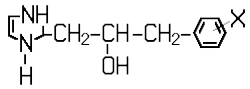
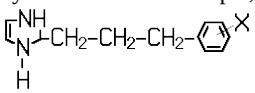
SECTION C — CHEMISTRY; METALLURGY

C07 ORGANIC CHEMISTRY

C07D HETEROCYCLIC COMPOUNDS (macromolecular compounds C08) [2]

Note(s) [2, 3, 7, 2006.01]

1. This subclass does not cover compounds containing saccharide radicals, as defined in Note (3) following the title of subclass C07H, which are covered by subclass C07H.
2. In this subclass, in compounds containing a hetero ring covered by group C07D 295/00 and at least one other hetero ring, the hetero ring covered by group C07D 295/00 is considered as an acyclic chain containing nitrogen atoms.
3. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "hetero ring" is a ring having at least one halogen, nitrogen, oxygen, sulfur, selenium or tellurium atom as a ring member;
   - "bridged" means the presence of at least one fusion other than ortho, peri or spiro;
   - two rings are "condensed" if they share at least one ring member, i.e. "spiro" and "bridged" are considered as condensed;
   - "condensed ring system" is a ring system in which all rings are condensed among themselves;
   - "number of relevant rings" in a condensed ring system equals the number of scissions necessary to convert the ring system into one acyclic chain;
   - "relevant rings" in a condensed ring system, i.e. the rings which taken together describe all the links between every atom of the ring system, are chosen according to the following criteria consecutively:
     a. lowest number of ring members;
     b. highest number of hetero atoms as ring members;
     c. lowest number of members shared with other rings;
     d. last place in the classification scheme.
4. Attention is drawn to Note (3) after class C07, which defines the last place priority rule applied in the range of subclasses C07C-C07K and within these subclasses.
5. Therapeutic activity of compounds is further classified in subclass A61P.
6. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary:
   a. compounds having only one hetero ring are classified in the last appropriate place in one of the groups C07D 203/00-C07D 347/00. The same applies for compounds having more hetero rings covered by the same main group, neither condensed among themselves nor condensed with a common carbocyclic ring system;
   b. compounds having two or more hetero rings covered by different main groups neither condensed among themselves nor condensed with a common carbocyclic ring system are classified in the last appropriate place in one of the groups C07D 401/00-C07D 421/00;
   c. compounds having two or more relevant hetero rings, covered by the same or by different main groups, which are condensed among themselves or condensed with a common carbocyclic ring system, are classified in the last appropriate place in one of the groups C07D 451/00-C07D 519/00.
7. In this subclass:
   - where a compound may exist in tautomeric forms, it is classified as though existing in the form which is classified last in the system. Therefore, double bonds between ring members and non-ring members and double bonds between ring members themselves are considered equivalent in determining the degree of hydrogenation of the ring. Formulae are considered to be written in Kekule form;
   - hydrocarbon radicals containing a carbocyclic ring and an acyclic chain by which it is linked to the hetero ring and being substituted on both the carbocyclic ring and the acyclic chain by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, are classified according to the substituents on the acyclic chain. For example, the compound  is classified in group C07D 233/22, and the compound  is classified in groups C07D 233/24 and C07D 233/26, where X —NH_2, —$NHCOCH_3$, or —$COOCH_3$.

Subclass index

Heterocyclic compounds having only nitrogen as ring hetero atom [2]

201/00 Preparation, separation, purification, or stabilisation of unsubstituted lactams [2, 2006.01]

201/02 • Preparation of lactams **[2, 2006.01]**

201/04 • • from or via oximes by Beckmann rearrangement **[2, 2006.01]**

201/06 • • • from ketones by simultaneous oxime formation and rearrangement **[2, 2006.01]**

201/08 • • from carboxylic acids or derivatives thereof, e.g. hydroxy carboxylic acids, lactones, nitriles **[2, 2006.01]**

201/10 • • from cycloaliphatic compounds by simultaneous nitrosylation and rearrangement **[2, 2006.01]**

201/12 • • by depolymerising polyamides **[2, 2006.01]**

201/14 • Preparation of salts or adducts of lactams **[2, 2006.01]**

201/16 • Separation or purification **[2, 2006.01]**

201/18 • Stabilisation **[2, 2006.01]**

203/00 Heterocyclic compounds containing three-membered rings with one nitrogen atom as the only ring hetero atom [2, 2006.01]

203/02 • Preparation by ring-closure **[2, 2006.01]**

203/04 • not condensed with other rings **[2, 2006.01]**

203/06 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

203/08 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring nitrogen atom **[2, 2006.01]**

203/10 • • • • Radicals substituted by singly bound oxygen atoms **[2, 2006.01]**

203/12 • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

203/14 • • • • with carbocyclic rings directly attached to the ring nitrogen atom **[2, 2006.01]**

203/16 • • • with acylated ring nitrogen atoms **[2, 2006.01]**

203/18 • • • • by carboxylic acids, or by sulfur or nitrogen analogues thereof **[2, 2006.01]**

203/20 • • • • by carbonic acid, or by sulfur or nitrogen analogues thereof, e.g. carbamates **[2, 2006.01]**

203/22 • • • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

203/24 • • • • Sulfur atoms **[2, 2006.01]**

203/26 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

205/00 Heterocyclic compounds containing four-membered rings with one nitrogen atom as the only ring hetero atom [2, 2006.01]

205/02 • not condensed with other rings **[2, 2006.01]**

205/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

205/06 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**

205/08 • • • with one oxygen atom directly attached in position 2, e.g. beta-lactams **[2, 2006.01]**

205/085 • • • • with a nitrogen atom directly attached in position 3 **[5, 2006.01]**

205/09 • • • • with a sulfur atom directly attached in position 4 **[5, 2006.01]**

205/095 • • • • • and with a nitrogen atom directly attached in position 3 **[5, 2006.01]**

205/10 • • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

205/12 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

207/00 Heterocyclic compounds containing five-membered rings not condensed with other rings, with one nitrogen atom as the only ring hetero atom [2, 2006.01]

Note(s) [2]

Pyrrolidines having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00.

207/02 • with only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

207/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

207/06 • • • with radicals, containing only hydrogen and carbon atoms, attached to ring carbon atoms **[2, 2006.01]**

207/08 • • • with hydrocarbon radicals, substituted by hetero atoms, attached to ring carbon atoms **[2, 2006.01]**

207/09 • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[3, 2006.01]**

207/10 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

207/12 • • • • Oxygen or sulfur atoms **[2, 2006.01]**

207/14 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

207/16 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**

207/18 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**

207/20 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**

207/22 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

207/24 • • • • Oxygen or sulfur atoms **[2, 2006.01]**

207/26 • • • • • 2-Pyrrolidones **[2, 2006.01]**

207/263 • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms **[3, 2006.01]**

207/267 • • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to the ring nitrogen atom **[3, 2006.01]**

207/27 • • • • • • • with substituted hydrocarbon radicals directly attached to the ring nitrogen atom **[3, 2006.01]**

207/273 • • • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to other ring carbon atoms **[3, 2006.01]**

207/277 • • • • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[3, 2006.01]**

207/28 • • • • • • • • 2-Pyrrolidone-5- carboxylic acids; Functional derivatives thereof, e.g. esters, nitriles **[2, 3, 2006.01]**

207/30 • • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

207/32 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**

207/323 • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to the ring nitrogen atoms **[3, 2006.01]**

207/325 • • • • with substituted hydrocarbon radicals directly attached to the ring nitrogen atom **[3, 2006.01]**

207/327 • • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[3, 2006.01]**

207/33 • • • • with substituted hydrocarbon radicals, directly attached to ring carbon atoms **[3, 2006.01]**

207/333 • • • • • Radicals substituted by oxygen or sulfur atoms **[3, 2006.01]**

207/335 • • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[3, 2006.01]**

207/337 • • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[3, 2006.01]**

207/34 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

207/36 • • • • Oxygen or sulfur atoms **[2, 2006.01]**

207/38 • • • • • 2-Pyrrolones **[2, 2006.01]**

207/40 • • • • • 2,5-Pyrrolidine-diones **[2, 2006.01]**

207/404 • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms, e.g. succinimide **[3, 2006.01]**

207/408 • • • • • • • Radicals containing only hydrogen and carbon atoms attached to ring carbon atoms **[3, 2006.01]**

207/412 • • • • • • • • Acyclic radicals containing more than six carbon atoms **[3, 2006.01]**

207/416 • • • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to other ring carbon atoms **[3, 2006.01]**

207/42 • • • • Nitro radicals **[2, 2006.01]**
207/44 • • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
207/444 • • • having two doubly-bound oxygen atoms directly attached in positions 2 and 5 **[3, 2006.01]**
207/448 • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms, e.g. maleimide **[3, 2006.01]**
207/452 • • • • • with hydrocarbon radicals, substituted by hetero atoms, directly attached to the ring nitrogen atom **[3, 2006.01]**
207/456 • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to other ring carbon atoms **[3, 2006.01]**
207/46 • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
207/48 • • Sulfur atoms **[2, 2006.01]**
207/50 • • Nitrogen atoms **[2, 2006.01]**

209/00 Heterocyclic compounds containing five-membered rings, condensed with other rings, with one nitrogen atom as the only ring hetero atom [2, 2006.01]

209/02 • condensed with one carbocyclic ring **[2, 2006.01]**
209/04 • • Indoles; Hydrogenated indoles **[2, 2006.01]**
209/06 • • • Preparation of indole from coal-tar **[2, 2006.01]**
209/08 • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
209/10 • • • with substituted hydrocarbon radicals attached to carbon atoms of the hetero ring **[2, 2006.01]**
209/12 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
209/14 • • • • Radicals substituted by nitrogen atoms, not forming part of a nitro radical **[2, 2006.01]**
209/16 • • • • • Tryptamines **[2, 2006.01]**
209/18 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
209/20 • • • • • substituted additionally by nitrogen atoms, e.g. tryptophane **[2, 2006.01]**
209/22 • • • • • with an aralkyl radical attached to the ring nitrogen atom **[2, 2006.01]**
209/24 • • • • • with an alkyl or cycloalkyl radical attached to the ring nitrogen atom **[2, 2006.01]**
209/26 • • • • • with an acyl radical attached to the ring nitrogen atom **[2, 2006.01]**
209/28 • • • • • • 1-(4-Chlorobenzoyl)-2-methyl-indolyl-3-acetic acid, substituted in position 5 by an oxygen or nitrogen atom; Esters thereof **[2, 2006.01]**
209/30 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
209/32 • • • • Oxygen atoms **[2, 2006.01]**
209/34 • • • • • in position 2 **[2, 2006.01]**
209/36 • • • • • in position 3, e.g. adrenochrome **[2, 2006.01]**
209/38 • • • • • in positions 2 and 3, e.g. isatin **[2, 2006.01]**
209/40 • • • • Nitrogen atoms, not forming part of a nitro radical, e.g. isatin semicarbazone **[2, 2006.01]**
209/42 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
209/43 • • • with an —$OCH_2CH(OH)CH_2NH_2$ radical, which may be further substituted, attached in positions 4, 5, 6 or 7 **[5, 2006.01]**
209/44 • • Iso-indoles; Hydrogenated iso-indoles **[2, 2006.01]**
209/46 • • • with an oxygen atom in position 1 **[2, 2006.01]**
209/48 • • • with oxygen atoms in positions 1 and 3, e.g. phthalimide **[2, 2006.01]**
209/49 • • • • and having in the molecule an acyl radical containing a saturated three-membered ring, e.g. chrysanthemumic acid esters **[5, 2006.01]**
209/50 • • • with oxygen and nitrogen atoms in positions 1 and 3 **[2, 2006.01]**
209/52 • • condensed with a ring other than six-membered **[2, 2006.01]**
209/54 • • Spiro-condensed **[2, 2006.01]**
209/56 • Ring systems containing three or more rings **[2, 2006.01]**
209/58 • • [b]- or [c]-condensed **[2, 2006.01]**
209/60 • • • Naphtho [b] pyrroles; Hydrogenated naphtho [b] pyrroles **[2, 2006.01]**
209/62 • • • Naphtho [c] pyrroles; Hydrogenated naphtho [c] pyrroles **[2, 2006.01]**
209/64 • • • • with an oxygen atom in position 1 **[2, 2006.01]**
209/66 • • • • with oxygen atoms in positions 1 and 3 **[2, 2006.01]**
209/68 • • • • with oxygen and nitrogen atoms in positions 1 and 3 **[2, 2006.01]**
209/70 • • • containing carbocyclic rings other than six-membered **[2, 2006.01]**
209/72 • • • 4,7-Endo-alkylene-iso-indoles **[2, 2006.01]**
209/74 • • • • with an oxygen atom in position 1 **[2, 2006.01]**
209/76 • • • • with oxygen atoms in positions 1 and 3 **[2, 2006.01]**
209/78 • • • • with oxygen and nitrogen atoms in positions 1 and 3 **[2, 2006.01]**
209/80 • • [b, c]- or [b, d]-condensed **[2, 2006.01]**
209/82 • • • Carbazoles; Hydrogenated carbazoles **[2, 2006.01]**
209/84 • • • • Separation, e.g. from tar; Purification **[2, 2006.01]**
209/86 • • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the ring system **[2, 2006.01]**
209/88 • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the ring system **[2, 2006.01]**
209/90 • • • Benzo [c, d] indoles; Hydrogenated benzo [c, d] indoles **[2, 2006.01]**
209/92 • • • • Naphthostyrils **[2, 2006.01]**
209/94 • • • containing carbocyclic rings other than six-membered **[4, 2006.01]**
209/96 • • Spiro-condensed ring systems **[2, 2006.01]**

211/00 Heterocyclic compounds containing hydrogenated pyridine rings, not condensed with other rings [2, 2006.01]

Note(s) [2]

1. In this group, the following term is used with the meaning indicated:
   - "hydrogenated" means having less than three double bonds between ring members or between ring members and non-ring members.
2. Piperidines having only hydrogen atoms attached to ring carbon atoms are classified in group C07D 295/00.

