[2]**

491/107 . . . with only one oxygen atom as ring hetero atom in the oxygen-containing ring **[3]**

491/113 . . . with two or more oxygen atoms as ring hetero atoms in the oxygen-containing ring **[3]**

491/12 . in which the condensed system contains three hetero rings **[2]**

491/14 . . Ortho-condensed systems (alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine, C07D 455/03) **[2]**

491/147 . . . the condensed system containing one ring with oxygen as ring hetero atom and two rings with nitrogen as ring hetero atom **[3]**

491/153 . . . the condensed system containing two rings with oxygen as ring hetero atom and one ring with nitrogen as ring hetero atom **[3]**

491/16 . . Peri-condensed systems **[2]**

491/18 . . Bridged systems (3-oxa-9-azatricyclo [3.3.1.02,4] nonane ring systems, e.g. scopolamine, C07D 451/00) **[2]**

491/20 . . Spiro-condensed systems **[2]**

491/22 . in which the condensed system contains four or more hetero rings **[2]**

493/00 Heterocyclic compounds containing oxygen atoms as the only ring hetero atoms in the condensed system [2]

493/02 . in which the condensed system contains two hetero rings **[2]**

493/04 . . Ortho-condensed systems **[2]**

493/06 . . Peri-condensed systems **[2]**

493/08 . . Bridged systems **[2]**

493/10 . . Spiro-condensed systems **[2]**

493/12 . in which the condensed system contains three hetero rings **[2]**

493/14 . . Ortho-condensed systems **[2]**

493/16 . . Peri-condensed systems **[2]**

493/18 . . Bridged systems **[2]**

493/20 . . Spiro-condensed systems **[2]**

493/22 . in which the condensed system contains four or more hetero rings **[2]**

495/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having sulfur atoms as the only ring hetero atoms [2]

495/02 . in which the condensed system contains two hetero rings **[2]**

495/04 . . Ortho-condensed systems **[2]**
495/06 . . Peri-condensed systems **[2]**
495/08 . . Bridged systems **[2]**
495/10 . . Spiro-condensed systems **[2]**
495/12 . in which the condensed system contains three hetero rings **[2]**
495/14 . . Ortho-condensed systems **[2]**
495/16 . . Peri-condensed systems **[2]**
495/18 . . Bridged systems **[2]**
495/20 . . Spiro-condensed systems **[2]**
495/22 . in which the condensed system contains four or more hetero rings **[2]**

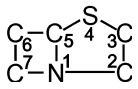
497/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having oxygen and sulfur atoms as the only ring hetero atoms [2]

497/02 . in which the condensed system contains two hetero rings **[2]**
497/04 . . Ortho-condensed systems **[2]**
497/06 . . Peri-condensed systems **[2]**
497/08 . . Bridged systems **[2]**
497/10 . . Spiro-condensed systems **[2]**
497/12 . in which the condensed system contains three hetero rings **[2]**
497/14 . . Ortho-condensed systems **[2]**
497/16 . . Peri-condensed systems **[2]**
497/18 . . Bridged systems **[2]**
497/20 . . Spiro-condensed systems **[2]**
497/22 . in which the condensed system contains four or more hetero rings **[2]**

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]**

498/02 . in which the condensed system contains two hetero rings **[2]**
498/04 . . Ortho-condensed systems **[2]**
498/06 . . Peri-condensed systems **[2]**
498/08 . . Bridged systems **[2]**
498/10 . . Spiro-condensed systems **[2]**
498/12 . in which the condensed system contains three hetero rings **[2]**
498/14 . . Ortho-condensed systems **[2]**
498/16 . . Peri-condensed systems **[2]**
498/18 . . Bridged systems **[2]**
498/20 . . Spiro-condensed systems **[2]**
498/22 . in which the condensed system contains four or more hetero rings **[2]**

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]**

499/04 . Preparation **[2,6]**
499/06 . . by forming the ring or condensed ring systems (by microbiological processes C12P 37/00) **[2,6]**
499/08 . . Modification of a carboxyl radical directly attached in position 2, e.g. esterification **[2,6]**
499/10 . . Modification of an amino radical directly attached in position 6 **[2,6]**
499/12 . . . Acylation **[2,6]**
499/14 . . Preparation of salts **[2,6]**
499/16 . . . of alkali or alkaline earth metals **[2,6]**
499/18 . . Separation; Purification **[2,6]**
499/20 . . . via salts with organic bases **[2,6]**
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]**
499/22 . . Salts with organic bases; Complexes with organic compounds **[2]**
499/24 . . . with acyclic or carbocyclic compounds containing amino radicals **[2]**
499/26 . . . with heterocyclic compounds **[2]**
499/28 . . with modified 2-carboxyl group **[2]**
499/30 . . . Acid anhydride **[2]**
499/32 . . . Esters **[2]**
499/34 . . . Thio-acid; Esters thereof **[2]**
499/36 . . . . O-esters **[2]**
499/38 . . . . S-esters **[2]**
499/40 . . . Amides; Hydrazides; Azides **[2]**
499/42 . . Compounds with a free primary amino radical attached in position 6 **[2]**
499/44 . . Compounds with an amino radical acylated by carboxylic acids, attached in position 6 **[2]**
499/46 . . . with acyclic hydrocarbon radicals or such radicals substituted by carbocyclic or heterocyclic rings, attached to the carboxamido radical **[2]**
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]**
499/50 . . . . substituted in beta-position to the carboxamido radical **[2]**
499/52 . . . . . by oxygen or sulfur atoms **[2]**
499/54 . . . . . by nitrogen atoms **[2]**
499/56 . . . . . by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2]**
499/58 . . . . substituted in alpha-position to the carboxamido radical **[2]**
499/60 . . . . . by oxygen atoms **[2]**
499/62 . . . . . by sulfur atoms **[2]**
499/64 . . . . . by nitrogen atoms **[2]**
499/66 . . . . . with alicyclic rings as additional substituents on the carbon chain **[2]**
499/68 . . . . . with aromatic rings as additional substituents on the carbon chain **[2]**
499/70 . . . . . with hetero rings as additional substituents on the carbon chain **[2]**
499/72 . . . . . by carbon atoms having three bonds to hetero atoms **[2]**
499/74 . . . with carbocyclic rings directly attached to the carboxamido radical **[2]**
499/76 . . . with hetero rings directly attached to the carboxamido radical **[2]**
499/78 . . Compounds with an amino radical, acylated by carbonic acid, or by nitrogen or sulfur analogues thereof, attached in position 6 **[2]**