211/02 • Preparation by ring-closure or hydrogenation **[2, 2006.01]**
211/04 • with only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
211/06 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
211/08 • • • with hydrocarbon or substituted hydrocarbon radicals directly attached to ring carbon atoms **[2, 3, 2006.01]**
211/10 • • • • with radicals containing only carbon and hydrogen atoms attached to ring carbon atoms **[2, 3, 2006.01]**
211/12 • • • • • with only hydrogen atoms attached to the ring nitrogen atom **[2, 3, 2006.01]**
211/14 • • • • • with hydrocarbon or substituted hydrocarbon radicals attached to the ring nitrogen atom **[2, 2006.01]**
211/16 • • • • • with acylated ring nitrogen atom **[2, 2006.01]**
211/18 • • • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**
211/20 • • • • • with hydrocarbon radicals, substituted by singly bound oxygen or sulfur atoms **[2, 2006.01]**
211/22 • • • • • • by oxygen atoms **[2, 2006.01]**
211/24 • • • • • • by sulfur atoms to which a second hetero atom is attached **[2, 2006.01]**
211/26 • • • • • with hydrocarbon radicals, substituted by nitrogen atoms **[2, 2006.01]**
211/28 • • • • • • to which a second hetero atom is attached **[2, 2006.01]**
211/30 • • • • • with hydrocarbon radicals, substituted by doubly bound oxygen or sulfur atoms or by two oxygen or sulfur atoms singly bound to the same carbon atom **[2, 2006.01]**
211/32 • • • • • • by oxygen atoms **[2, 2006.01]**
211/34 • • • • • with hydrocarbon radicals, substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
211/36 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
211/38 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**
211/40 • • • • Oxygen atoms **[2, 2006.01]**
211/42 • • • • • attached in position 3 or 5 **[2, 2006.01]**
211/44 • • • • • attached in position 4 **[2, 2006.01]**
211/46 • • • • • • having a hydrogen atom as the second substituent in position 4 **[2, 2006.01]**
211/48 • • • • • • having an acyclic carbon atom attached in position 4 **[2, 2006.01]**
211/50 • • • • • • • Aroyl radical **[2, 2006.01]**
211/52 • • • • • having an aryl radical as the second substituent in position 4 **[2, 2006.01]**
211/54 • • • • Sulfur atoms **[2, 2006.01]**
211/56 • • • • Nitrogen atoms (nitro radicals C07D 211/38) **[2, 2006.01]**
211/58 • • • • • attached in position 4 **[2, 2006.01]**
211/60 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
211/62 • • • • • attached in position 4 **[2, 2006.01]**
211/64 • • • • • • having an aryl radical as the second substituent in position 4 **[2, 2006.01]**
211/66 • • • • • • having a hetero atom as the second substituent in position 4 **[2, 2006.01]**
211/68 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
211/70 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
211/72 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, directly attached to ring carbon atoms **[2, 2006.01]**
211/74 • • • • Oxygen atoms **[2, 2006.01]**
211/76 • • • • • attached in position 2 or 6 **[2, 2006.01]**
211/78 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
211/80 • • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
211/82 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
211/84 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms **[2, 2006.01]**
211/86 • • • • Oxygen atoms **[2, 2006.01]**
211/88 • • • • • attached in positions 2 and 6, e.g. glutarimide **[2, 2006.01]**
211/90 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
211/92 • with a hetero atom directly attached to the ring nitrogen atom **[2, 2006.01]**
211/94 • • Oxygen atom, e.g. piperidine N-oxide **[2, 2006.01]**
211/96 • • Sulfur atom **[2, 2006.01]**
211/98 • • Nitrogen atom **[2, 2006.01]**

213/00 Heterocyclic compounds containing six-membered rings, not condensed with other rings, with one nitrogen atom as the only ring hetero atom and three or more double bonds between ring members or between ring members and non-ring members [2, 2006.01]

213/02 • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
213/04 • • having no bond between the ring nitrogen atom and a non-ring member or having only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

213/06 • • • containing only hydrogen and carbon atoms in addition to the ring nitrogen atom **[2, 2006.01]**
213/08 • • • • Preparation by ring-closure **[2, 2006.01]**
213/09 • • • • • involving the use of ammonia, amines, amine salts, or nitriles **[3, 2006.01]**
213/10 • • • • • • from acetaldehyde or cyclic polymers thereof **[3, 2006.01]**
213/12 • • • • • • from unsaturated compounds **[3, 2006.01]**
213/127 • • • • Preparation from compounds containing pyridine rings **[3, 2006.01]**
213/133 • • • • Preparation by dehydrogenation of hydrogenated pyridine compounds **[3, 2006.01]**
213/14 • • • • Preparation from compounds containing heterocyclic oxygen **[2, 2006.01]**
213/16 • • • • containing only one pyridine ring **[2, 2006.01]**
213/18 • • • • • Salts thereof **[2, 2006.01]**
213/20 • • • • • Quaternary compounds thereof **[2, 2006.01]**
213/22 • • • • containing two or more pyridine rings directly linked together, e.g. bipyridyl **[2, 2006.01]**
213/24 • • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**
213/26 • • • • Radicals substituted by halogen atoms or nitro radicals **[2, 2006.01]**
213/28 • • • • Radicals substituted by singly-bound oxygen or sulfur atoms **[2, 2006.01]**
213/30 • • • • • Oxygen atoms **[2, 2006.01]**
213/32 • • • • • Sulfur atoms **[2, 2006.01]**
213/34 • • • • • • to which a second hetero atom is attached **[2, 2006.01]**
213/36 • • • • Radicals substituted by singly-bound nitrogen atoms (nitro radicals C07D 213/26) **[2, 2006.01]**
213/38 • • • • • having only hydrogen or hydrocarbon radicals attached to the substituent nitrogen atom **[2, 2006.01]**
213/40 • • • • • Acylated substituent nitrogen atom **[2, 2006.01]**
213/42 • • • • • having hetero atoms attached to the substituent nitrogen atom (nitro radicals C07D 213/26) **[2, 2006.01]**
213/44 • • • • Radicals substituted by doubly-bound oxygen, sulfur, or nitrogen atoms, or by two such atoms singly-bound to the same carbon atom **[2, 2006.01]**
213/46 • • • • • Oxygen atoms **[2, 2006.01]**
213/48 • • • • • • Aldehydo radicals **[2, 2006.01]**
213/50 • • • • • • Ketonic radicals **[2, 2006.01]**
213/51 • • • • • • Acetal radicals **[2, 2006.01]**
213/52 • • • • • Sulfur atoms **[2, 2006.01]**
213/53 • • • • • Nitrogen atoms **[2, 2006.01]**
213/54 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
213/55 • • • • • Acids; Esters **[2, 2006.01]**
213/56 • • • • • Amides **[2, 2006.01]**
213/57 • • • • • Nitriles **[2, 2006.01]**
213/58 • • • • • Amidines **[2, 2006.01]**
213/59 • • • • • with at least one of the bonds being to sulfur **[2, 2006.01]**
213/60 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
213/61 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**
213/62 • • • • Oxygen or sulfur atoms **[2, 2006.01]**
213/63 • • • • • One oxygen atom **[2, 2006.01]**
213/64 • • • • • • attached in position 2 or 6 **[2, 2006.01]**
213/643 • • • • • • • • 2-Phenoxypyridines; Derivatives thereof **[5, 2006.01]**
213/647 • • • • • • • • and having in the molecule an acyl radical containing a saturated three-membered ring, e.g. chrysanthemumic acid esters **[5, 2006.01]**
213/65 • • • • • • attached in position 3 or 5 **[2, 2006.01]**
213/66 • • • • • • • having in position 3 an oxygen atom and in each of the positions 4 and 5 a carbon atom bound to an oxygen, sulfur, or nitrogen atom, e.g. pyridoxal **[2, 2006.01]**
213/67 • • • • • • • • • 2-Methyl-3-hydroxy-4,5-bis (hydroxy-methyl) pyridine, i.e. pyridoxine **[2, 2006.01]**
213/68 • • • • • • attached in position 4 **[2, 2006.01]**
213/69 • • • • • Two or more oxygen atoms **[2, 2006.01]**
213/70 • • • • • Sulfur atoms **[4, 2006.01]**
213/71 • • • • • • to which a second hetero atom is attached **[4, 2006.01]**
213/72 • • • • Nitrogen atoms (nitro radicals C07D 213/61) **[2, 2006.01]**
213/73 • • • • • Unsubstituted amino or imino radicals **[2, 2006.01]**
213/74 • • • • • Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals **[2, 2006.01]**
213/75 • • • • • Amino or imino radicals, acylated by carboxylic or carbonic acids, or by sulfur or nitrogen analogues thereof, e.g. carbamates **[2, 2006.01]**
213/76 • • • • • to which a second hetero atom is attached (nitro radicals C07D 213/61) **[2, 2006.01]**
213/77 • • • • • • Hydrazine radicals **[2, 2006.01]**
213/78 • • • • Carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
213/79 • • • • • Acids; Esters **[2, 2006.01]**
213/80 • • • • • • in position 3 **[2, 2006.01]**
213/803 • • • • • • Processes of preparation **[3, 2006.01]**
213/807 • • • • • • • by oxidation of pyridines or condensed pyridines **[3, 2006.01]**
213/81 • • • • • Amides; Imides **[2, 2006.01]**
213/82 • • • • • • in position 3 **[2, 2006.01]**
213/83 • • • • • Thioacids; Thioesters; Thioamides; Thioimides **[2, 2006.01]**
213/84 • • • • • Nitriles **[2, 2006.01]**
213/85 • • • • • • in position 3 **[2, 2006.01]**
213/86 • • • • • Hydrazides; Thio or imino analogues thereof **[2, 2006.01]**
213/87 • • • • • • in position 3 **[2, 2006.01]**
213/88 • • • • • Nicotinoylhydrazones **[2, 2006.01]**
213/89 • • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

213/90 • having more than three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

215/00 Heterocyclic compounds containing quinoline or hydrogenated quinoline ring systems [2, 2006.01]

215/02 • having no bond between the ring nitrogen atom and a non-ring member or having only hydrogen atoms or carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

215/04 • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to the ring carbon atoms **[2, 2006.01]**

215/06 • • • having only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to the ring nitrogen atom **[2, 2006.01]**

215/08 • • • with acylated ring nitrogen atom **[2, 2006.01]**

215/10 • • • Quaternary compounds **[2, 2006.01]**

215/12 • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**

215/14 • • • Radicals substituted by oxygen atoms **[2, 2006.01]**

215/16 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

215/18 • • • Halogen atoms or nitro radicals **[2, 2006.01]**

215/20 • • • Oxygen atoms **[2, 2006.01]**

215/22 • • • • attached in position 2 or 4 **[2, 2006.01]**

215/227 • • • • • only one oxygen atom which is attached in position 2 **[5, 2006.01]**

215/233 • • • • • only one oxygen atom which is attached in position 4 **[5, 2006.01]**

215/24 • • • • attached in position 8 **[2, 2006.01]**

215/26 • • • • • Alcohols; Ethers thereof **[2, 2006.01]**

215/28 • • • • • • with halogen atoms or nitro radicals in positions 5, 6 or 7 **[2, 2006.01]**

215/30 • • • • • • Metal salts; Chelates **[2, 2006.01]**

215/32 • • • • • • Esters **[2, 2006.01]**

215/34 • • • • • • • Carbamates **[2, 2006.01]**

215/36 • • • Sulfur atoms (C07D 215/24 takes precedence) **[2, 2006.01]**

215/38 • • • Nitrogen atoms (nitro radicals C07D 215/18) **[2, 2006.01]**

215/40 • • • • attached in position 8 **[2, 2006.01]**

215/42 • • • • attached in position 4 **[2, 2006.01]**

215/44 • • • • • with aryl radicals attached to said nitrogen atoms **[2, 2006.01]**

215/46 • • • • • with hydrocarbon radicals, substituted by nitrogen atoms, attached to said nitrogen atoms **[2, 2006.01]**

215/48 • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**

215/50 • • • • attached in position 4 **[2, 2006.01]**

215/52 • • • • • with aryl radicals attached in position 2 **[2, 2006.01]**

215/54 • • • • attached in position 3 **[2, 2006.01]**

215/56 • • • • • with oxygen atoms in position 4 **[2, 2006.01]**

215/58 • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

215/60 • • N-oxides **[2, 2006.01]**

217/00 Heterocyclic compounds containing isoquinoline or hydrogenated isoquinoline ring systems [2, 2006.01]

217/02 • with only hydrogen atoms or radicals containing only carbon and hydrogen atoms, directly attached to carbon atoms of the nitrogen-containing ring; Alkylene-bis-isoquinolines **[2, 2006.01]**

217/04 • • with hydrocarbon or substituted hydrocarbon radicals attached to the ring nitrogen atom **[2, 2006.01]**

217/06 • • with the ring nitrogen atom acylated by carboxylic or carbonic acids, or with sulfur or nitrogen analogues thereof, e.g. carbamates **[2, 2006.01]**

217/08 • • with a hetero atom directly attached to the ring nitrogen atom **[2, 2006.01]**

217/10 • • Quaternary compounds **[2, 2006.01]**

217/12 • with radicals, substituted by hetero atoms, attached to carbon atoms of the nitrogen-containing ring **[2, 2006.01]**

217/14 • • other than aralkyl radicals **[2, 2006.01]**

217/16 • • • substituted by oxygen atoms **[2, 2006.01]**

217/18 • • Aralkyl radicals **[2, 2006.01]**

217/20 • • • with oxygen atoms directly attached to the aromatic ring of said aralkyl radical, e.g. papaverine **[2, 2006.01]**

217/22 • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the nitrogen-containing ring **[2, 2006.01]**

217/24 • • Oxygen atoms **[2, 2006.01]**

217/26 • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**

219/00 Heterocyclic compounds containing acridine or hydrogenated acridine ring systems [2, 2006.01]

219/02 • with only hydrogen, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the ring system **[2, 2006.01]**

219/04 • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the ring system **[2, 2006.01]**

219/06 • • Oxygen atoms **[2, 2006.01]**

219/08 • • Nitrogen atoms **[2, 2006.01]**

219/10 • • • attached in position 9 **[2, 2006.01]**

219/12 • • • • Aminoalkyl-amino radicals attached in position 9 **[2, 2006.01]**

219/14 • with hydrocarbon radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom **[2, 2006.01]**

219/16 • with acyl radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom **[2, 2006.01]**

221/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom as the only ring hetero atom, not provided for by groups C07D 211/00-C07D 219/00 [2, 2006.01]

221/02 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

221/04 • • Ortho- or peri-condensed ring systems **[2, 2006.01]**

221/06 • • • Ring systems of three rings **[2, 2006.01]**

221/08 • • • • Aza-anthracenes **[2, 2006.01]**

221/10 • • • • Aza-phenanthrenes **[2, 2006.01]**

221/12 • • • • • Phenanthridines **[2, 2006.01]**

221/14 • • • • Aza-phenalenes, e.g. 1,8-naphthalimide **[2, 2006.01]**

221/16 • • • • containing carbocyclic rings other than six-membered **[2, 2006.01]**

221/18 • • • Ring systems of four or more rings **[2, 2006.01]**

221/20 • • Spiro-condensed ring systems **[2, 2006.01]**
221/22 • • Bridged ring systems **[2, 2006.01]**
221/24 • • • Camphidines **[2, 2006.01]**
221/26 • • • Benzomorphans **[2, 2006.01]**
221/28 • • • Morphinans **[2, 2006.01]**

223/00 Heterocyclic compounds containing seven-membered rings having one nitrogen atom as the only ring hetero atom [2, 2006.01]

Note(s) [2]

Hexamethylene imines or 3-azabicyclo [3.2.2] nonanes, having only hydrogen atoms attached to the ring carbon atoms, are classified in group C07D 295/00.

223/02 • not condensed with other rings **[2, 2006.01]**
223/04 • • with only hydrogen atoms, halogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
223/06 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms (halogen atoms C07D 223/04) **[2, 2006.01]**
223/08 • • • Oxygen atoms **[2, 2006.01]**
223/10 • • • • attached in position 2 **[2, 2006.01]**
223/12 • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
223/14 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
223/16 • • Benzazepines; Hydrogenated benzazepines **[2, 2006.01]**
223/18 • • Dibenzazepines; Hydrogenated dibenzazepines **[2, 2006.01]**
223/20 • • • Dibenz [b, e] azepines; Hydrogenated dibenz [b, e] azepines **[2, 2006.01]**
223/22 • • • Dibenz [b, f] azepines; Hydrogenated dibenz [b, f] azepines **[2, 2006.01]**
223/24 • • • • with hydrocarbon radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom **[2, 2006.01]**
223/26 • • • • • having a double bond between positions 10 and 11 **[2, 2006.01]**
223/28 • • • • • having a single bond between positions 10 and 11 **[2, 2006.01]**
223/30 • • • • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
223/32 • • containing carbocyclic rings other than six-membered **[2, 2006.01]**

225/00 Heterocyclic compounds containing rings of more than seven members having one nitrogen atom as the only ring hetero atom [2, 2006.01]

Note(s) [3]

Polymethyleneimines with at least five ring members and having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00.

225/02 • not condensed with other rings **[2, 2006.01]**
225/04 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
225/06 • • condensed with one six-membered ring **[2, 2006.01]**
225/08 • • condensed with two six-membered rings **[2, 2006.01]**

227/00 Heterocyclic compounds containing rings having one nitrogen atom as the only ring hetero atom, according to more than one of groups C07D 203/00-C07D 225/00 [2, 2006.01]

Note(s) [3]

Polymethyleneimines with at least five ring members and having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00.