499/80 . . Compounds with a nitrogen-containing hetero ring, attached with the ring nitrogen atom in position 6 **[2]**

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]**

499/861 . . with a hydrocarbon radical or a substituted hydrocarbon radical, directly attached in position 6 **[6]**

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]**

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]**

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]**

499/881 . . with a hydrogen atom or an unsubstituted hydrocarbon radical, attached in position 3 **[6]**

499/883 . . with a substituted hydrocarbon radical attached in position 3 **[6]**

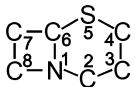
499/887 . . with a hetero atom or a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 3 **[6]**

499/893 . . with a hetero ring or a condensed hetero ring system, directly attached in position 3 **[6]**

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]**

499/90 . further condensed with carbocyclic rings or ring systems **[5]**

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]**

501/02 . Preparation **[2]**

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]**

501/06 . . . Acylation of 7-aminocephalosporanic acid **[2]**

501/08 . . by forming the ring or condensed ring systems (by microbiological processes C12P 35/00) **[2]**

501/10 . . . from compounds containing the penicillin ring system **[2]**

501/12 . . Separation; Purification **[2]**

501/14 . Compounds having a nitrogen atom directly attached in position 7 **[2]**

501/16 . . with a double bond between positions 2 and 3 **[2]**

501/18 . . . 7-Aminocephalosporanic or substituted 7-aminocephalosporanic acids **[2]**

501/20 . . . 7-Acylaminocephalosporanic or substituted 7-acylaminocephalosporanic acids in which the acyl radicals are derived from carboxylic acids **[2]**

501/22 . . . . with radicals containing only hydrogen and carbon atoms, attached in position 3 **[2]**

501/24 . . . . with hydrocarbon radicals, substituted by hetero atoms or hetero rings, attached in position 3 **[2]**

501/26 . . . . . Methylene radicals, substituted by oxygen atoms; Lactones thereof with the 2-carboxyl group **[2]**

501/28 . . . . . with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms **[2]**

501/30 . . . . . with the 7-amino-radical acylated by an araliphatic carboxylic acid **[2]**

501/32 . . . . . with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms **[2]**

501/34 . . . . . with the 7-amino radical acylated by carboxylic acids containing hetero rings **[2]**

501/36 . . . . . Methylene radicals, substituted by sulfur atoms **[2]**

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]**

501/40 . . . . . with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms **[2]**

501/42 . . . . . with the 7-amino radical acylated by an araliphatic carboxylic acid **[2]**

501/44 . . . . . with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms **[2]**

501/46 . . . . . with the 7-amino radical acylated by carboxylic acids containing hetero rings **[2]**

501/48 . . . . . Methylene radicals, substituted by hetero rings (C07D 501/38 to C07D 501/46 take precedence) **[2]**

501/50 . . . . . with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms **[2]**

501/52 . . . . . with the 7-amino radical acylated by an araliphatic carboxylic acid **[2]**

501/54 . . . . . with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms **[2]**

501/56 . . . . . with the 7-amino radical acylated by carboxylic acids containing hetero rings **[2]**

501/57 . . . . with a further substituent in position 7, e.g. cephamycines **[3]**

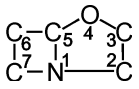
501/58 . . . with a nitrogen atom, which is a member of a hetero ring, attached in position 7 **[2]**

501/59 . . . with hetero atoms directly attached in position 3 **[3]**

501/60 . . with a double bond between positions 3 and 4 **[2]**

501/62 . Compounds further condensed with a carbocyclic ring or ring system **[3]**

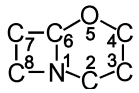
503/00 **Heterocyclic compounds containing 4-oxa-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:**



, 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]**

503/02 . Preparation (by microbiological processes C12P 17/18) **[6]**
503/04 . . by forming the ring or condensed ring systems **[6]**
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]**
503/08 . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6]**
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]**
503/12 . . unsubstituted in position 6 **[6]**
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]**
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]**
503/18 . . . . . by oxygen atoms **[6]**
503/20 . . . . . by sulfur atoms **[6]**
503/22 . . . . . by nitrogen atoms **[6]**

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]**

505/02 . Preparation (by microbiological processes C12P 17/18) **[6]**
505/04 . . by forming the ring or condensed ring systems **[6]**
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]**
505/08 . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6]**
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]**
505/12 . . substituted in position 7 **[6]**
505/14 . . . with hetero atoms directly attached in position 7 **[6]**
505/16 . . . . Nitrogen atoms **[6]**
505/18 . . . . . further acylated by radicals derived from carboxylic acids or by nitrogen or sulfur analogues thereof **[6]**
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]**
505/22 . . . . . further substituted by singly-bound nitrogen atoms **[6]**
505/24 . . . . . further substituted by doubly-bound nitrogen atoms **[6]**