227/02 • with only hydrogen or carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**
227/04 • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to ring carbon atoms **[2, 2006.01]**
227/06 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
227/08 • • • Oxygen atoms **[2, 2006.01]**
227/087 • • • • One doubly-bound oxygen atom in position 2, e.g. lactams **[3, 2006.01]**
227/093 • • • • Two doubly-bound oxygen atoms attached to the carbon atoms adjacent to the ring nitrogen atom, e.g. dicarboxylic acid imides **[3, 2006.01]**
227/10 • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
227/12 • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

229/00 Heterocyclic compounds containing rings of less than five members having two nitrogen atoms as the only ring hetero atoms [2, 2006.01]

229/02 • containing three-membered rings **[3, 2006.01]**

231/00 Heterocyclic compounds containing 1,2-diazole or hydrogenated 1,2-diazole rings [2, 2006.01]

231/02 • not condensed with other rings **[2, 2006.01]**
231/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
231/06 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
231/08 • • • with oxygen or sulfur atoms directly attached to ring carbon atoms **[2, 2006.01]**
231/10 • • having two or three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
231/12 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
231/14 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
231/16 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**
231/18 • • • • One oxygen or sulfur atom **[2, 2006.01]**
231/20 • • • • • One oxygen atom attached in position 3 or 5 **[2, 2006.01]**
231/22 • • • • • • with aryl radicals attached to ring nitrogen atoms **[2, 2006.01]**
231/24 • • • • • • • having sulfone or sulfonic acid radicals in the molecule **[2, 2006.01]**

231/26 • • • • • • • • 1-Phenyl-3-methyl-5- pyrazolones, unsubstituted or substituted on the phenyl ring **[2, 2006.01]**
231/28 • • • • Two oxygen or sulfur atoms **[2, 2006.01]**
231/30 • • • • • attached in position 3 and 5 **[2, 2006.01]**
231/32 • • • • • • Oxygen atoms **[2, 2006.01]**
231/34 • • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached in position 4 **[2, 2006.01]**
231/36 • • • • • • • with hydrocarbon radicals, substituted by hetero atoms, attached in position 4 **[2, 2006.01]**
231/38 • • • • Nitrogen atoms (nitro radicals C07D 231/16) **[2, 2006.01]**
231/40 • • • • • Acylated on said nitrogen atom **[2, 2006.01]**
231/42 • • • • • Benzene-sulfonamido pyrazoles **[2, 2006.01]**
231/44 • • • • Oxygen and nitrogen or sulfur and nitrogen atoms **[2, 2006.01]**
231/46 • • • • • Oxygen atom in position 3 or 5 and nitrogen atom in position 4 **[2, 2006.01]**
231/48 • • • • • • with hydrocarbon radicals attached to said nitrogen atom **[2, 2006.01]**
231/50 • • • • • • Acylated on said nitrogen atom **[2, 2006.01]**
231/52 • • • • • Oxygen atom in position 3 and nitrogen atom in position 5, or vice-versa **[2, 2006.01]**
231/54 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
231/56 • • Benzopyrazoles; Hydrogenated benzopyrazoles **[2, 2006.01]**

233/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, not condensed with other rings [2, 2006.01]

233/02 • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
233/04 • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
233/06 • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2, 2006.01]**
233/08 • • • with alkyl radicals, containing more than four carbon atoms, directly attached to ring carbon atoms **[2, 2006.01]**
233/10 • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring nitrogen atoms **[2, 2006.01]**
233/12 • • • • with substituted hydrocarbon radicals attached to ring nitrogen atoms **[2, 2006.01]**
233/14 • • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
233/16 • • • • • Radicals substituted by nitrogen atoms **[2, 2006.01]**
233/18 • • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
233/20 • • with substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
233/22 • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
233/24 • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
233/26 • • • Radicals substituted by carbon atoms having three bonds to hetero atoms **[2, 2006.01]**
233/28 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
233/30 • • • Oxygen or sulfur atoms **[2, 2006.01]**
233/32 • • • • One oxygen atom **[2, 2006.01]**
233/34 • • • • • Ethylene-urea **[2, 2006.01]**
233/36 • • • • • with hydrocarbon radicals, substituted by nitrogen atoms, attached to ring nitrogen atoms **[2, 2006.01]**
233/38 • • • • • with acyl radicals or hetero atoms directly attached to ring nitrogen atoms **[2, 2006.01]**
233/40 • • • • Two or more oxygen atoms **[2, 2006.01]**
233/42 • • • • Sulfur atoms **[2, 2006.01]**
233/44 • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
233/46 • • • • with only hydrogen atoms attached to said nitrogen atoms **[2, 2006.01]**
233/48 • • • • with acyclic hydrocarbon or substituted acyclic hydrocarbon radicals, attached to said nitrogen atoms **[2, 2006.01]**
233/50 • • • • with carbocyclic radicals directly attached to said nitrogen atoms **[2, 2006.01]**
233/52 • • • • with hetero atoms directly attached to said nitrogen atoms **[2, 2006.01]**
233/54 • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
233/56 • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring carbon atoms **[2, 2006.01]**
233/58 • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring nitrogen atoms **[2, 2006.01]**
233/60 • • • with hydrocarbon radicals, substituted by oxygen or sulfur atoms, attached to ring nitrogen atoms **[2, 2006.01]**
233/61 • • • with hydrocarbon radicals, substituted by nitrogen atoms not forming part of a nitro radical, attached to ring nitrogen atoms **[3, 2006.01]**
233/62 • • • with triarylmethyl radicals attached to ring nitrogen atoms **[2, 2006.01]**
233/64 • • with substituted hydrocarbon radicals attached to ring carbon atoms, e.g. histidine **[2, 2006.01]**
233/66 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
233/68 • • • Halogen atoms **[2, 2006.01]**
233/70 • • • One oxygen atom **[2, 2006.01]**
233/72 • • • Two oxygen atoms, e.g. hydantoin **[2, 2006.01]**
233/74 • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to other ring members **[2, 2006.01]**
233/76 • • • • with substituted hydrocarbon radicals attached to the third ring carbon atom **[2, 2006.01]**
233/78 • • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
233/80 • • • • with hetero atoms or acyl radicals directly attached to ring nitrogen atoms **[2, 2006.01]**

233/82 • • • • • Halogen atoms **[2, 2006.01]**
233/84 • • • Sulfur atoms **[2, 2006.01]**
233/86 • • • Oxygen and sulfur atoms, e.g. thiohydantoin **[2, 2006.01]**
233/88 • • • Nitrogen atoms, e.g. allantoin **[2, 2006.01]**
233/90 • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
233/91 • • • Nitro radicals **[2, 2006.01]**
233/92 • • • • attached in position 4 or 5 **[2, 2006.01]**
233/93 • • • • • with hydrocarbon radicals, substituted by halogen atoms, attached to other ring members **[2, 2006.01]**
233/94 • • • • • with hydrocarbon radicals, substituted by oxygen or sulfur atoms, attached to other ring members **[2, 2006.01]**
233/95 • • • • • with hydrocarbon radicals, substituted by nitrogen atoms, attached to other ring members **[2, 2006.01]**
233/96 • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

235/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, condensed with other rings [2, 2006.01]

235/02 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
235/04 • • Benzimidazoles; Hydrogenated benzimidazoles **[2, 2006.01]**
235/06 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2 **[2, 2006.01]**
235/08 • • • • Radicals containing only hydrogen and carbon atoms **[2, 2006.01]**
235/10 • • • • Radicals substituted by halogen atoms or nitro radicals **[2, 2006.01]**
235/12 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
235/14 • • • • Radicals substituted by nitrogen atoms (by nitro radicals C07D 235/10) **[2, 2006.01]**
235/16 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
235/18 • • • with aryl radicals directly attached in position 2 **[2, 2006.01]**
235/20 • • • Two benzimidazolyl-2 radicals linked together directly or via a hydrocarbon or substituted hydrocarbon radical **[2, 2006.01]**
235/22 • • • with hetero atoms directly attached to ring nitrogen atoms (C07D 235/10 takes precedence) **[2, 2006.01]**
235/24 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2 **[2, 2006.01]**
235/26 • • • • Oxygen atoms **[2, 2006.01]**
235/28 • • • • Sulfur atoms **[2, 2006.01]**
235/30 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
235/32 • • • • • Benzimidazole-2-carbamic acids, unsubstituted or substituted; Esters thereof; Thio-analogues thereof **[2, 2006.01]**

237/00 Heterocyclic compounds containing 1,2-diazine or hydrogenated 1,2-diazine rings [2, 2006.01]

237/02 • not condensed with other rings **[2, 2006.01]**
237/04 • • having less than three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
237/06 • • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
237/08 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
237/10 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
237/12 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**
237/14 • • • • Oxygen atoms **[2, 2006.01]**
237/16 • • • • • Two oxygen atoms **[2, 2006.01]**
237/18 • • • • Sulfur atoms **[2, 2006.01]**
237/20 • • • • Nitrogen atoms (nitro radicals C07D 237/12) **[2, 2006.01]**
237/22 • • • • Nitrogen and oxygen atoms **[2, 2006.01]**
237/24 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
237/26 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
237/28 • • Cinnolines **[2, 2006.01]**
237/30 • • Phthalazines **[2, 2006.01]**
237/32 • • • with oxygen atoms directly attached to carbon atoms of the nitrogen-containing ring **[2, 2006.01]**
237/34 • • • with nitrogen atoms directly attached to carbon atoms of the nitrogen-containing ring, e.g. hydrazine radicals **[2, 2006.01]**
237/36 • • Benzo-cinnolines **[2, 2006.01]**

239/00 Heterocyclic compounds containing 1,3-diazine or hydrogenated 1,3-diazine rings [2, 2006.01]

239/02 • not condensed with other rings **[2, 2006.01]**
239/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
239/06 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
239/08 • • • with hetero atoms directly attached in position 2 **[2, 2006.01]**
239/10 • • • • Oxygen or sulfur atoms **[2, 2006.01]**
239/12 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
239/14 • • • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to said nitrogen atoms **[2, 2006.01]**
239/16 • • • • • acylated on said nitrogen atoms **[2, 2006.01]**
239/18 • • • • • with hetero atoms attached to said nitrogen atoms, except nitro radicals, e.g. hydrazine radicals **[2, 2006.01]**
239/20 • • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
239/22 • • • with hetero atoms directly attached to ring carbon atoms **[2, 2006.01]**

239/24 • • having three or more double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

239/26 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**

239/28 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms **[2, 2006.01]**

239/30 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**

239/32 • • • • One oxygen, sulfur or nitrogen atom **[2, 2006.01]**

239/34 • • • • • One oxygen atom **[2, 2006.01]**

239/36 • • • • • • as doubly bound oxygen atom or as unsubstituted hydroxy radical **[2, 2006.01]**

239/38 • • • • • One sulfur atom **[2, 2006.01]**

239/40 • • • • • • as doubly bound sulfur atom or as unsubstituted mercapto radical **[2, 2006.01]**

239/42 • • • • • One nitrogen atom (nitro radicals C07D 239/30) **[2, 2006.01]**

239/46 • • • • Two or more oxygen, sulfur or nitrogen atoms **[2, 2006.01]**

239/47 • • • • • One nitrogen atom and one oxygen or sulfur atom, e.g. cytosine **[3, 2006.01]**

239/48 • • • • • Two nitrogen atoms **[2, 2006.01]**

239/49 • • • • • • with an aralkyl radical, or substituted aralkyl radical, attached in position 5, e.g. trimethoprim **[3, 2006.01]**

239/50 • • • • • Three nitrogen atoms **[2, 2006.01]**

239/52 • • • • • Two oxygen atoms **[2, 2006.01]**

239/54 • • • • • • as doubly bound oxygen atoms or as unsubstituted hydroxy radicals **[2, 2006.01]**

239/545 • • • • • • • with other hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms **[5, 2006.01]**

239/553 • • • • • • • • with halogen atoms or nitro radicals directly attached to ring carbon atoms, e.g. fluorouracil **[5, 2006.01]**

239/557 • • • • • • • • with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms, e.g. orotic acid **[5, 2006.01]**

239/56 • • • • • One oxygen atom and one sulfur atom **[2, 2006.01]**

239/58 • • • • • Two sulfur atoms **[2, 2006.01]**

239/60 • • • • • Three or more oxygen or sulfur atoms **[2, 2006.01]**

239/62 • • • • • • Barbituric acids **[2, 2006.01]**

239/64 • • • • • • • Salts of organic bases; Organic double compounds **[2, 2006.01]**

239/66 • • • • • • Thiobarbituric acids **[2, 2006.01]**

239/68 • • • • • • • Salts of organic bases; Organic double compounds **[2, 2006.01]**

239/69 • • • • Benzenesulfonamido-pyrimidines **[3, 2006.01]**

239/70 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

239/72 • • Quinazolines; Hydrogenated quinazolines **[2, 2006.01]**

239/74 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to ring carbon atoms of the hetero ring **[2, 2006.01]**

239/76 • • • • N-oxides **[2, 2006.01]**

239/78 • • • with hetero atoms directly attached in position 2 **[2, 2006.01]**

239/80 • • • • Oxygen atoms **[2, 2006.01]**

239/82 • • • • • with an aryl radical attached in position 4 **[2, 2006.01]**

239/84 • • • • Nitrogen atoms **[2, 2006.01]**

239/86 • • • with hetero atoms directly attached in position 4 **[2, 2006.01]**

239/88 • • • • Oxygen atoms **[2, 2006.01]**

239/90 • • • • • with acyclic radicals attached in position 2 or 3 **[2, 2006.01]**

239/91 • • • • • with aryl or aralkyl radicals attached in position 2 or 3 **[2, 2006.01]**

239/92 • • • • • with hetero atoms directly attached to nitrogen atoms of the hetero ring **[2, 2006.01]**

239/93 • • • • Sulfur atoms **[2, 2006.01]**

239/94 • • • • Nitrogen atoms **[2, 2006.01]**

239/95 • • • with hetero atoms directly attached in positions 2 and 4 **[2, 2006.01]**

239/96 • • • • Two oxygen atoms **[2, 2006.01]**

241/00 Heterocyclic compounds containing 1,4-diazine or hydrogenated 1,4-diazine rings [2, 2006.01]

Note(s) [2]

Piperazines with only hydrogen atoms directly attached to ring carbon atoms are classified in group C07D 295/00.