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 to C07D 505/00**; **Such ring systems being further condensed [6]**

507/02 . containing 3-oxa-1-azabicyclo [3.2.0] heptane ring systems **[6]**
507/04 . containing 2-oxa-1-azabicyclo [4.2.0] octane ring systems **[6]**
507/06 . containing 3-oxa-1-azabicyclo [4.2.0] octane ring systems **[6]**
507/08 . containing 4-oxa-1-azabicyclo [4.2.0] octane ring systems **[6]**

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 to C07D 507/00 [2,6]**

513/02 . in which the condensed system contains two hetero rings **[2]**
513/04 . . Ortho-condensed systems **[2]**
513/06 . . Peri-condensed systems **[2]**
513/08 . . Bridged systems **[2]**
513/10 . . Spiro-condensed systems **[2]**
513/12 . in which the condensed system contains three hetero rings **[2]**
513/14 . . Ortho-condensed systems **[2]**
513/16 . . Peri-condensed systems **[2]**
513/18 . . Bridged systems **[2]**
513/20 . . Spiro-condensed systems **[2]**
513/22 . in which the condensed system contains four or more hetero rings **[2]**

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 to C07D 507/00 [2]**

515/02 . in which the condensed system contains two hetero rings **[2]**
515/04 . . Ortho-condensed systems **[2]**
515/06 . . Peri-condensed systems **[2]**
515/08 . . Bridged systems **[2]**
515/10 . . Spiro-condensed systems **[2]**
515/12 . in which the condensed system contains three hetero rings **[2]**
515/14 . . Ortho-condensed systems **[2]**
515/16 . . Peri-condensed systems **[2]**
515/18 . . Bridged systems **[2]**
515/20 . . Spiro-condensed systems **[2]**
515/22 . in which the condensed system contains four or more hetero rings **[2]**

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]

517/02 . in which the condensed system contains two hetero rings **[2]**
517/04 . . Ortho-condensed systems **[2]**
517/06 . . Peri-condensed systems **[2]**
517/08 . . Bridged systems **[2]**
517/10 . . Spiro-condensed systems **[2]**
517/12 . in which the condensed system contains three hetero rings **[2]**
517/14 . . Ortho-condensed systems **[2]**
517/16 . . Peri-condensed systems **[2]**
517/18 . . Bridged systems **[2]**
517/20 . . Spiro-condensed systems **[2]**
517/22 . in which the condensed system contains four or more hetero rings **[2]**

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]

519/02 . Ergot alkaloids of the cyclic peptide type **[2]**
519/04 . Dimeric indole alkaloids, e.g. vincaleucoblastine **[2]**
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 to C07D 507/00, e.g. a penem or a cepham system **[6]**

521/00 Heterocyclic compounds containing unspecified hetero rings [2]

Note

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 to C07D 519/00. **[2009.01]**

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)

Notes

(1) Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C to C07K and within these subclasses. **[8]**
(2) Attention is drawn to Note (6) following the title of class C07. **[2]**
(3) Therapeutic activity of compounds is further classified in subclass A61P. **[7]**
(4) In this subclass, organic acid salts, alcoholates, phenates, chelates or mercaptides are classified as the parent compounds. **[2]**

1/00 Compounds containing elements of the 1st Group of the Periodic System

1/02 . Lithium compounds
1/04 . Sodium compounds
1/06 . Potassium compounds
1/08 . Copper compounds
1/10 . Silver compounds
1/12 . Gold compounds

3/00 Compounds containing elements of the 2nd Group of the Periodic System

3/02 . Magnesium compounds
3/04 . Calcium compounds
3/06 . Zinc compounds
3/08 . Cadmium compounds
3/10 . Mercury compounds
3/12 . . Aromatic substances containing mercury
3/14 . . Heterocyclic substances containing mercury

5/00 Compounds containing elements of the 3rd Group of the Periodic System

5/02 . Boron compounds
5/04 . . Esters of boric acids
5/05 . . Cyclic compounds having at least one ring containing boron but no carbon in the ring **[2]**
5/06 . Aluminium compounds

7/00 Compounds containing elements of the 4th Group of the Periodic System

7/02 . Silicon compounds
7/04 . . Esters of silicic acids
7/06 . . . with hydroxyaryl compounds
7/07 . . . Cyclic esters **[2]**
7/08 . . Compounds having one or more C−Si linkages
7/10 . . . containing nitrogen
7/12 . . . Organo silicon halides
7/14 . . . . Preparation thereof from halogenated silanes and hydrocarbons
7/16 . . . . Preparation thereof from silicon and halogenated hydrocarbons
7/18 . . . Compounds having one or more C−Si linkages as well as one or more C−O−Si linkages
7/20 . . . Purification; Separation
7/21 . . Cyclic compounds having at least one ring containing silicon but no carbon in the ring **[2]**
7/22 . Tin compounds
7/24 . Lead compounds
7/26 . . Tetra-alkyl lead compounds
7/28 . Titanium compounds
7/30 . Germanium compounds **[2]**

9/00 Compounds containing elements of the 5th Group of the Periodic System

9/02 . Phosphorus compounds **[2]**
9/04 . . Reaction products of phosphorus sulfur compounds with hydrocarbons
9/06 . . without P−C bonds
9/08 . . . Esters of oxyacids of phosphorus

9/09 . . . . Esters of phosphoric acids **[2]**
9/10 . . . . . Phosphatides, e.g. lecithin
9/11 . . . . . with hydroxyalkyl compounds without further substituents on alkyl **[2]**
9/113 . . . . . with unsaturated acyclic alcohols **[2]**
9/117 . . . . . with cycloaliphatic alcohols **[2]**
9/12 . . . . . with hydroxyaryl compounds **[2]**
9/14 . . . . . containing P-halide groups **[2]**
9/141 . . . . Esters of phosphorous acids **[2]**
9/142 . . . . . with hydroxyalkyl compounds without further substituents on alkyl **[2]**
9/143 . . . . . with unsaturated acyclic alcohols **[2]**
9/144 . . . . . with cycloaliphatic alcohols **[2]**
9/145 . . . . . with hydroxyaryl compounds **[2]**
9/146 . . . . . containing P-halide groups **[2]**
9/16 . . . Esters of thiophosphoric acids or thiophosphorous acids
9/165 . . . . Esters of thiophosphoric acids **[2]**
9/17 . . . . . with hydroxyalkyl compounds without further substituents on alkyl **[2]**
9/173 . . . . . with unsaturated acyclic alcohols **[2]**
9/177 . . . . . with cycloaliphatic alcohols **[2]**
9/18 . . . . . with hydroxyaryl compounds **[2]**
9/20 . . . . . containing P-halide groups **[2]**
9/201 . . . . Esters of thiophosphorous acids **[2]**
9/202 . . . . . with hydroxyalkyl compounds without further substituents on alkyl **[2]**
9/203 . . . . . with unsaturated acyclic alcohols **[2]**
9/204 . . . . . with cycloaliphatic alcohols **[2]**
9/205 . . . . . with hydroxyaryl compounds **[2]**
9/206 . . . . . containing P-halide groups **[2]**
9/22 . . . Amides of acids of phosphorus
9/24 . . . . Esteramides
9/26 . . . . containing P-halide groups
9/28 . . with one or more P−C bonds
9/30 . . . Phosphinic acids (R_2=P(:O)OH); Thiophosphinic acids
9/32 . . . . Esters thereof
9/34 . . . . Halides thereof
9/36 . . . . Amides thereof
9/38 . . . Phosphonic acids (R−P(:O)$(OH)_2$); Thiophosphonic acids
9/40 . . . . Esters thereof
9/42 . . . . Halides thereof
9/44 . . . . Amides thereof
9/46 . . . Phosphinous acids (R_2=P−OH); Thiophosphinous acids
9/48 . . . Phosphonous acids (R−P$(OH)_2$); Thiophosphonous acids
9/50 . . . Organo-phosphines
9/52 . . . . Halophosphines
9/53 . . . . Organo-phosphine oxides; Organo-phosphine sulfides **[2]**
9/535 . . . Organo-phosphoranes **[3]**
9/54 . . . Quaternary phosphonium compounds
9/547 . . Heterocyclic compounds, e.g. containing phosphorus as a ring hetero atom **[5]**
9/553 . . . having one nitrogen atom as the only ring hetero atom **[5]**
9/564 . . . . Three-membered rings **[5]**
9/568 . . . . Four-membered rings **[5]**
9/572 . . . . Five-membered rings **[5]**
9/576 . . . . Six-membered rings **[5]**
9/58 . . . . . Pyridine rings **[5]**
9/59 . . . . . Hydrogenated pyridine rings **[5]**
9/60 . . . . . Quinoline or hydrogenated quinoline ring systems **[5]**
9/62 . . . . . Isoquinoline or hydrogenated isoquinoline ring systems **[5]**
9/64 . . . . . Acridine or hydrogenated acridine ring systems **[5]**
9/645 . . . having two nitrogen atoms as the only ring hetero atoms **[5]**
9/6503 . . . . Five-membered rings **[5]**
9/6506 . . . . . having the nitrogen atoms in positions 1 and 3 **[5]**
9/6509 . . . . Six-membered rings **[5]**
9/6512 . . . . . having the nitrogen atoms in positions 1 and 3 **[5]**
9/6515 . . . having three nitrogen atoms as the only ring hetero atoms **[5]**
9/6518 . . . . Five-membered rings **[5]**
9/6521 . . . . Six-membered rings **[5]**
9/6524 . . . having four or more nitrogen atoms as the only ring hetero atoms **[5]**
9/6527 . . . having nitrogen and oxygen atoms as the only ring hetero atoms **[5]**
9/653 . . . . Five-membered rings **[5]**
9/6533 . . . . Six-membered rings **[5]**
9/6536 . . . having nitrogen and sulfur atoms with or without oxygen atoms, as the only ring hetero atoms **[5]**
9/6539 . . . . Five-membered rings **[5]**
9/6541 . . . . . condensed with carbocyclic rings or ring systems **[5]**
9/6544 . . . . Six-membered rings **[5]**
9/6547 . . . . . condensed with carbocyclic rings or ring systems **[5]**
9/655 . . . having oxygen atoms, with or without sulfur, selenium, or tellurium atoms, as the only ring hetero atoms **[5]**
9/6553 . . . having sulfur atoms, with or without selenium or tellurium atoms, as the only ring hetero atoms **[5]**
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]**
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]**
9/6564 . . . having phosphorus atoms, with or without nitrogen, oxygen, sulfur, selenium or tellurium atoms, as ring hetero atoms **[5]**
9/6568 . . . . having phosphorus atoms as the only ring hetero atoms **[5]**
9/6571 . . . . having phosphorus and oxygen atoms as the only ring hetero atoms **[5]**
9/6574 . . . . . Esters of oxyacids of phosphorus **[5]**
9/6578 . . . . having phosphorus and sulfur atoms with or without oxygen atoms, as ring hetero atoms **[5]**
9/6581 . . . . having phosphorus and nitrogen atoms with or without oxygen or sulfur atoms, as ring hetero atoms **[5]**
9/6584 . . . . . having one phosphorus atom as ring hetero atom **[5]**