241/02 • not condensed with other rings **[2, 2006.01]**

241/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

241/06 • • having one or two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

241/08 • • • with oxygen atoms directly attached to ring carbon atoms **[2, 2006.01]**

241/10 • • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

241/12 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**

241/14 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

241/16 • • • • Halogen atoms; Nitro radicals **[2, 2006.01]**

241/18 • • • • Oxygen or sulfur atoms **[2, 2006.01]**

241/20 • • • • Nitrogen atoms (nitro radicals C07D 241/16) **[2, 2006.01]**

241/22 • • • • • Benzenesulfonamido pyrazines **[2, 2006.01]**

241/24 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**

241/26 • • • • • with nitrogen atoms directly attached to ring carbon atoms **[2, 2006.01]**

241/28 • • • • • • in which said hetero-bound carbon atoms have double bonds to oxygen, sulfur or nitrogen atoms **[2, 5, 2006.01]**

241/30 • • • • • • • in which said hetero-bound carbon atoms are part of a substructure —C(=X)—X—C(=X)—X— in which X is an oxygen or sulfur atom or an imino radical, e.g. imidoylguanidines **[2, 5, 2006.01]**

241/32 • • • • • • • • (Amino-pyrazinoyl) guanidines **[2, 5, 2006.01]**

241/34 • • • • • • • (Amino-pyrazine carbonamido) guanidines **[2, 5, 2006.01]**

241/36 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

241/38 • • with only hydrogen or carbon atoms directly attached to the ring nitrogen atoms **[2, 2006.01]**

241/40 • • • Benzopyrazines **[2, 2006.01]**

241/42 • • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**

241/44 • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**

241/46 • • • Phenazines **[2, 2006.01]**

241/48 • • • • with hydrocarbon radicals, substituted by nitrogen atoms, directly attached to the ring nitrogen atoms **[2, 2006.01]**

241/50 • • with hetero atoms directly attached to ring nitrogen atoms **[2, 2006.01]**

241/52 • • • Oxygen atoms **[2, 2006.01]**

241/54 • • • Nitrogen atoms **[2, 2006.01]**

243/00 Heterocyclic compounds containing seven-membered rings having two nitrogen atoms as the only ring hetero atoms [2, 2006.01]

243/02 • having the nitrogen atoms in positions 1 and 2 **[2, 2006.01]**

243/04 • having the nitrogen atoms in positions 1 and 3 **[2, 2006.01]**

243/06 • having the nitrogen atoms in positions 1 and 4 **[2, 2006.01]**

243/08 • • not condensed with other rings **[2, 2006.01]**

243/10 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

243/12 • • • 1,5-Benzodiazepines; Hydrogenated 1,5-benzodiazepines **[2, 2006.01]**

243/14 • • • 1,4-Benzodiazepines; Hydrogenated 1,4-benzodiazepines **[2, 2006.01]**

243/16 • • • • substituted in position 5 by aryl radicals **[2, 2006.01]**

243/18 • • • • • substituted in position 2 by nitrogen, oxygen or sulfur atoms **[2, 2006.01]**

243/20 • • • • • • Nitrogen atoms **[2, 2006.01]**

243/22 • • • • • • Sulfur atoms **[2, 2006.01]**

243/24 • • • • • • Oxygen atoms **[2, 2006.01]**

243/26 • • • • • • • Preparation from compounds already containing the benzodiazepine skeleton **[2, 2006.01]**

243/28 • • • • • • • Preparation including building-up the benzodiazepine skeleton from compounds containing no hetero rings **[2, 2006.01]**

243/30 • • • • • • • Preparation including building-up the benzodiazepine skeleton from compounds already containing hetero rings **[2, 2006.01]**

243/32 • • • • • • • • containing a phthalimide or hydrogenated phthalimide ring system **[2, 2006.01]**

243/34 • • • • • • • • containing a quinazoline or hydrogenated quinazoline ring system **[2, 2006.01]**

243/36 • • • • • • • • containing an indole or hydrogenated indole ring system **[2, 2006.01]**

243/38 • • • [b, e]- or [b, f]-condensed with six-membered rings **[2, 2006.01]**

245/00 Heterocyclic compounds containing rings of more than seven members having two nitrogen atoms as the only ring hetero atoms [2, 2006.01]

245/02 • not condensed with other rings **[2, 2006.01]**

245/04 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

245/06 • • condensed with one six-membered ring **[2, 2006.01]**

247/00 Heterocyclic compounds containing rings having two nitrogen atoms as the only ring hetero atoms, according to more than one of groups C07D 229/00-C07D 245/00 [2, 2006.01]

247/02 • having the nitrogen atoms in positions 1 and 3 **[2, 2006.01]**

249/00 Heterocyclic compounds containing five-membered rings having three nitrogen atoms as the only ring hetero atoms [2, 2006.01]

249/02 • not condensed with other rings **[2, 2006.01]**

249/04 • • 1,2,3-Triazoles; Hydrogenated 1,2,3-triazoles **[2, 2006.01]**

249/06 • • • with aryl radicals directly attached to ring atoms **[2, 2006.01]**

249/08 • • 1,2,4-Triazoles; Hydrogenated 1,2,4-triazoles **[2, 2006.01]**

249/10 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

249/12 • • • • Oxygen or sulfur atoms **[2, 2006.01]**

249/14 • • • • Nitrogen atoms **[2, 2006.01]**

249/16 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

249/18 • • Benzotriazoles **[2, 2006.01]**

249/20 • • • with aryl radicals directly attached in position 2 **[2, 2006.01]**

249/22 • • Naphthotriazoles **[2, 2006.01]**

249/24 • • • with stilbene radicals directly attached in position 2 **[2, 2006.01]**

251/00 Heterocyclic compounds containing 1,3,5-triazine rings [2, 2006.01]

251/02 • not condensed with other rings **[2, 2006.01]**

251/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

251/06 • • • with hetero atoms directly attached to ring nitrogen atoms **[2, 2006.01]**
251/08 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
251/10 • • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
251/12 • • having three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
251/14 • • • with hydrogen or carbon atoms directly attached to at least one ring carbon atom **[2, 2006.01]**
251/16 • • • • to only one ring carbon atom **[2, 2006.01]**
251/18 • • • • • • with nitrogen atoms directly attached to the two other ring carbon atoms, e.g. guanamines **[2, 2006.01]**
251/20 • • • • • • with no nitrogen atoms directly attached to a ring carbon atom **[2, 2006.01]**
251/22 • • • • to two ring carbon atoms **[2, 2006.01]**
251/24 • • • • to three ring carbon atoms **[2, 2006.01]**
251/26 • • • with only hetero atoms directly attached to ring carbon atoms **[2, 2006.01]**
251/28 • • • • Only halogen atoms, e.g. cyanuric chloride **[2, 2006.01]**
251/30 • • • • Only oxygen atoms **[2, 2006.01]**
251/32 • • • • • Cyanuric acid; Isocyanuric acid **[2, 2006.01]**
251/34 • • • • • Cyanuric or isocyanuric esters **[2, 2006.01]**
251/36 • • • • • • having halogen atoms directly attached to ring nitrogen atoms **[2, 2006.01]**
251/38 • • • • Sulfur atoms **[2, 2006.01]**
251/40 • • • • Nitrogen atoms **[2, 2006.01]**
251/42 • • • • • One nitrogen atom **[2, 2006.01]**
251/44 • • • • • • • with halogen atoms attached to the two other ring carbon atoms **[2, 2006.01]**
251/46 • • • • • • • with oxygen or sulfur atoms attached to the two other ring carbon atoms **[2, 2006.01]**
251/48 • • • • • Two nitrogen atoms **[2, 2006.01]**
251/50 • • • • • • • with a halogen atom attached to the third ring carbon atom **[2, 2006.01]**
251/52 • • • • • • • with an oxygen or sulfur atom attached to the third ring carbon atom **[2, 2006.01]**
251/54 • • • • • Three nitrogen atoms **[2, 2006.01]**
251/56 • • • • • • Preparation of melamine **[2, 2006.01]**
251/58 • • • • • • • • from cyanamide, dicyanamide or calcium cyanamide **[2, 2006.01]**
251/60 • • • • • • • • from urea or from carbon dioxide and ammonia **[2, 2006.01]**
251/62 • • • • • • Purification of melamine **[2, 2006.01]**
251/64 • • • • • • Condensation products of melamine with aldehydes; Derivatives thereof (polycondensation products C08G) **[2, 2006.01]**
251/66 • • • • • • Derivatives of melamine in which a hetero atom is directly attached to a nitrogen atom of melamine **[2, 2006.01]**
251/68 • • • • • • Triazinylamino stilbenes **[2, 2006.01]**
251/70 • • • • • • Other substituted melamines **[2, 2006.01]**
251/72 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

253/00 Heterocyclic compounds containing six-membered rings having three nitrogen atoms as the only ring hetero atoms, not provided for by group C07D 251/00 [2, 2006.01]
253/02 • not condensed with other rings **[2, 2006.01]**
253/04 • • 1,2,3-Triazines **[2, 2006.01]**
253/06 • • 1,2,4-Triazines **[2, 2006.01]**
253/065 • • • having three double bonds between ring members or between ring members and non-ring members **[5, 2006.01]**
253/07 • • • • with hetero atoms, or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[5, 2006.01]**
253/075 • • • • • Two hetero atoms, in positions 3 and 5 **[5, 2006.01]**
253/08 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
253/10 • • Condensed 1,2,4-triazines; Hydrogenated condensed 1,2,4-triazines **[5, 2006.01]**

255/00 Heterocyclic compounds containing rings having three nitrogen atoms as the only ring hetero atoms, not provided for by groups C07D 249/00-C07D 253/00 [2, 2006.01]
255/02 • not condensed with other rings **[2, 2006.01]**
255/04 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

257/00 Heterocyclic compounds containing rings having four nitrogen atoms as the only ring hetero atoms [2, 2006.01]
257/02 • not condensed with other rings **[2, 2006.01]**
257/04 • • Five-membered rings **[2, 2006.01]**
257/06 • • • with nitrogen atoms directly attached to the ring carbon atom **[2, 2006.01]**
257/08 • • Six-membered rings **[2, 2006.01]**
257/10 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
257/12 • • Six-membered rings having four nitrogen atoms **[2, 2006.01]**

259/00 Heterocyclic compounds containing rings having more than four nitrogen atoms as the only ring hetero atoms [2, 2006.01]

Heterocyclic compounds having nitrogen and oxygen as the only ring hetero atoms [2]

261/00 Heterocyclic compounds containing 1,2-oxazole or hydrogenated 1,2-oxazole rings [2, 2006.01]
261/02 • not condensed with other rings **[2, 2006.01]**
261/04 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
261/06 • • having two or more double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
261/08 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
261/10 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

261/12 • • • • Oxygen atoms **[2, 2006.01]**
261/14 • • • • Nitrogen atoms **[2, 2006.01]**
261/16 • • • • • Benzene-sulfonamido isoxazoles **[2, 2006.01]**
261/18 • • • • Carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen **[2, 2006.01]**
261/20 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

263/00 Heterocyclic compounds containing 1,3-oxazole or hydrogenated 1,3-oxazole rings [2, 2006.01]

263/02 • not condensed with other rings **[2, 2006.01]**
263/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
263/06 • • • with hydrocarbon radicals, substituted by oxygen atoms, attached to ring carbon atoms **[2, 2006.01]**
263/08 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
263/10 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
263/12 • • • • with radicals containing only hydrogen and carbon atoms **[2, 2006.01]**
263/14 • • • • with radicals substituted by oxygen atoms **[2, 2006.01]**
263/16 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
263/18 • • • • Oxygen atoms **[2, 2006.01]**
263/20 • • • • • attached in position 2 **[2, 2006.01]**
263/22 • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to other ring carbon atoms **[2, 2006.01]**
263/24 • • • • • • with hydrocarbon radicals, substituted by oxygen atoms, attached to other ring carbon atoms **[2, 2006.01]**
263/26 • • • • • • with hetero atoms or acyl radicals directly attached to the ring nitrogen atom **[2, 2006.01]**
263/28 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
263/30 • • having two or three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
263/32 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
263/34 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
263/36 • • • • One oxygen atom **[2, 2006.01]**
263/38 • • • • • attached in position 2 **[2, 2006.01]**
263/40 • • • • • attached in position 4 **[2, 2006.01]**
263/42 • • • • • attached in position 5 **[2, 2006.01]**
263/44 • • • • Two oxygen atoms **[2, 2006.01]**
263/46 • • • • Sulfur atoms **[2, 2006.01]**
263/48 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
263/50 • • • • • Benzene-sulfonamido oxazoles **[2, 2006.01]**
263/52 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
263/54 • • Benzoxazoles; Hydrogenated benzoxazoles **[2, 2006.01]**
263/56 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2 **[2, 2006.01]**
263/57 • • • • Aryl or substituted aryl radicals **[5, 2006.01]**
263/58 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2 **[2, 2006.01]**
263/60 • • Naphthoxazoles; Hydrogenated naphthoxazoles **[2, 2006.01]**
263/62 • • having two or more ring systems containing condensed 1,3-oxazole rings **[2, 2006.01]**
263/64 • • • linked in positions 2 and 2' by chains containing six-membered aromatic rings or ring systems containing such rings **[5, 2006.01]**

265/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom and one oxygen atom as the only ring hetero atoms [2, 2006.01]

Note(s) [2]

Morpholines having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00.

265/02 • 1,2-Oxazines; Hydrogenated 1,2-oxazines **[2, 2006.01]**
265/04 • 1,3-Oxazines; Hydrogenated 1,3-oxazines **[2, 2006.01]**
265/06 • • not condensed with other rings **[2, 2006.01]**
265/08 • • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
265/10 • • • • with oxygen atoms directly attached to ring carbon atoms **[2, 2006.01]**
265/12 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
265/14 • • • condensed with one six-membered ring **[2, 2006.01]**
265/16 • • • • with only hydrogen or carbon atoms directly attached in positions 2 and 4 **[2, 2006.01]**
265/18 • • • • with hetero atoms directly attached in position 2 **[2, 2006.01]**
265/20 • • • • with hetero atoms directly attached in position 4 **[2, 2006.01]**
265/22 • • • • • Oxygen atoms **[2, 2006.01]**
265/24 • • • • with hetero atoms directly attached in positions 2 and 4 **[2, 2006.01]**
265/26 • • • • • Two oxygen atoms, e.g. isatoic anhydride **[2, 2006.01]**
265/28 • 1,4-Oxazines; Hydrogenated 1,4-oxazines **[2, 2006.01]**
265/30 • • not condensed with other rings **[2, 2006.01]**
265/32 • • • with oxygen atoms directly attached to ring carbon atoms **[2, 2006.01]**
265/33 • • • • Two oxygen atoms, in positions 3 and 5 **[5, 2006.01]**
265/34 • • condensed with carbocyclic rings **[2, 2006.01]**
265/36 • • • condensed with one six-membered ring **[2, 2006.01]**

265/38 • • • [b, e]-condensed with two six-membered rings **[2, 2006.01]**

267/00 Heterocyclic compounds containing rings of more than six members having one nitrogen atom and one oxygen atom as the only ring hetero atoms [2, 2006.01]

267/02 • Seven-membered rings **[2, 2006.01]**
267/04 • • having the hetero atoms in positions 1 and 2 **[2, 2006.01]**
267/06 • • having the hetero atoms in positions 1 and 3 **[2, 2006.01]**
267/08 • • having the hetero atoms in positions 1 and 4 **[2, 2006.01]**
267/10 • • • not condensed with other rings **[2, 2006.01]**
267/12 • • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
267/14 • • • • condensed with one six-membered ring **[2, 2006.01]**
267/16 • • • • condensed with two six-membered rings **[2, 2006.01]**
267/18 • • • • • [b, e]-condensed **[2, 2006.01]**
267/20 • • • • • [b, f]-condensed **[2, 2006.01]**
267/22 • Eight-membered rings **[2, 2006.01]**

269/00 Heterocyclic compounds containing rings having one nitrogen atom and one oxygen atom as the only ring hetero atoms according to more than one of groups C07D 261/00-C07D 267/00 [2, 2006.01]

269/02 • having the hetero atoms in positions 1 and 3 **[2, 2006.01]**

271/00 Heterocyclic compounds containing five-membered rings having two nitrogen atoms and one oxygen atom as the only ring hetero atoms [2, 2006.01]

271/02 • not condensed with other rings **[2, 2006.01]**
271/04 • • 1,2,3-Oxadiazoles; Hydrogenated 1,2,3-oxadiazoles **[2, 2006.01]**
271/06 • • 1,2,4-Oxadiazoles; Hydrogenated 1,2,4-oxadiazoles **[2, 2006.01]**
271/07 • • • with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical **[5, 2006.01]**
271/08 • • 1,2,5-Oxadiazoles; Hydrogenated 1,2,5-oxadiazoles **[2, 2006.01]**
271/10 • • 1,3,4-Oxadiazoles; Hydrogenated 1,3,4-oxadiazoles **[2, 2006.01]**
271/107 • • • with two aryl or substituted aryl radicals attached in positions 2 and 5 **[5, 2006.01]**
271/113 • • • with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical **[5, 2006.01]**
271/12 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

273/00 Heterocyclic compounds containing rings having nitrogen and oxygen atoms as the only ring hetero atoms, not provided for by groups C07D 261/00-C07D 271/00 [2, 2006.01]

273/01 • having one nitrogen atom **[3, 2006.01]**
273/02 • having two nitrogen atoms and only one oxygen atom **[2, 2006.01]**
273/04 • • Six-membered rings **[2, 2006.01]**
273/06 • • Seven-membered rings **[2, 2006.01]**
273/08 • having two nitrogen atoms and more than one oxygen atom **[3, 2006.01]**

Heterocyclic compounds having nitrogen and sulfur as the only ring hetero atoms [2]

275/00 Heterocyclic compounds containing 1, 2-thiazole or hydrogenated 1,2-thiazole rings [2, 2006.01]

275/02 • not condensed with other rings **[2, 2006.01]**
275/03 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[5, 2006.01]**
275/04 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
275/06 • • with hetero atoms directly attached to the ring sulfur atom **[2, 2006.01]**

277/00 Heterocyclic compounds containing 1,3-thiazole or hydrogenated 1,3-thiazole rings [2, 2006.01]

277/02 • not condensed with other rings **[2, 2006.01]**
277/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
277/06 • • • with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
277/08 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
277/10 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
277/12 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
277/14 • • • • Oxygen atoms **[2, 2006.01]**
277/16 • • • • Sulfur atoms **[2, 2006.01]**
277/18 • • • • Nitrogen atoms **[2, 2006.01]**
277/20 • • having two or three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
277/22 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
277/24 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
277/26 • • • • Radicals substituted by sulfur atoms **[2, 2006.01]**
277/28 • • • • Radicals substituted by nitrogen atoms **[2, 2006.01]**
277/30 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
277/32 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
277/34 • • • • Oxygen atoms **[2, 2006.01]**
277/36 • • • • Sulfur atoms **[2, 2006.01]**
277/38 • • • • Nitrogen atoms **[2, 2006.01]**
277/40 • • • • • Unsubstituted amino or imino radicals **[2, 2006.01]**
277/42 • • • • • Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals **[2, 2006.01]**

277/44 • • • • • Acylated amino or imino radicals **[2, 2006.01]**

277/46 • • • • • • by carboxylic acids, or sulfur or nitrogen analogues thereof **[2, 2006.01]**

277/48 • • • • • • by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof, e.g. carbonylguanidines **[2, 2006.01]**

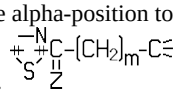
277/50 • • • • • Nitrogen atoms bound to hetero atoms **[2, 2006.01]**

277/52 • • • • • • to sulfur atoms, e.g. sulfonamides **[2, 2006.01]**

277/54 • • • • Nitrogen and either oxygen or sulfur atoms **[2, 2006.01]**

277/56 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**

277/58 • • • • Nitro radicals **[2, 2006.01]**

277/587 • • • with aliphatic hydrocarbon radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms, said aliphatic radicals being substituted in the alpha-position to the ring by a hetero atom, e.g.  with m ≥ 0, Z being a singly or a doubly bound hetero atom **[5, 2006.01]**

277/593 • • • • Z being doubly bound oxygen or doubly bound nitrogen, which nitrogen is part of a possibly substituted oximino radical **[5, 2006.01]**

277/60 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

277/62 • • Benzothiazoles **[2, 2006.01]**

277/64 • • • with only hydrocarbon or substituted hydrocarbon radicals attached in position 2 **[2, 2006.01]**

277/66 • • • • with aromatic rings or ring systems directly attached in position 2 **[2, 2006.01]**

277/68 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2 **[2, 2006.01]**

277/70 • • • • Sulfur atoms **[2, 2006.01]**

277/72 • • • • • • 2-Mercaptobenzothiazole **[2, 2006.01]**

277/74 • • • • • Sulfur atoms substituted by carbon atoms **[2, 2006.01]**

277/76 • • • • • Sulfur atoms attached to a second hetero atom **[2, 2006.01]**

277/78 • • • • • • to a second sulfur atom **[2, 2006.01]**

277/80 • • • • • • to a nitrogen atom **[2, 2006.01]**

277/82 • • • • Nitrogen atoms **[2, 2006.01]**

277/84 • • Naphthothiazoles **[2, 2006.01]**

279/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom and one sulfur atom as the only ring hetero atoms [2, 2006.01]

Note(s) [2]

Thiomorpholines having only hydrogen atoms attached to the ring carbon atoms are classified in group C07D 295/00.

279/02 • 1,2-Thiazines; Hydrogenated 1,2-thiazines **[2, 2006.01]**

279/04 • 1,3-Thiazines; Hydrogenated 1,3-thiazines **[2, 2006.01]**

279/06 • • not condensed with other rings **[2, 2006.01]**

279/08 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

279/10 • 1,4-Thiazines; Hydrogenated 1,4-thiazines **[2, 2006.01]**

279/12 • • not condensed with other rings **[2, 2006.01]**

279/14 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

279/16 • • • condensed with one six-membered ring **[2, 2006.01]**

279/18 • • • [b, e]-condensed with two six-membered rings **[2, 2006.01]**

279/20 • • • • with hydrogen atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

279/22 • • • • with carbon atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

279/24 • • • • • with hydrocarbon radicals, substituted by amino radicals, attached to the ring nitrogen atom **[2, 2006.01]**

279/26 • • • • • • without other substituents attached to the ring system **[2, 2006.01]**

279/28 • • • • • • with other substituents attached to the ring system **[2, 2006.01]**

279/30 • • • • • with acyl radicals attached to the ring nitrogen atom **[2, 2006.01]**

279/32 • • • • with hetero atoms directly attached to the ring nitrogen atom **[2, 2006.01]**

279/34 • • • • with hetero atoms directly attached to the ring sulfur atom **[2, 2006.01]**

279/36 • • • [b, e]-condensed, at least one with a further condensed benzene ring **[2, 2006.01]**

281/00 Heterocyclic compounds containing rings of more than six members having one nitrogen atom and one sulfur atom as the only ring hetero atoms [2, 2006.01]

281/02 • Seven-membered rings **[2, 2006.01]**

281/04 • • having the hetero atoms in positions 1 and 4 **[2, 2006.01]**

281/06 • • • not condensed with other rings **[2, 2006.01]**

281/08 • • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

281/10 • • • • condensed with one six-membered ring **[2, 2006.01]**

281/12 • • • • condensed with two six-membered rings **[2, 2006.01]**

281/14 • • • • • [b, e]-condensed **[2, 2006.01]**

281/16 • • • • • [b, f]-condensed **[2, 2006.01]**

281/18 • Eight-membered rings **[2, 2006.01]**

283/00 Heterocyclic compounds containing rings having one nitrogen atom and one sulfur atom as the only ring hetero atoms, according to more than one of groups C07D 275/00-C07D 281/00 [2, 2006.01]

283/02 • having the hetero atoms in positions 1 and 3 **[2, 2006.01]**

285/00 Heterocyclic compounds containing rings having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by groups C07D 275/00-C07D 283/00 [2, 2006.01]

285/01 • Five-membered rings **[5, 2006.01]**

285/02 • • Thiadiazoles; Hydrogenated thiadiazoles **[2, 5, 2006.01]**

285/04 • • • not condensed with other rings **[2, 5, 2006.01]**

285/06 • • • • 1,2,3-Thiadiazoles; Hydrogenated 1,2,3-thiadiazoles **[2, 5, 2006.01]**
285/08 • • • • 1,2,4-Thiadiazoles; Hydrogenated 1,2,4-thiadiazoles **[2, 5, 2006.01]**
285/10 • • • • 1,2,5-Thiadiazoles; Hydrogenated 1,2,5-thiadiazoles **[2, 5, 2006.01]**
285/12 • • • • 1,3,4-Thiadiazoles; Hydrogenated 1,3,4-thiadiazoles **[2, 5, 2006.01]**
285/125 • • • • • with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical **[5, 2006.01]**
285/13 • • • • • • Oxygen atoms **[5, 2006.01]**
285/135 • • • • • • Nitrogen atoms **[5, 2006.01]**
285/14 • • • condensed with carbocyclic rings or ring systems **[2, 5, 2006.01]**
285/15 • Six-membered rings **[5, 2006.01]**
285/16 • • Thiadiazines; Hydrogenated thiadiazines **[2, 5, 2006.01]**
285/18 • • • 1,2,4-Thiadiazines; Hydrogenated 1,2,4-thiadiazines **[2, 5, 2006.01]**
285/20 • • • • condensed with carbocyclic rings or ring systems **[2, 5, 2006.01]**
285/22 • • • • • condensed with one six-membered ring **[2, 5, 2006.01]**
285/24 • • • • • • with oxygen atoms directly attached to the ring sulfur atom **[2, 5, 2006.01]**
285/26 • • • • • • • substituted in position 6 or 7 by sulfamoyl or substituted sulfamoyl radicals **[2, 5, 2006.01]**
285/28 • • • • • • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached in position 3 **[2, 5, 2006.01]**
285/30 • • • • • • • • with hydrocarbon radicals, substituted by hetero atoms, attached in position 3 **[2, 5, 2006.01]**
285/32 • • • • • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 3 **[2, 5, 2006.01]**
285/34 • • • 1,3,5-Thiadiazines; Hydrogenated 1,3,5-thiadiazines **[2, 5, 2006.01]**
285/36 • Seven-membered rings **[2, 2006.01]**
285/38 • Eight-membered rings **[2, 2006.01]**

291/00 Heterocyclic compounds containing rings having nitrogen, oxygen and sulfur atoms as the only ring hetero atoms [2, 2006.01]

291/02 • not condensed with other rings **[2, 2006.01]**
291/04 • • Five-membered rings **[2, 2006.01]**
291/06 • • Six-membered rings **[2, 2006.01]**
291/08 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

293/00 Heterocyclic compounds containing rings having nitrogen and selenium or nitrogen and tellurium, with or without oxygen or sulfur atoms, as the ring hetero atoms [2, 2006.01]

293/02 • not condensed with other rings **[2, 2006.01]**
293/04 • • Five-membered rings **[2, 2006.01]**
293/06 • • • Selenazoles; Hydrogenated selenazoles **[2, 2006.01]**
293/08 • • Six-membered rings **[2, 2006.01]**
293/10 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
293/12 • • Selenazoles; Hydrogenated selenazoles **[2, 2006.01]**

295/00 Heterocyclic compounds containing polymethyleneimine rings with at least five ring members, 3-azabicyclo [3.2.2] nonane, piperazine, morpholine or thiomorpholine rings, having only hydrogen atoms directly attached to the ring carbon atoms [2, 2006.01]

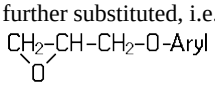
295/02 • containing only hydrogen and carbon atoms in addition to the ring hetero elements **[2, 2006.01]**
295/023 • • Preparation; Separation; Stabilisation; Use of additives **[5, 2006.01]**
295/027 • • containing only one hetero ring **[5, 2006.01]**
295/03 • • • with the ring nitrogen atoms directly attached to acyclic carbon atoms **[5, 2006.01]**
295/033 • • • with the ring nitrogen atoms directly attached to carbocyclic rings **[5, 2006.01]**
295/037 • • with quaternary ring nitrogen atoms **[5, 2006.01]**
295/04 • with substituted hydrocarbon radicals attached to ring nitrogen atoms **[2, 2006.01]**
295/06 • • substituted by halogen atoms or nitro radicals **[2, 2006.01]**
295/067 • • • with the ring nitrogen atoms and the substituents attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5, 2006.01]**
295/073 • • • with the ring nitrogen atoms and the substituents separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5, 2006.01]**
295/08 • • substituted by singly bound oxygen or sulfur atoms **[2, 2006.01]**
295/084 • • • with the ring nitrogen atoms and the oxygen or sulfur atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5, 2006.01]**
295/088 • • • • to an acyclic saturated chain **[5, 2006.01]**
295/092 • • • • with aromatic radicals attached to the chain **[5, 2006.01]**
295/096 • • • with the ring nitrogen atoms and the oxygen or sulfur atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5, 2006.01]**
295/10 • • substituted by doubly bound oxygen or sulfur atoms **[2, 2006.01]**
295/104 • • • with the ring nitrogen atoms and the doubly bound oxygen or sulfur atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5, 2006.01]**
295/108 • • • • to an acyclic saturated chain **[5, 2006.01]**
295/112 • • • with the ring nitrogen atoms and the doubly bound oxygen or sulfur atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5, 2006.01]**
295/116 • • • • with the doubly bound oxygen or sulfur atoms directly attached to a carbocyclic ring **[5, 2006.01]**
295/12 • • substituted by singly or doubly bound nitrogen atoms (nitro radicals C07D 295/06) **[2, 2006.01]**

295/125 • • • with the ring nitrogen atoms and the substituent nitrogen atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5, 2006.01]**
295/13 • • • • to an acyclic saturated chain **[5, 2006.01]**
295/135 • • • with the ring nitrogen atoms and the substituent nitrogen atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5, 2006.01]**
295/14 • • substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
295/145 • • • with the ring nitrogen atoms and the carbon atoms with three bonds to hetero atoms attached to the same carbon chain, which is not interrupted by carbocyclic rings **[5, 2006.01]**
295/15 • • • • to an acyclic saturated chain **[5, 2006.01]**
295/155 • • • with the ring nitrogen atoms and the carbon atoms with three bonds to hetero atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings **[5, 2006.01]**
295/16 • acylated on ring nitrogen atoms **[2, 2006.01]**
295/18 • • by radicals derived from carboxylic acids, or sulfur or nitrogen analogues thereof **[2, 2006.01]**
295/182 • • • Radicals derived from carboxylic acids **[5, 2006.01]**
295/185 • • • • from aliphatic carboxylic acids **[5, 2006.01]**
295/192 • • • • from aromatic carboxylic acids **[5, 2006.01]**
295/194 • • • Radicals derived from thio- or thiono carboxylic acids **[5, 2006.01]**
295/195 • • • Radicals derived from nitrogen analogues of carboxylic acids **[5, 2006.01]**
295/20 • • by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof **[2, 2006.01]**
295/205 • • • Radicals derived from carbonic acid **[5, 2006.01]**
295/21 • • • Radicals derived from sulfur analogues of carbonic acid **[5, 2006.01]**
295/215 • • • Radicals derived from nitrogen analogues of carbonic acid **[5, 2006.01]**
295/22 • with hetero atoms directly attached to ring nitrogen atoms **[2, 2006.01]**
295/24 • • Oxygen atoms **[5, 2006.01]**
295/26 • • Sulfur atoms **[5, 2006.01]**
295/28 • • Nitrogen atoms **[5, 2006.01]**
295/30 • • • non-acylated **[5, 2006.01]**
295/32 • • • acylated with carboxylic or carbonic acids, or their nitrogen or sulfur analogues **[5, 2006.01]**

Heterocyclic compounds having oxygen atoms, with or without sulfur, selenium, or tellurium atoms, as ring hetero atoms [2]

301/00 Preparation of oxiranes [2, 2006.01]
301/02 • Synthesis of the oxirane ring **[2, 2006.01]**
301/03 • • by oxidation of unsaturated compounds, or of mixtures of unsaturated and saturated compounds **[3, 2006.01]**
301/04 • • • with air or molecular oxygen **[2, 3, 2006.01]**
301/06 • • • • in the liquid phase **[2, 3, 2006.01]**
301/08 • • • • in the gaseous phase **[2, 3, 2006.01]**
301/10 • • • • • with catalysts containing silver or gold **[2, 3, 2006.01]**
301/12 • • • with hydrogen peroxide or inorganic peroxides or peracids **[2, 3, 2006.01]**
301/14 • • • with organic peracids, or salts, anhydrides or esters thereof **[2, 3, 2006.01]**
301/16 • • • • formed in situ, e.g. from carboxylic acids and hydrogen peroxide **[2, 3, 2006.01]**
301/18 • • • • • from polybasic carboxylic acids **[2, 3, 2006.01]**
301/19 • • • with organic hydroperoxides **[3, 2006.01]**
301/22 • • by oxidation of saturated compounds with air or molecular oxygen (of mixtures of unsaturated and saturated compounds C07D 301/04) **[2, 2006.01]**
301/24 • • by splitting-off Hal—Y from compounds containing the radical Hal—C—C—OY **[2, 2006.01]**
301/26 • • • Y being hydrogen **[2, 2006.01]**
301/27 • Condensation of epihalohydrins or halohydrins with compounds containing active hydrogen atoms (macromolecular compounds C08) **[3, 2006.01]**
301/28 • • by reaction with hydroxyl radicals **[2, 3, 2006.01]**
301/30 • • by reaction with carboxyl radicals **[2, 3, 2006.01]**
301/32 • Separation; Purification **[2, 2006.01]**
301/36 • Use of additives, e.g. for stabilisation **[3, 2006.01]**

303/00 Compounds containing three-membered rings having one oxygen atom as the only ring hetero atom [2, 2006.01]
303/02 • Compounds containing oxirane rings **[2, 2006.01]**
303/04 • • containing only hydrogen and carbon atoms in addition to the ring oxygen atoms **[2, 2006.01]**
303/06 • • • in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings **[2, 2006.01]**
303/08 • • with hydrocarbon radicals, substituted by halogen atoms, nitro radicals or nitroso radicals **[2, 2006.01]**
303/10 • • • in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings **[2, 2006.01]**
303/12 • • with hydrocarbon radicals, substituted by singly or doubly bound oxygen atoms **[2, 2006.01]**
303/14 • • • by free hydroxyl radicals **[2, 2006.01]**
303/16 • • • by esterified hydroxyl radicals **[2, 2006.01]**
303/17 • • • • containing oxirane rings condensed with carbocyclic ring systems having three or more relevant rings **[3, 2006.01]**
303/18 • • • by etherified hydroxyl radicals **[2, 2006.01]**
303/20 • • • • Ethers with hydroxy compounds containing no oxirane rings **[2, 2006.01]**
303/22 • • • • • with monohydroxy compounds **[2, 2006.01]**
303/23 • • • • • • Oxiranylmethyl ethers of compounds having one hydroxy group bound to a six-membered aromatic ring, the oxiranylmethyl radical not being further substituted, i.e.