9/6587 . . . . . having two phosphorus atoms as ring hetero atoms **[5]**
9/659 . . . . . having three phosphorus atoms as ring hetero atoms **[5]**
9/6593 . . . . . 1,3,5-Triaza-2,4,6-triphosphorines **[5]**
9/6596 . . . having atoms other than oxygen, sulfur, selenium, tellurium, nitrogen or phosphorus as ring hetero atoms **[5]**
9/66 . Arsenic compounds
9/68 . . without As−C bonds
9/70 . . Organo-arsenic compounds
9/72 . . . Aliphatic compounds
9/74 . . . Aromatic compounds
9/76 . . . . containing hydroxyl groups
9/78 . . . . containing amino groups
9/80 . . . Heterocyclic compounds
9/82 . . . . Arsenic compounds containing one or more pyridine rings
9/84 . . . . Arsenic compounds containing one or more quinoline ring systems
9/86 . . . . Arsenic compounds containing one or more isoquinoline ring systems
9/88 . . . . Arsenic compounds containing one or more acridine ring systems
9/90 . Antimony compounds
9/92 . . Aromatic compounds
9/94 . Bismuth compounds

11/00 Compounds containing elements of the 6th Group of the Periodic System

13/00 Compounds containing elements of the 7th Group of the Periodic System

15/00 Compounds containing elements of the 8th Group of the Periodic System

15/02 . Iron compounds
15/03 . . Sideramines; The corresponding desferri compounds
15/04 . Nickel compounds
15/06 . Cobalt compounds

17/00 Metallocenes [2]
17/02 . of metals of the iron group or the platinum group **[2]**

19/00 Metal compounds according to more than one of main groups C07F 1/00 to C07F 17/00 [5]

C07G COMPOUNDS OF UNKNOWN CONSTITUTION (sulfonated fats, oils or waxes of undetermined constution C07C 309/62)

Notes

(1) This subclass does not cover peptides or proteins, of unknown constitution, which are covered by subclass C07K. **[4]**
(2) Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C to C07K and within these subclasses. **[8]**
(3) Therapeutic activity of compounds is further classified in subclass A61P. **[7]**

1/00 Lignin; **Lignin derivatives**

3/00 Glycosides (polysaccharides C08B)

5/00 Alkaloids

9/00 Ammonium bituminosulfonate, e.g. Ichthyol

11/00 Antibiotics

13/00 Vitamins (vitamin K_1 C07C 50/14; pantothenic acid C07C 235/12; vitamins of the D group C07C 401/00; vitamin A C07C 403/00; pyridoxal, pyridoxamin C07D 213/66; pyridoxin C07D 213/67; vitamin C C07D 307/62; tocopherols C07D 311/72; lipoic acid C07D 339/04; vitamin B_1 C07D 415/00; riboflavin C07D 475/14; biotin C07D 495/04; sideramines, corresponding desferri compounds C07F 15/03; vitamin B_{12} C07H 23/00)

15/00 Hormones

***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]**

Notes

(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

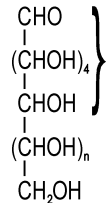
(ii) is considered to be terminated by every bond to a carbon atom of a cyclic structure and by every bond to a carbon atom having three bonds to hetero atoms, e.g. ester or nitrile radicals, and

(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

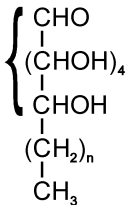
(B) in an acyclic sequence, at least one other carbon atom has one double bond to an oxygen atom as the only hetero bond,

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; **[4]**

(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 to C07K and within these subclasses. **[8]**

(5) Therapeutic activity of compounds is further classified in subclass A61P. **[7]**

Subclass Index

1/00 Processes for the preparation of sugar derivatives [2]

1/02 . Phosphorylation **[2]**

1/04 . . Introducing polyphosphoric acid radicals **[2]**

1/06 . Separation; Purification **[2]**

1/08 . . from natural products **[2]**

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]**

3/02 . Monosaccharides **[2]**
3/04 . Disaccharides **[2]**
3/06 . Oligosaccharides, i.e. having three to five saccharide radicals attached to each other by glycosidic linkages **[2]**
3/08 . Deoxysugars; Unsaturated sugars (1,2-dideoxy-1-enoses C07D); Osones **[2]**
3/10 . Anhydrosugars, e.g. epoxides **[2]**

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]**

5/02 . to halogen **[2]**
5/04 . to nitrogen **[2]**
5/06 . . Aminosugars **[2]**
5/08 . to sulfur, selenium, or tellurium **[2]**
5/10 . . to sulfur **[2]**

7/00 **Compounds containing non-saccharide radicals linked to saccharide radicals by a carbon-to-carbon bond [2]**

7/02 . Acyclic radicals **[2]**
7/027 . . Keto-aldonic acids **[4]**
7/033 . . Uronic acids **[4]**
7/04 . Carbocyclic radicals **[2]**
7/06 . Heterocyclic radicals **[2]**

9/00 **Compounds containing a hetero ring sharing at least two hetero atoms with a saccharide radical [2]**

9/02 . the hetero ring containing only oxygen as ring hetero atoms **[2]**
9/04 . . Cyclic acetals **[2]**
9/06 . the hetero ring containing nitrogen as ring hetero atoms **[2]**