[5, 2006.01]

303/24 • • • • • with polyhydroxy compounds **[2, 2006.01]**
303/26 • • • • • • having one or more free hydroxyl radicals **[2, 2006.01]**
303/27 • • • • • • having all hydroxyl radicals etherified with oxirane containing compounds **[3, 2006.01]**
303/28 • • • • Ethers with hydroxy compounds containing oxirane rings **[2, 2006.01]**

303/30 • • • • • Ethers of oxirane-containing polyhydroxy compounds in which all hydroxyl radicals are etherified with oxirane-containing hydroxy compounds **[2, 2006.01]**

303/31 • • • • in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings **[3, 2006.01]**

303/32 • • • by aldehydo- or ketonic radicals **[2, 2006.01]**

303/34 • • with hydrocarbon radicals, substituted by sulfur, selenium, or tellurium atoms **[2, 2006.01]**

303/36 • • with hydrocarbon radicals, substituted by nitrogen atoms (nitro, nitroso radicals C07D 303/08) **[2, 2006.01]**

303/38 • • with hydrocarbon radicals, substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**

303/40 • • • by ester radicals **[2, 2006.01]**

303/42 • • • • Acyclic compounds having a chain of seven or more carbon atoms, e.g. epoxidised fats **[2, 2006.01]**

303/44 • • • • Esterified with oxirane-containing hydroxy compounds **[2, 2006.01]**

303/46 • • • by amide or nitrile radicals **[2, 2006.01]**

303/48 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms, e.g. ester or nitrile radicals **[3, 2006.01]**

305/00 Heterocyclic compounds containing four-membered rings having one oxygen atom as the only ring hetero atoms [2, 2006.01]

305/02 • not condensed with other rings **[2, 2006.01]**

305/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

305/06 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring atoms **[2, 2006.01]**

305/08 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring atoms **[2, 2006.01]**

305/10 • • having one or more double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

305/12 • • • Beta-lactones **[2, 2006.01]**

305/14 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

307/00 Heterocyclic compounds containing five-membered rings having one oxygen atom as the only ring hetero atom [2, 2006.01]

307/02 • not condensed with other rings **[2, 2006.01]**

307/04 • • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

307/06 • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2, 2006.01]**

307/08 • • • • Preparation of tetrahydrofuran **[2, 2006.01]**

307/10 • • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**

307/12 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**

307/14 • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

307/16 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**

307/18 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

307/20 • • • • Oxygen atoms **[2, 2006.01]**

307/22 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

307/24 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**

307/26 • • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**

307/28 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**

307/30 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

307/32 • • • • Oxygen atoms **[2, 2006.01]**

307/33 • • • • • in position 2, the oxygen atom being in its keto or unsubstituted enol form **[5, 2006.01]**

307/34 • • having two or three double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**

307/36 • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2, 2006.01]**

307/38 • • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**

307/40 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**

307/42 • • • • • Singly bound oxygen atoms **[2, 2006.01]**

307/44 • • • • • • Furfuryl alcohol **[2, 2006.01]**

307/45 • • • • • • Oxygen atoms acylated by a cyclopropane containing carboxylic acyl radical, e.g. chrysanthemumates **[3, 2006.01]**

307/46 • • • • • Doubly bound oxygen atoms, or two oxygen atoms singly bound to the same carbon atom **[2, 2006.01]**

307/48 • • • • • • Furfural **[2, 2006.01]**

307/50 • • • • • • • Preparation from natural products **[2, 2006.01]**

307/52 • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

307/54 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**

307/56 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

307/58 • • • • One oxygen atom, e.g. butenolide **[2, 2006.01]**

307/60 • • • • Two oxygen atoms, e.g. succinic anhydride **[2, 2006.01]**
307/62 • • • • Three oxygen atoms, e.g. ascorbic acid **[2, 2006.01]**
307/64 • • • • Sulfur atoms **[2, 2006.01]**
307/66 • • • • Nitrogen atoms **[2, 2006.01]**
307/68 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
307/70 • • • • Nitro radicals **[2, 2006.01]**
307/71 • • • • • attached in position 5 **[2, 2006.01]**
307/72 • • • • • • with hydrocarbon radicals, substituted by nitrogen-containing radicals, attached in position 2 **[2, 2006.01]**
307/73 • • • • • • • by amino or imino, or substituted amino or imino radicals **[2, 2006.01]**
307/74 • • • • • • • by hydrazino or hydrazono or such substituted radicals **[2, 2006.01]**
307/75 • • • • • • • • having carboxylic acyl radicals or their thio or nitrogen analogues directly attached to the hydrazino or hydrazono radical, e.g. hydrazides **[2, 2006.01]**
307/76 • • • • • • • • having carbonic acyl radicals or their thio or nitrogen analogues directly attached to the hydrazino or hydrazono radical, e.g. semicarbazides **[2, 3, 2006.01]**
307/77 • ortho- or peri-condensed with carbocyclic rings or ring systems **[2, 2006.01]**
307/78 • • Benzo [b] furans; Hydrogenated benzo [b] furans **[2, 2006.01]**
307/79 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
307/80 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
307/81 • • • • Radicals substituted by nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
307/82 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**
307/83 • • • • Oxygen atoms **[2, 2006.01]**
307/84 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
307/85 • • • • • attached in position 2 **[2, 2006.01]**
307/86 • • • with an oxygen atom directly attached in position 7 **[2, 2006.01]**
307/87 • • Benzo [c] furans; Hydrogenated benzo [c] furans **[2, 2006.01]**
307/88 • • • with one oxygen atom directly attached in position 1 or 3 **[2, 2006.01]**
307/885 • • • • 3,3-Diphenylphthalides **[5, 2006.01]**
307/89 • • • with two oxygen atoms directly attached in positions 1 and 3 **[2, 2006.01]**
307/90 • • • with an oxygen atom in position 1 and a nitrogen atom in position 3, or vice versa **[2, 2006.01]**
307/91 • • Dibenzofurans; Hydrogenated dibenzofurans **[2, 2006.01]**
307/92 • • Naphthofurans; Hydrogenated naphthofurans **[2, 2006.01]**
307/93 • • condensed with a ring other than six-membered **[2, 2006.01]**
307/935 • • • Not further condensed cyclopenta [b] furans or hydrogenated cyclopenta [b] furans **[3, 2006.01]**
307/937 • • • • with hydrocarbon or substituted hydrocarbon radicals directly attached in position 2, e.g. prostacyclins **[5, 2006.01]**
307/94 • spiro-condensed with carbocyclic rings or ring systems, e.g. griseofulvins **[2, 2006.01]**

309/00 Heterocyclic compounds containing six-membered rings having one oxygen atom as the only ring hetero atom, not condensed with other rings [2, 2006.01]

309/02 • having no double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
309/04 • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms **[2, 2006.01]**
309/06 • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
309/08 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
309/10 • • • Oxygen atoms **[2, 2006.01]**
309/12 • • • • only hydrogen atoms and one oxygen atom directly attached to ring carbon atoms, e.g. tetrahydropyranyl ethers **[2, 2006.01]**
309/14 • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
309/16 • having one double bond between ring members or between a ring member and a non-ring member **[2, 2006.01]**
309/18 • • containing only hydrogen and carbon atoms in addition to the ring hetero atom **[2, 2006.01]**
309/20 • • with hydrogen atoms and substituted hydrocarbon radicals directly attached to ring carbon atoms **[2, 2006.01]**
309/22 • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
309/24 • • • • Methylol radicals **[2, 2006.01]**
309/26 • • • • Carboxaldehyde radicals **[2, 2006.01]**
309/28 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
309/30 • • • Oxygen atoms, e.g. delta-lactones **[2, 2006.01]**
309/32 • having two double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
309/34 • having three or more double bonds between ring members or between ring members and non-ring members **[2, 2006.01]**
309/36 • • with oxygen atoms directly attached to ring carbon atoms **[2, 2006.01]**
309/38 • • • one oxygen atom in position 2 or 4, e.g. pyrones **[2, 2006.01]**
309/40 • • • Oxygen atoms attached in positions 3 and 4, e.g. maltol **[2, 2006.01]**

311/00 Heterocyclic compounds containing six-membered rings having one oxygen atom as the only hetero atom, condensed with other rings [2, 2006.01]

311/02 • ortho- or peri-condensed with carbocyclic rings or ring systems **[2, 2006.01]**

311/04 • • Benzo [b] pyrans, not hydrogenated in the carbocyclic ring **[2, 2006.01]**
311/06 • • • with oxygen or sulfur atoms directly attached in position 2 **[2, 2006.01]**
311/08 • • • • not hydrogenated in the hetero ring **[2, 2006.01]**
311/10 • • • • • unsubstituted **[2, 2006.01]**
311/12 • • • • • substituted in position 3 and unsubstituted in position 7 **[2, 2006.01]**
311/14 • • • • • substituted in position 6 and unsubstituted in position 7 **[2, 2006.01]**
311/16 • • • • • substituted in position 7 **[2, 2006.01]**
311/18 • • • • • substituted otherwise than in position 3 or 7 **[2, 2006.01]**
311/20 • • • • hydrogenated in the hetero ring **[2, 2006.01]**
311/22 • • • with oxygen or sulfur atoms directly attached in position 4 **[2, 2006.01]**
311/24 • • • • with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2 **[2, 2006.01]**
311/26 • • • • with aromatic rings attached in position 2 or 3 **[2, 2006.01]**
311/28 • • • • • with aromatic rings attached in position 2 only **[2, 2006.01]**
311/30 • • • • • • not hydrogenated in the hetero ring, e.g. flavones **[2, 2006.01]**
311/32 • • • • • • 2, 3-Dihydro derivatives, e.g. flavanones **[2, 2006.01]**
311/34 • • • • • with aromatic rings attached in position 3 only **[2, 2006.01]**
311/36 • • • • • • not hydrogenated in the hetero ring, e.g. isoflavones **[2, 2006.01]**
311/38 • • • • • • 2, 3-Dihydro derivatives, e.g. isoflavanones **[2, 2006.01]**
311/40 • • • • • Separation, e.g. from natural material; Purification **[2, 2006.01]**
311/42 • • • with oxygen or sulfur atoms in positions 2 and 4 **[2, 2006.01]**
311/44 • • • • with one hydrogen atom in position 3 **[2, 2006.01]**
311/46 • • • • • unsubstituted in the carbocyclic ring **[2, 2006.01]**
311/48 • • • • • • with two such benzopyran radicals linked together by a carbon chain **[2, 2006.01]**
311/50 • • • • • • with elements other than carbon and hydrogen in position 3 **[2, 2006.01]**
311/52 • • • • • • Enol-esters or -ethers, or sulfur analogues thereof **[2, 2006.01]**
311/54 • • • • • substituted in the carbocyclic ring **[2, 2006.01]**
311/56 • • • • without hydrogen atoms in position 3 **[2, 2006.01]**
311/58 • • • other than with oxygen or sulfur atoms in position 2 or 4 **[2, 2006.01]**
311/60 • • • • with aryl radicals attached in position 2 **[2, 2006.01]**
311/62 • • • • • with oxygen atoms directly attached in position 3, e.g. anthocyanidins **[2, 2006.01]**
311/64 • • • • with oxygen atoms directly attached in position 8 **[2, 2006.01]**
311/66 • • • • with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 2 **[2, 2006.01]**
311/68 • • • • with nitrogen atoms directly attached in position 4 **[2, 2006.01]**
311/70 • • • • with two hydrocarbon radicals attached in position 2 and elements other than carbon and hydrogen in position 6 **[2, 2006.01]**
311/72 • • • • • 3, 4-Dihydro derivatives having in position 2 at least one methyl radical and in position 6 one oxygen atom, e.g. tocopherols **[2, 2006.01]**
311/74 • • Benzo [b] pyrans, hydrogenated in the carbocyclic ring **[2, 2006.01]**
311/76 • • Benzo [c] pyrans **[2, 2006.01]**
311/78 • • Ring systems having three or more relevant rings **[2, 2006.01]**
311/80 • • • Dibenzopyrans; Hydrogenated dibenzopyrans **[2, 2006.01]**
311/82 • • • • Xanthenes **[2, 2006.01]**
311/84 • • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 9 **[2, 2006.01]**
311/86 • • • • • • Oxygen atoms, e.g. xanthones **[2, 2006.01]**
311/88 • • • • • • Nitrogen atoms **[2, 2006.01]**
311/90 • • • • • with hydrocarbon radicals, substituted by amino radicals, directly attached in position 9 **[2, 2006.01]**
311/92 • • • Naphthopyrans; Hydrogenated naphthopyrans **[2, 2006.01]**
311/94 • • condensed with rings other than six-membered or with ring systems containing such rings **[2, 5, 2006.01]**
311/96 • spiro-condensed with carbocyclic rings or ring systems **[2, 2006.01]**

313/00 Heterocyclic compounds containing rings of more than six members having one oxygen atom as the only ring hetero atom [2, 2006.01]

313/02 • Seven-membered rings **[2, 2006.01]**
313/04 • • not condensed with other rings **[2, 2006.01]**
313/06 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
313/08 • • • condensed with one six-membered ring **[2, 2006.01]**
313/10 • • • condensed with two six-membered rings **[2, 2006.01]**
313/12 • • • • [b, e]-condensed **[2, 2006.01]**
313/14 • • • • [b, f]-condensed **[2, 2006.01]**
313/16 • Eight-membered rings **[2, 2006.01]**
313/18 • • not condensed with other rings **[2, 2006.01]**
313/20 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

315/00 Heterocyclic compounds containing rings having one oxygen atom as the only ring hetero atom according to more than one of groups C07D 303/00- C07D 313/00 [2, 2006.01]

317/00 Heterocyclic compounds containing five-membered rings having two oxygen atoms as the only ring hetero atoms [2, 2006.01]

317/02 • having the hetero atoms in positions 1 and 2 **[2, 2006.01]**
317/04 • • not condensed with other rings **[2, 2006.01]**
317/06 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

317/08 • having the hetero atoms in positions 1 and 3 **[2, 2006.01]**
317/10 • • not condensed with other rings **[2, 2006.01]**
317/12 • • • with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms **[2, 2006.01]**
317/14 • • • with substituted hydrocarbon radicals attached to ring carbon atoms **[2, 2006.01]**
317/16 • • • • Radicals substituted by halogen atoms or nitro radicals **[2, 2006.01]**
317/18 • • • • Radicals substituted by singly bound oxygen or sulfur atoms **[2, 2006.01]**
317/20 • • • • • Free hydroxyl or mercaptan **[2, 2006.01]**
317/22 • • • • • etherified **[2, 2006.01]**
317/24 • • • • • esterified **[2, 2006.01]**
317/26 • • • • Radicals substituted by doubly bound oxygen or sulfur atoms or by two such atoms singly bound to the same carbon atom **[2, 2006.01]**
317/28 • • • • Radicals substituted by nitrogen atoms (nitro radicals C07D 317/16) **[2, 2006.01]**
317/30 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
317/32 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**
317/34 • • • • Oxygen atoms **[2, 2006.01]**
317/36 • • • • • Alkylene carbonates; Substituted alkylene carbonates **[2, 2006.01]**
317/38 • • • • • • Ethylene carbonate **[2, 2006.01]**
317/40 • • • • • Vinylene carbonate; Substituted vinylene carbonates **[2, 2006.01]**
317/42 • • • • Halogen atoms or nitro radicals **[2, 2006.01]**
317/44 • • ortho- or peri-condensed with carbocyclic rings or ring systems **[2, 2006.01]**
317/46 • • • condensed with one six-membered ring **[2, 2006.01]**
317/48 • • • • Methylenedioxybenzenes or hydrogenated methylenedioxybenzenes, unsubstituted on the hetero ring **[2, 2006.01]**
317/50 • • • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to atoms of the carbocyclic ring **[2, 2006.01]**
317/52 • • • • • • Radicals substituted by halogen atoms or nitro radicals **[2, 2006.01]**
317/54 • • • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**
317/56 • • • • • • Radicals substituted by sulfur atoms **[2, 2006.01]**
317/58 • • • • • • Radicals substituted by nitrogen atoms (nitro radicals C07D 317/52) **[2, 2006.01]**
317/60 • • • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**
317/62 • • • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to atoms of the carbocyclic ring **[2, 2006.01]**
317/64 • • • • • • Oxygen atoms **[2, 2006.01]**
317/66 • • • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**
317/68 • • • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**
317/70 • • • condensed with ring systems containing two or more relevant rings **[2, 2006.01]**
317/72 • • spiro-condensed with carbocyclic rings **[2, 2006.01]**

319/00 Heterocyclic compounds containing six-membered rings having two oxygen atoms as the only ring hetero atoms [2, 2006.01]

319/02 • 1,2-Dioxanes; Hydrogenated 1,2-dioxanes **[2, 2006.01]**
319/04 • 1,3-Dioxanes; Hydrogenated 1,3-dioxanes **[2, 2006.01]**
319/06 • • not condensed with other rings **[2, 2006.01]**
319/08 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
319/10 • 1,4-Dioxanes; Hydrogenated 1,4-dioxanes **[2, 2006.01]**
319/12 • • not condensed with other rings **[2, 2006.01]**
319/14 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
319/16 • • • condensed with one six-membered ring **[2, 2006.01]**
319/18 • • • • Ethylenedioxybenzenes, not substituted on the hetero ring **[2, 2006.01]**
319/20 • • • • with substituents attached to the hetero ring **[2, 2006.01]**
319/22 • • • condensed with one naphthalene or hydrogenated naphthalene ring system **[2, 2006.01]**
319/24 • • • [b, e]-condensed with two six-membered rings **[2, 2006.01]**

321/00 Heterocyclic compounds containing rings having two oxygen atoms as the only ring hetero atoms, not provided for by groups C07D 317/00-C07D 319/00 [2, 2006.01]

321/02 • Seven-membered rings **[2, 2006.01]**
321/04 • • not condensed with other rings **[2, 2006.01]**
321/06 • • • 1, 3-Dioxepines; Hydrogenated 1,3-dioxepines **[2, 2006.01]**
321/08 • • • 1, 4-Dioxepines; Hydrogenated 1,4-dioxepines **[2, 2006.01]**
321/10 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**
321/12 • Eight-membered rings **[2, 2006.01]**

323/00 Heterocyclic compounds containing more than two oxygen atoms as the only ring hetero atoms [2, 2006.01]

323/02 • Five-membered rings **[2, 2006.01]**
323/04 • Six-membered rings **[2, 2006.01]**
323/06 • • Trioxane **[2, 2006.01]**

325/00 Heterocyclic compounds containing rings having oxygen as the only ring hetero atom according to more than one of groups C07D 303/00-C07D 323/00 [2, 2006.01]

327/00 Heterocyclic compounds containing rings having oxygen and sulfur atoms as the only ring hetero atoms [2, 2006.01]

327/02 • one oxygen atom and one sulfur atom **[2, 2006.01]**

327/04 • • Five-membered rings **[2, 2006.01]**

327/06 • • Six-membered rings **[2, 2006.01]**

327/08 • • • [b, e]-condensed with two six-membered carbocyclic rings **[2, 2006.01]**

327/10 • two oxygen atoms and one sulfur atom, e.g. cyclic sulfates **[2, 2006.01]**

329/00 Heterocyclic compounds containing rings having oxygen and selenium or oxygen and tellurium atoms as the only ring hetero atoms [2, 2006.01]

Heterocyclic compounds having sulfur, selenium, or tellurium atoms as the only ring hetero atoms [2]

331/00 Heterocyclic compounds containing rings of less than five members, having one sulfur atom as the only ring hetero atom [2, 2006.01]

331/02 • Three-membered rings **[2, 2006.01]**

331/04 • Four-membered rings **[2, 2006.01]**

333/00 Heterocyclic compounds containing five-membered rings having one sulfur atom as the only ring hetero atom [2, 2006.01]

333/02 • not condensed with other rings **[2, 2006.01]**

333/04 • • not substituted on the ring sulfur atom **[2, 2006.01]**

333/06 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring carbon atoms **[2, 2006.01]**

333/08 • • • • Hydrogen atoms or radicals containing only hydrogen and carbon atoms **[2, 2006.01]**

333/10 • • • • • Thiophene **[2, 2006.01]**

333/12 • • • • Radicals substituted by halogen atoms or nitro or nitroso radicals **[2, 2006.01]**

333/14 • • • • Radicals substituted by singly bound hetero atoms other than halogen **[2, 2006.01]**

333/16 • • • • • by oxygen atoms **[2, 2006.01]**

333/18 • • • • • by sulfur atoms **[2, 2006.01]**

333/20 • • • • • by nitrogen atoms (nitro, nitroso radicals C07D 333/12) **[2, 2006.01]**

333/22 • • • • Radicals substituted by doubly bound hetero atoms, or by two hetero atoms other than halogen singly bound to the same carbon atom **[2, 2006.01]**

333/24 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**

333/26 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms **[2, 2006.01]**

333/28 • • • • Halogen atoms **[2, 2006.01]**

333/30 • • • • Hetero atoms other than halogen **[2, 2006.01]**

333/32 • • • • • Oxygen atoms **[2, 2006.01]**

333/34 • • • • • Sulfur atoms **[2, 2006.01]**

333/36 • • • • • Nitrogen atoms **[2, 2006.01]**

333/38 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**

333/40 • • • • • Thiophene-2-carboxylic acid **[2, 2006.01]**

333/42 • • • • with nitro or nitroso radicals directly attached to ring carbon atoms **[2, 2006.01]**

333/44 • • • • • attached in position 5 **[2, 2006.01]**

333/46 • • substituted on the ring sulfur atom **[2, 2006.01]**

333/48 • • • by oxygen atoms **[2, 2006.01]**

333/50 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

333/52 • • Benzo [b] thiophenes; Hydrogenated benzo [b] thiophenes **[2, 2006.01]**

333/54 • • • with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**

333/56 • • • • Radicals substituted by oxygen atoms **[2, 2006.01]**

333/58 • • • • Radicals substituted by nitrogen atoms **[2, 2006.01]**

333/60 • • • • Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals **[2, 2006.01]**

333/62 • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the hetero ring **[2, 2006.01]**

333/64 • • • • Oxygen atoms **[2, 2006.01]**

333/66 • • • • Nitrogen atoms not forming part of a nitro radical **[2, 2006.01]**

333/68 • • • • Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**

333/70 • • • • • attached in position 2 **[2, 2006.01]**

333/72 • • Benzo [c] thiophenes; Hydrogenated benzo [c] thiophenes **[2, 2006.01]**

333/74 • • Naphthothiophenes **[2, 2006.01]**

333/76 • • Dibenzothiophenes **[2, 2006.01]**

333/78 • • condensed with rings other than six-membered or with ring systems containing such rings **[2, 5, 2006.01]**

333/80 • • • Seven-membered rings **[2, 2006.01]**

335/00 Heterocyclic compounds containing six-membered rings having one sulfur atom as the only ring hetero atom [2, 2006.01]

335/02 • not condensed with other rings **[2, 2006.01]**

335/04 • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

335/06 • • Benzothiopyrans; Hydrogenated benzothiopyrans **[2, 2006.01]**

335/08 • • Naphthothiopyrans; Hydrogenated naphthothiopyrans **[2, 2006.01]**

335/10 • • Dibenzothiopyrans; Hydrogenated dibenzothiopyrans **[2, 2006.01]**

335/12 • • • Thioxanthenes **[2, 2006.01]**

335/14 • • • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 9 **[2, 2006.01]**

335/16 • • • • • Oxygen atoms, e.g. thioxanthones **[2, 2006.01]**

335/18 • • • • • Nitrogen atoms **[2, 2006.01]**

335/20 • • • • with hydrocarbon radicals, substituted by amino radicals, directly attached in position 9 **[2, 2006.01]**

337/00 Heterocyclic compounds containing rings of more than six members having one sulfur atom as the only ring hetero atom [2, 2006.01]

337/02 • Seven-membered rings **[2, 2006.01]**

337/04 • • not condensed with other rings **[2, 2006.01]**

337/06 • • condensed with carbocyclic rings or ring systems **[2, 2006.01]**

337/08 • • • condensed with one six-membered ring **[2, 2006.01]**

337/10 • • • condensed with two six-membered rings **[2, 2006.01]**

337/12 • • • • [b, e]-condensed **[2, 2006.01]**

337/14 • • • • [b, f]-condensed **[2, 2006.01]**

337/16 • Eight-membered rings **[2, 2006.01]**

339/00 Heterocyclic compounds containing rings having two sulfur atoms as the only ring hetero atoms [2, 2006.01]

339/02 • Five-membered rings **[2, 2006.01]**

339/04 • • having the hetero atoms in positions 1 and 2, e.g. lipoic acid **[2, 2006.01]**

339/06 • • having the hetero atoms in positions 1 and 3, e.g. cyclic dithiocarbonates **[2, 2006.01]**

339/08 • Six-membered rings **[2, 2006.01]**

341/00 Heterocyclic compounds containing rings having three or more sulfur atoms as the only ring hetero atoms [2, 2006.01]

343/00 Heterocyclic compounds containing rings having sulfur and selenium or sulfur and tellurium atoms as the only ring hetero atoms [2, 2006.01]

345/00 Heterocyclic compounds containing rings having selenium or tellurium atoms as the only ring hetero atoms [2, 2006.01]

347/00 Heterocyclic compounds containing rings having halogen atoms as ring hetero atoms [2, 2006.01]

Heterocyclic compounds containing two or more hetero rings [2]

Note(s) [2]

Groups C07D 401/00-C07D 421/00cover compounds containing two or more relevant hetero rings at least two of which are covered by different main groups of groups C07D 203/00-C07D 347/00, neither condensed among themselves nor condensed with a common carbocyclic ring or ring system.

401/00 Heterocyclic compounds containing two or more hetero rings, having nitrogen atoms as the only ring hetero atoms, at least one ring being a six-membered ring with only one nitrogen atom [2, 2006.01]

401/02 • containing two hetero rings **[2, 2006.01]**

401/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

401/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

401/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

401/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

401/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

401/14 • containing three or more hetero rings **[2, 2006.01]**

403/00 Heterocyclic compounds containing two or more hetero rings, having nitrogen atoms as the only ring hetero atoms, not provided for by group C07D 401/00 [2, 2006.01]

403/02 • containing two hetero rings **[2, 2006.01]**

403/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

403/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

403/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

403/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

403/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

403/14 • containing three or more hetero rings **[2, 2006.01]**

405/00 Heterocyclic compounds containing both one or more hetero rings having oxygen atoms as the only ring hetero atoms, and one or more rings having nitrogen as the only ring hetero atom [2, 2006.01]

405/02 • containing two hetero rings **[2, 2006.01]**

405/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

405/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

405/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

405/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

405/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

405/14 • containing three or more hetero rings **[2, 2006.01]**

407/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having oxygen atoms as the only ring hetero atoms, not provided for by group C07D 405/00 [2, 2006.01]

407/02 • containing two hetero rings **[2, 2006.01]**

407/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

407/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

407/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

407/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

407/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

407/14 • containing three or more hetero rings **[2, 2006.01]**

409/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having sulfur atoms as the only ring hetero atoms [2, 2006.01]

409/02 • containing two hetero rings **[2, 2006.01]**

409/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

409/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

409/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

409/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

409/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

409/14 • containing three or more hetero rings **[2, 2006.01]**

411/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having oxygen and sulfur atoms as the only ring hetero atoms [2, 2006.01]

411/02 • containing two hetero rings **[2, 2006.01]**

411/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

411/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

411/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

411/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

411/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

411/14 • containing three or more hetero rings **[2, 2006.01]**

413/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen and oxygen atoms as the only ring hetero atoms [2, 2006.01]

413/02 • containing two hetero rings **[2, 2006.01]**

413/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

413/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

413/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

413/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

413/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

413/14 • containing three or more hetero rings **[2, 2006.01]**

415/00 Heterocyclic compounds containing the thiamine skeleton [2, 2006.01]

417/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by group C07D 415/00 [2, 2006.01]

417/02 • containing two hetero rings **[2, 2006.01]**

417/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

417/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

417/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

417/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

417/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

417/14 • containing three or more hetero rings **[2, 2006.01]**

419/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen, oxygen, and sulfur atoms as the only ring hetero atoms [2, 2006.01]

419/02 • containing two hetero rings **[2, 2006.01]**

419/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

419/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

419/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

419/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

419/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

419/14 • containing three or more hetero rings **[2, 2006.01]**

421/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having selenium, tellurium, or halogen atoms as ring hetero atoms [2, 2006.01]

421/02 • containing two hetero rings **[2, 2006.01]**

421/04 • • directly linked by a ring-member-to-ring- member bond **[2, 2006.01]**

421/06 • • linked by a carbon chain containing only aliphatic carbon atoms **[2, 2006.01]**

421/08 • • linked by a carbon chain containing alicyclic rings **[2, 2006.01]**

421/10 • • linked by a carbon chain containing aromatic rings **[2, 2006.01]**

421/12 • • linked by a chain containing hetero atoms as chain links **[2, 2006.01]**

421/14 • containing three or more hetero rings **[2, 2006.01]**

Heterocyclic compounds containing condensed hetero ring systems [2]

Note(s) [2, 3, 5]

1. Groups C07D 451/00-C07D 517/00cover compounds containing one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system, with or without other non-condensed hetero rings.
2. For the purpose of classification in groups C07D 451/00-C07D 519/00, the degree of hydrogenation of the ring system is not taken into consideration.
3. For the purpose of classification in groups C07D 451/00-C07D 463/00, C07D 473/00-C07D 477/00, C07D 489/00, C07D 499/00-C07D 507/00, the wording of the groups has to be understood, in the absence of an indication to the contrary, as including ring systems further condensed with carbocyclic rings or ring systems, but excluding ring systems further condensed with other hetero rings, either directly or through a common carbocyclic ring system, e.g. sparteine  is classified in group C07D 471/22, not in group C07D 455/02.
4. In groups C07D 471/00, C07D 487/00, C07D 491/00-C07D 498/00 or C07D 513/00-C07D 517/00, the subdivision is based on the number of relevant hetero rings.