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; esterified by carbonic acid or derivatives thereof C07H 13/12) **[2]**

11/02 . Nitrates; Nitrites **[2]**
11/04 . Phosphates; Phosphites; Polyphosphates (phosphonates C07H 13/00) **[2]**

13/00 **Compounds containing saccharide radicals esterified by carbonic acid or derivatives thereof, or by organic acids, e.g. phosphonic acids [2]**

13/02 . by carboxylic acids **[2]**
13/04 . . having the esterifying carboxyl radicals attached to acyclic carbon atoms **[2]**
13/06 . . . Fatty acids **[2]**
13/08 . . having the esterifying carboxyl radicals directly attached to carbocyclic rings **[2]**
13/10 . . having the esterifying carboxyl radicals directly attached to heterocyclic rings **[2]**
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]**

15/00 **Compounds containing hydrocarbon or substituted hydrocarbon radicals directly attached to hetero atoms of saccharide radicals [2]**

Note

In this group, acyl radicals directly attached to hetero atoms of the saccharide radicals are not considered as substituted hydrocarbon radicals. **[4]**

15/02 . Acyclic radicals, not substituted by cyclic structures **[2]**
15/04 . . attached to an oxygen atom of a saccharide radical **[2]**
15/06 . . . being a hydroxyalkyl group esterified by a fatty acid **[4]**
15/08 . . . Polyoxyalkylene derivatives (polyoxyalkylene derivatives of polyols in general C07C 41/00, C07C 43/00) **[2]**
15/10 . . . containing unsaturated carbon-to-carbon bonds **[2]**
15/12 . . attached to a nitrogen atom of a saccharide radical **[2]**
15/14 . . attached to a sulfur, selenium or tellurium atom of a saccharide radical **[2]**
15/16 . . . Lincomycin; Derivatives thereof **[2]**
15/18 . Acyclic radicals, substituted by carbocyclic rings **[2]**
15/20 . Carbocyclic rings **[2]**
15/203 . . Monocyclic carbocyclic rings other than cyclohexane rings; Bicyclic carbocyclic ring systems **[4]**
15/207 . . Cyclohexane rings not substituted by nitrogen atoms, e.g. kasugamycins **[4]**
15/22 . . Cyclohexane rings, substituted by nitrogen atoms **[4]**
15/222 . . . Cyclohexane rings, substituted by at least two nitrogen atoms **[4]**
15/224 . . . . with only one saccharide radical directly attached to the cyclohexane rings, e.g. destomycin, fortimicin, neamine **[4]**
15/226 . . . . with at least two saccharide radicals directly attached to the cyclohexane rings **[4]**
15/228 . . . . . attached to adjacent ring-carbon atoms of the cyclohexane rings **[4]**
15/23 . . . . . with only two saccharide radicals in the molecule, e.g. ambutyrosin, butyrosin, xylostatin, ribostamycin **[4]**
15/232 . . . . . with at least three saccharide radicals in the molecule, e.g. lividomycin, neomycin, paromomycin **[4]**
15/234 . . . . . attached to non-adjacent ring carbon atoms of the cyclohexane rings, e.g. kanamycins, tobramycin, nebramycin, gentamicin A_2 **[4]**
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]**
15/238 . . . Cyclohexane rings substituted by two guanidine radicals, e.g. streptomycins **[4]**
15/24 . . Condensed ring systems having three or more rings (steroid glycosides C07J) **[2]**
15/244 . . . Anthraquinone radicals, e.g. sennosides **[4]**
15/248 . . . Colchicine radicals, e.g. colchicosides **[4]**
15/252 . . . Naphthacene radicals, e.g. daunomycins, adriamycins **[4]**

15/256 . . . Polyterpene radicals **[4]**
15/26 . Acyclic or carbocyclic radicals, substituted by hetero rings **[2]**

17/00 Compounds containing heterocyclic radicals directly attached to hetero atoms of saccharide radicals [2]

17/02 . Heterocyclic radicals containing only nitrogen as ring hetero atoms **[2]**
17/04 . Heterocyclic radicals containing only oxygen as ring hetero atoms **[2]**
17/06 . . Benzopyran radicals **[4]**
17/065 . . . Benzo[b]pyrans **[4]**
17/07 . . . . Benzo[b]pyran-4-ones **[4]**
17/075 . . . . Benzo[b]pyran-2-ones **[4]**
17/08 . . Hetero rings containing eight or more ring members, e.g. erythromycins **[2]**

19/00 Compounds containing a hetero ring sharing one ring hetero atom with a saccharide radical; **Nucleosides**; **Mononucleotides**; **Anhydro derivatives thereof [2,4]**

19/01 . sharing oxygen **[4]**
19/02 . sharing nitrogen **[2]**
19/04 . . Heterocyclic radicals containing only nitrogen as ring hetero atom **[2]**
19/044 . . . Pyrrole radicals **[4]**
19/048 . . . Pyridine radicals **[4]**
19/052 . . . Imidazole radicals **[4]**
19/056 . . . Triazole or tetrazole radicals **[4]**
19/06 . . . Pyrimidine radicals **[2]**
19/067 . . . . with ribosyl as the saccharide radical **[4]**
19/073 . . . . with 2-deoxyribosyl as the saccharide radical **[4]**
19/09 . . . . with arabinosyl as the saccharide radical **[4]**
19/10 . . . . with the saccharide radical being esterified by phosphoric or polyphosphoric acids **[2]**
19/11 . . . . . containing cyclic phosphate **[4]**
19/12 . . . Triazine radicals **[2]**
19/14 . . . Pyrrolo-pyrimidine radicals **[2]**
19/16 . . . Purine radicals **[2]**
19/167 . . . . with ribosyl as the saccharide radical **[4]**
19/173 . . . . with 2-deoxyribosyl as the saccharide radical **[4]**
19/19 . . . . with arabinosyl as the saccharide radical **[4]**
19/20 . . . . with the saccharide radical being esterified by phosphoric or polyphosphoric acids **[2]**
19/207 . . . . . the phosphoric or polyphosphoric acids being esterified by a further hydroxylic compound, e.g. flavine-adenine dinucleotide or nicotinamide-adenine dinucleotide (nicotinamide-adenine dinucleotide phosphate C07H 21/02) **[4]**
19/213 . . . . . containing cyclic phosphate **[4]**
19/22 . . . Pteridine radicals **[2]**
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 to C07H 19/22 **[4]**
19/24 . . Heterocyclic radicals containing oxygen or sulfur as ring hetero atom **[2]**

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]

21/02 . with ribosyl as saccharide radical **[2]**
21/04 . with deoxyribosyl as saccharide radical **[2]**

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]**

99/00 Subject matter not provided for in other groups of this subclass [8]

C07J STEROIDS (seco-steroids C07C) **[2]**

Notes

(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. **[4]**

(2) Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C to C07Kand within these subclasses. **[8]**

(3) Therapeutic activity of compounds is further classified in subclass A61P. **[7]**

Subclass Index

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]

3/00 Normal steroids containing carbon, hydrogen, halogen, or oxygen, substituted in position 17 beta by one carbon atom [2]

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]

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]**

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]

11/00 Normal steroids containing carbon, hydrogen, halogen, or oxygen, not substituted in position 3 [2]

13/00 Normal steroids containing carbon, hydrogen, halogen, or oxygen, having a carbon-to-carbon double bond from or to position 17 [2]

15/00 Stereochemically pure steroids containing carbon, hydrogen, halogen, or oxygen, having a partially or totally inverted skeleton, e.g. retrosteroids, L-isomers [2]

17/00 Normal steroids containing carbon, hydrogen, halogen, or oxygen, having an oxygen-containing hetero ring not condensed with the cyclopenta[a]hydrophenanthrene skeleton (cardanolide, bufanolide C07J 19/00) **[2]**

19/00 Normal steroids containing carbon, hydrogen, halogen, or oxygen, substituted in position 17 by a lactone ring [2]

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]

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]

33/00 Normal steroids having a sulfur-containing hetero ring spiro-condensed or not condensed with the cyclopenta[a]hydrophenanthrene skeleton [2]

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]

43/00 Normal steroids having a nitrogen-containing hetero ring spiro-condensed or not condensed with the cyclopenta[a]hydrophenanthrene skeleton [2]

51/00 Normal steroids with unmodified cyclopenta[a]hydrophenanthrene skeleton not provided for in groups C07J 1/00 to C07J 43/00 [2]

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]

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]

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]

65/00 Steroids in which the cyclopenta[a]hydrophenanthrene skeleton has been modified by contraction of two rings, each by one atom [2]

67/00 Steroids in which the cyclopenta[a]hydrophenanthrene skeleton has been modified by expansion of two rings, each by one atom [2]

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]

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]**

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]

75/00 Processes for the preparation of steroids, in general [4]

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]**

Notes

(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 $HOCH_2$CO-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.

      ; **[4]**

  - (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 to C07K and within these subclasses. **[8]**

(3) Therapeutic activity of compounds is further classified in subclass A61P. **[7]**

(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. **[8]**

(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]**

(6) Peptides prepared by chemical processes and having an amino acid sequence derived from naturally occurring peptides are classified with the natural one. **[6]**

(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. **[6]**

Subclass Index

1/00 **General processes for the preparation of peptides [4]**
1/02 . in solution **[4]**
1/04 . on carriers **[4]**
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1/36 . . by a combination of two or more processes of different types **[6]**

2/00 Peptides of undefined number of amino acids; Derivatives thereof [6]

4/00 Peptides having up to 20 amino acids in an undefined or only partially defined sequence; Derivatives thereof [6]

4/02 . from viruses **[6]**
4/04 . from bacteria **[6]**
4/06 . from fungi **[6]**
4/08 . from algae; from lichens **[6]**
4/10 . from plants **[6]**
4/12 . from animals; from humans **[6]**

5/00 Peptides having up to four amino acids in a fully defined sequence; Derivatives thereof [4]

Note

In this group, the following expression is used with the meaning indicated: **[6]**
– "first amino acid" means the first amino acid from the left side, i.e. the N-terminal amino acid, of the peptide sequence. **[6]**

5/02 . containing at least one abnormal peptide link **[4]**
5/023 . . in which at least a beta-amino acid is involved **[6]**
5/027 . . in which at least a gamma-amino acid is involved, e.g. statine **[6]**
5/03 . . in which at least a delta-amino acid is involved, e.g. isosteres **[6]**
5/033 . . in which at least an epsilon- or zeta-amino acid is involved **[6]**
5/037 . . the abnormal link being formed by the side chain of an alpha-amino acid, e.g. gamma-Glu, epsilon-Lys, glutathione **[6]**
5/04 . containing only normal peptide links **[4]**
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5/062 . . . the side chain of the first amino acid being acyclic, e.g. Gly, Ala **[6]**
5/065 . . . the side chain of the first amino acid containing carbocyclic rings, e.g. Phe, Tyr **[6]**
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]**
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]**
5/075 . . . . Asp-Phe; Derivatives thereof, e.g. aspartame **[6]**
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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]**
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]**
5/097 . . . the first amino acid being heterocyclic, e.g. Pro, His, Trp, e.g. thyroliberin, melanostatin **[6]**
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5/103 . . . the side chain of the first amino acid being acyclic, e.g. Gly, Ala **[6]**
5/107 . . . the side chain of the first amino acid containing carbocyclic rings, e.g. Phe, Tyr **[6]**
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]**
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]**
5/117 . . . the first amino acid being heterocyclic, e.g. Pro, His, Trp **[6]**
5/12 . . Cyclic peptides **[4]**

7/00 Peptides having 5 to 20 amino acids in a fully defined sequence; Derivatives thereof [4,6]

7/02 . Linear peptides containing at least one abnormal peptide link **[4]**
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7/06 . . having 5 to 11 amino acids **[4]**
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7/16 . . Oxytocins; Vasopressins; Related peptides **[4]**
7/18 . . Kallidins; Bradykinins; Related peptides **[4]**
7/22 . . Eledoisins; Related peptides **[4]**
7/23 . . Luteinising hormone-releasing hormone (LHRH); Related peptides **[6]**
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7/52 . . with only normal peptide links in the ring **[4]**
7/54 . . with at least one abnormal peptide link in the ring **[4]**
7/56 . . . the cyclisation not occurring through 2,4-diamino-butanoic acid **[4]**
7/58 . . . . Bacitracins; Related peptides **[4]**
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7/64 . Cyclic peptides containing only normal peptide links **[4]**
7/66 . . Gramicidins S, C; Tyrocidins A, B, C; Related peptides **[4]**

9/00 Peptides having up to 20 amino acids, containing saccharide radicals and having a fully defined sequence; Derivatives thereof [4,6]

11/00 Depsipeptides having up to 20 amino acids in a fully defined sequence; Derivatives thereof [4,6]

11/02 . cyclic, e.g. valinomycins **[4]**

14/00 Peptides having more than 20 amino acids; Gastrins; Somatostatins; Melanotropins; Derivatives thereof [6]

14/005 . from viruses **[6]**

14/01 . . DNA viruses **[6]**
14/015 . . . Parvoviridae, e.g. feline panleukopenia virus, human parvovirus **[6]**
14/02 . . . Hepadnaviridae, e.g. hepatitis B virus **[6]**
14/025 . . . Papovaviridae, e.g. papillomavirus, polyomavirus, SV40, BK virus, JC virus **[6]**
14/03 . . . Herpetoviridae, e.g. pseudorabies virus **[6]**
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14/04 . . . . Varicella-zoster virus **[6]**
14/045 . . . . Cytomegalovirus **[6]**
14/05 . . . . Epstein-Barr virus **[6]**
14/055 . . . . Marek's disease virus **[6]**
14/06 . . . . Infectious bovine rhinotracheitis virus **[6]**
14/065 . . . Poxviridae, e.g. avipoxvirus **[6]**
14/07 . . . . Vaccinia virus; Variola virus **[6]**
14/075 . . . Adenoviridae **[6]**
14/08 . . RNA viruses **[6]**
14/085 . . . Picornaviridae, e.g. coxsackie virus, echovirus, enterovirus **[6]**
14/09 . . . . Foot-and-mouth disease virus **[6]**
14/095 . . . . Rhinovirus **[6]**
14/10 . . . . Hepatitis A virus **[6]**
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14/11 . . . Orthomyxoviridae, e.g. influenza virus **[6]**
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14/175 . . . Bunyaviridae, e.g. California encephalitis virus, Rift valley fever virus, Hantaan virus **[6]**
14/18 . . . Togaviridae, e.g. flavivirus, pestivirus, yellow fever virus, hepatitis C virus, japanese encephalitis virus **[6]**
14/185 . . . . Hog cholera virus **[6]**
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14/195 . from bacteria **[6]**

Note

In groups C07K 14/20 to 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. **[6]**

14/20 . . from Spirochaetales (O), e.g. Treponema, Leptospira **[6]**
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14/235 . . from Bordetella (G) **[6]**
14/24 . . from Enterobacteriaceae (F), e.g. Citrobacter, Serratia, Proteus, Providencia, Morganella, Yersinia **[6]**
14/245 . . . Escherichia (G) **[6]**
14/25 . . . Shigella (G) **[6]**
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14/275 . . . Hafnia (G) **[6]**
14/28 . . from Vibrionaceae (F) **[6]**
14/285 . . from Pasteurellaceae (F), e.g. Haemophilus influenza **[6]**
14/29 . . from Richettsiales (O) **[6]**
14/295 . . from Chlamydiales (O) **[6]**
14/30 . . from Mycoplasmatales, e.g. Pleuropneumonia-like organisms (PPLO) **[6]**
14/305 . . from Micrococcaceae (F) **[6]**
14/31 . . . from Staphylococcus (G) **[6]**
14/315 . . from Streptococcus (G), e.g. Enterococci **[6]**
14/32 . . from Bacillus (G) **[6]**
14/325 . . . Bacillus thuringiensis crystal peptide (delta-endotoxin) **[6]**
14/33 . . from Clostridium (G) **[6]**
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14/34 . . from Corynebacterium (G) **[6]**
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14/36 . . from Actinomyces; from Streptomyces (G) **[6]**
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14/595 . . . Gastrins; Cholecystokinins (CCK) **[6]**
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16/12 . against material from bacteria **[6]**
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17/00 Carrier-bound or immobilised peptides; **Preparation thereof [4]**

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