451/00 Heterocyclic compounds containing 8-azabicyclo [3.2.1] octane, 9-azabicyclo [3.3.1] nonane, or 3-oxa-9-azatricyclo [3.3.1.02,4] nonane ring systems, e.g. tropane or granatane alkaloids, scopolamine; Cyclic acetals thereof [2, 2006.01]

451/02 • containing not further condensed 8-azabicyclo [3.2.1] octane or 3-oxa-9-azatricyclo [3.3.1.02,4] nonane ring systems, e.g. tropane; Cyclic acetals thereof **[2, 2006.01]**

451/04 • • with hetero atoms directly attached in position 3 of the 8-azabicyclo [3.2.1] octane or in position 7 of the 3-oxa-9-azatricyclo [3.3.1.02,4] nonane ring system **[2, 2006.01]**

451/06 • • • Oxygen atoms **[2, 2006.01]**

451/08 • • • • Diarylmethoxy radicals **[2, 2006.01]**

451/10 • • • • acylated by aliphatic or araliphatic carboxylic acids, e.g. atropine, scopolamine **[2, 2006.01]**

451/12 • • • • acylated by aromatic or heteroaromatic carboxylic acids, e.g. cocaine **[2, 2006.01]**

451/14 • containing 9-azabicyclo [3.3.1] nonane ring systems, e.g. granatane, 2-aza-adamantane; Cyclic acetals thereof **[2, 2006.01]**

453/00 Heterocyclic compounds containing quinuclidine or iso-quinuclidine ring systems, e.g. quinine alkaloids [2, 2006.01]

453/02 • containing not further condensed quinuclidine ring systems **[2, 2006.01]**

453/04 • • having a quinolyl-4, a substituted quinolyl-4 or a alkylenedioxy-quinolyl-4 radical linked through only one carbon atom, attached in position 2, e.g. quinine **[2, 2006.01]**

453/06 • containing iso-quinuclidine ring systems **[2, 2006.01]**

455/00 Heterocyclic compounds containing quinolizine ring systems, e.g. emetine alkaloids, protoberberine; Alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine [2, 2006.01]

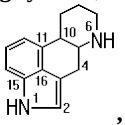
455/02 • containing not further condensed quinolizine ring systems **[2, 2006.01]**

455/03 • containing quinolizine ring systems directly condensed with at least one six-membered carbocyclic ring, e.g. protoberberine; Alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine **[3, 2006.01]**

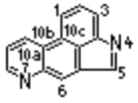
455/04 • • containing a quinolizine ring system condensed with only one six-membered carbocyclic ring, e.g. julolidine **[2, 3, 2006.01]**

455/06 • • • containing benzo [a] quinolizine ring systems **[2, 3, 2006.01]**

455/08 • • • • having an isoquinolyl-1, a substituted isoquinolyl-1 or an alkylenedioxyisoquinolyl-1 radical linked through only one carbon atom, attached in position 2, e.g. emetine **[2, 3, 2006.01]**

457/00 Heterocyclic compounds containing indolo [4, 3-f, g] quinoline ring systems, e.g. derivatives of ergoline, of the formula:  **, e.g. lysergic acid** (compounds of the cyclic peptide type derived from ergotamane C07D 519/02) **[2, 2006.01]**

Note(s) [5]

The numbering may be different according to the RING INDEX and given by the formula:  .

457/02 • with hydrocarbon or substituted hydrocarbon radicals, attached in position 8 **[2, 2006.01]**

457/04 • with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached in position 8 **[2, 2006.01]**

457/06 • • Lysergic acid amides **[2, 2006.01]**

457/08 • • • in which the amide nitrogen is a member of a heterocyclic ring **[2, 2006.01]**

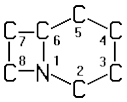
457/10 • with hetero atoms directly attached in position 8 **[2, 2006.01]**

457/12 • • Nitrogen atoms **[2, 2006.01]**

457/14 • containing indolo [4, 3-f, g] quinoline ring systems condensed with carbocyclic rings or ring systems **[3, 2006.01]**

459/00 Heterocyclic compounds containing benz [g] indolo [2, 3-a] quinolizine ring systems, e.g. yohimbine; 16, 18-lactones thereof, e.g. reserpic acid lactone [2, 2006.01]

461/00 Heterocyclic compounds containing indolo [3, 2, 1-d, e] pyrido [3, 2, 1-i, j] [1, 5]-naphthyridine ring systems, e.g. vincamine (dimeric indolo alkaloids C07D 519/04) **[3, 2006.01]**

463/00 Heterocyclic compounds containing 1-azabicyclo [4.2.0] octane ring systems, i.e. compounds  **containing a ring system of the formula:** **, e.g. carbacephalosporins; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [5, 2006.01]**

463/02 • Preparation (by microbiological processes C12P 17/18) **[6, 2006.01]**

463/04 • • by forming the ring or condensed ring systems **[6, 2006.01]**

463/06 • • from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents **[6, 2006.01]**

463/08 • • • Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6, 2006.01]**

463/10 • with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**

463/12 • • with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached in position 7 **[6, 2006.01]**

463/14 • • with hetero atoms directly attached in position 7 **[6, 2006.01]**

463/16 • • • Nitrogen atoms **[6, 2006.01]**

463/18 • • • • further acylated by radicals derived from carboxylic acids or by nitrogen or sulfur analogues thereof **[6, 2006.01]**

463/20 • • • • • with the acylating radicals further substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[6, 2006.01]**

463/22 • • • • • • further substituted by nitrogen atoms **[6, 2006.01]**

471/00 Heterocyclic compounds containing nitrogen atoms as the only ring hetero atoms in the condensed system, at least one ring being a six-membered ring with one nitrogen atom, not provided for by groups C07D 451/00-C07D 463/00 [2, 5, 2006.01]

471/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

471/04 • • Ortho-condensed systems **[2, 5, 2006.01]**

471/06 • • Peri-condensed systems **[2, 2006.01]**

471/08 • • Bridged systems **[2, 2006.01]**

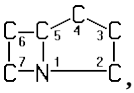
471/10 • • Spiro-condensed systems **[2, 2006.01]**

471/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**
471/14 • • Ortho-condensed systems **[2, 2006.01]**
471/16 • • Peri-condensed systems **[2, 2006.01]**
471/18 • • Bridged systems **[2, 2006.01]**
471/20 • • Spiro-condensed systems **[2, 2006.01]**
471/22 • in which the condensed systems contains four or more hetero rings **[2, 2006.01]**

473/00 Heterocyclic compounds containing purine ring systems [2, 2006.01]
473/02 • with oxygen, sulfur, or nitrogen atoms directly attached in positions 2 and 6 **[2, 2006.01]**
473/04 • • two oxygen atoms **[2, 2006.01]**
473/06 • • • with radicals containing only hydrogen and carbon atoms, attached in position 1 or 3 **[2, 2006.01]**
473/08 • • • • with methyl radicals in positions 1 and 3, e.g. theophylline **[2, 2006.01]**
473/10 • • • • with methyl radicals in positions 3 and 7, e.g. theobromine **[2, 2006.01]**
473/12 • • • • with methyl radicals in positions 1, 3, and 7, e.g. caffeine **[2, 2006.01]**
473/14 • • • • with two methyl radicals in positions 1 and 3 and two methyl radicals in positions 7, 8, or 9 **[2, 2006.01]**
473/16 • • two nitrogen atoms **[2, 2006.01]**
473/18 • • one oxygen and one nitrogen atom, e.g. guanine **[2, 2006.01]**
473/20 • • two sulfur atoms **[2, 2006.01]**
473/22 • • one oxygen and one sulfur atom **[2, 2006.01]**
473/24 • • one nitrogen and one sulfur atom **[2, 2006.01]**
473/26 • with an oxygen, sulfur, or nitrogen atom directly attached in position 2 or 6, but not in both **[2, 2006.01]**
473/28 • • Oxygen atom **[2, 2006.01]**
473/30 • • • attached in position 6, e.g. hypoxanthine **[2, 2006.01]**
473/32 • • Nitrogen atom **[2, 2006.01]**
473/34 • • • attached in position 6, e.g. adenine **[2, 2006.01]**
473/36 • • Sulfur atom **[2, 2006.01]**
473/38 • • • attached in position 6 **[2, 2006.01]**
473/40 • with halogen atoms or perhalogeno-alkyl radicals directly attached in position 2 or 6 **[2, 2006.01]**

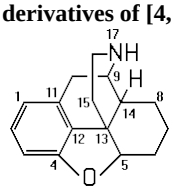
475/00 Heterocyclic compounds containing pteridine ring systems [2, 2006.01]
475/02 • with an oxygen atom directly attached in position 4 **[2, 2006.01]**
475/04 • • with a nitrogen atom directly attached in position 2 **[2, 2006.01]**
475/06 • with a nitrogen atom directly attached in position 4 **[2, 2006.01]**
475/08 • • with a nitrogen atom directly attached in position 2 **[2, 2006.01]**
475/10 • • with an aromatic or hetero-aromatic ring directly attached in position 2 **[2, 2006.01]**
475/12 • containing pteridine ring systems condensed with carbocyclic rings or ring systems **[3, 2006.01]**
475/14 • • Benz [g] pteridines, e.g. riboflavin **[3, 2006.01]**

477/00 Heterocyclic compounds containing 1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds

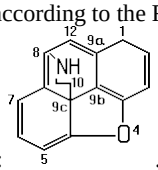


containing a ring system of the formula: , e.g. carbapenicillins, thienamycins; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [5, 2006.01]
477/02 • Preparation (by microbiological processes C12P 17/18) **[6, 2006.01]**
477/04 • • by forming the ring or condensed ring systems **[6, 2006.01]**
477/06 • • from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents **[6, 2006.01]**
477/08 • • • Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6, 2006.01]**
477/10 • with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 4, and with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**
477/12 • • with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 6 **[6, 2006.01]**
477/14 • • • with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 3 **[6, 2006.01]**
477/16 • • • with hetero atoms or carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 3 **[6, 2006.01]**
477/18 • • • • Oxygen atoms **[6, 2006.01]**
477/20 • • • • Sulfur atoms **[6, 2006.01]**
477/22 • • • • Nitrogen atoms **[6, 2006.01]**
477/24 • • with hetero atoms or carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 6 **[6, 2006.01]**
477/26 • with hetero atoms or carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 4 **[6, 2006.01]**

487/00 Heterocyclic compounds containing nitrogen atoms as the only ring hetero atoms in the condensed system, not provided for by groups C07D 451/00-C07D 477/00 [2, 5, 2006.01]
487/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**
487/04 • • Ortho-condensed systems **[2, 5, 2006.01]**
487/06 • • Peri-condensed systems **[2, 2006.01]**
487/08 • • Bridged systems **[2, 2006.01]**
487/10 • • Spiro-condensed systems **[2, 2006.01]**
487/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**
487/14 • • Ortho-condensed systems **[2, 2006.01]**
487/16 • • Peri-condensed systems **[2, 2006.01]**
487/18 • • Bridged systems **[2, 2006.01]**
487/20 • • Spiro-condensed systems **[2, 2006.01]**
487/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

489/00 Heterocyclic compounds containing 4aH-8, 9 c-Iminoethano-phenanthro [4, 5-b, c, d] furan ring systems, e.g. derivatives of [4, 5-epoxy]-morphinan of the formula:  **[2, 2006.01]**

Note(s) [5]

The numbering may be different according to the RING INDEX and given by the formula:  .

489/02 • with oxygen atoms attached in positions 3 and 6, e.g. morphine, morphinone **[2, 2006.01]**

489/04 • • Salts; Organic complexes **[2, 2006.01]**

489/06 • with a hetero atom directly attached in position 14 **[2, 2006.01]**

489/08 • • Oxygen atom **[2, 2006.01]**

489/09 • containing 4aH-8, 9 c-Iminoethano- phenanthro [4, 5-b, c, d] furan ring systems condensed with carbocyclic rings or ring systems **[3, 2006.01]**

489/10 • • with a bridge between positions 6 and 14 **[2, 3, 2006.01]**

489/12 • • • the bridge containing only two carbon atoms **[2, 3, 2006.01]**

491/00 Heterocyclic compounds containing in the condensed ring system both one or more rings having oxygen atoms as the only ring hetero atoms and one or more rings having nitrogen atoms as the only ring hetero atoms, not provided for by groups C07D 451/00-C07D 459/00, C07D 463/00, C07D 477/00 or C07D 489/00 [2, 2006.01]

491/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

491/04 • • Ortho-condensed systems **[2, 2006.01]**

491/044 • • • with only one oxygen atom as ring hetero atom in the oxygen-containing ring **[3, 2006.01]**

491/048 • • • • the oxygen-containing ring being five-membered **[3, 2006.01]**

491/052 • • • • the oxygen-containing ring being six-membered **[3, 2006.01]**

491/056 • • • with two or more oxygen atoms as ring hetero atoms in the oxygen-containing ring **[3, 2006.01]**

491/06 • • Peri-condensed systems **[2, 2006.01]**

491/08 • • Bridged systems **[2, 2006.01]**

491/10 • • Spiro-condensed systems **[2, 2006.01]**

491/107 • • • with only one oxygen atom as ring hetero atom in the oxygen-containing ring **[3, 2006.01]**

491/113 • • • with two or more oxygen atoms as ring hetero atoms in the oxygen-containing ring **[3, 2006.01]**

491/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

491/14 • • Ortho-condensed systems **[2, 2006.01]**

491/147 • • • the condensed system containing one ring with oxygen as ring hetero atom and two rings with nitrogen as ring hetero atom **[3, 2006.01]**

491/153 • • • the condensed system containing two rings with oxygen as ring hetero atom and one ring with nitrogen as ring hetero atom **[3, 2006.01]**

491/16 • • Peri-condensed systems **[2, 2006.01]**

491/18 • • Bridged systems **[2, 2006.01]**

491/20 • • Spiro-condensed systems **[2, 2006.01]**

491/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

493/00 Heterocyclic compounds containing oxygen atoms as the only ring hetero atoms in the condensed system [2, 2006.01]

493/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

493/04 • • Ortho-condensed systems **[2, 2006.01]**

493/06 • • Peri-condensed systems **[2, 2006.01]**

493/08 • • Bridged systems **[2, 2006.01]**

493/10 • • Spiro-condensed systems **[2, 2006.01]**

493/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

493/14 • • Ortho-condensed systems **[2, 2006.01]**

493/16 • • Peri-condensed systems **[2, 2006.01]**

493/18 • • Bridged systems **[2, 2006.01]**

493/20 • • Spiro-condensed systems **[2, 2006.01]**

493/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

495/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having sulfur atoms as the only ring hetero atoms [2, 2006.01]

495/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

495/04 • • Ortho-condensed systems **[2, 2006.01]**

495/06 • • Peri-condensed systems **[2, 2006.01]**

495/08 • • Bridged systems **[2, 2006.01]**

495/10 • • Spiro-condensed systems **[2, 2006.01]**

495/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

495/14 • • Ortho-condensed systems **[2, 2006.01]**

495/16 • • Peri-condensed systems **[2, 2006.01]**

495/18 • • Bridged systems **[2, 2006.01]**

495/20 • • Spiro-condensed systems **[2, 2006.01]**

495/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

497/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having oxygen and sulfur atoms as the only ring hetero atoms [2, 2006.01]

497/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

497/04 • • Ortho-condensed systems **[2, 2006.01]**

497/06 • • Peri-condensed systems **[2, 2006.01]**

497/08 • • Bridged systems **[2, 2006.01]**

497/10 • • Spiro-condensed systems **[2, 2006.01]**

497/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

497/14 • • Ortho-condensed systems **[2, 2006.01]**

497/16 • • Peri-condensed systems **[2, 2006.01]**

497/18 • • Bridged systems **[2, 2006.01]**

497/20 • • Spiro-condensed systems **[2, 2006.01]**

497/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

498/00 **Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and oxygen atoms as the only ring hetero atoms** (4-oxa-1-azabicyclo [3.2.0] heptanes, e.g. oxapenicillins C07D 503/00; 5-oxa-1-azabicyclo [4.2.0] octanes, e.g. oxacephalosporins C07D 505/00; analogues thereof having ring oxygen atoms in other position C07D 507/00) **[2, 6, 2006.01]**

498/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

498/04 • • Ortho-condensed systems **[2, 2006.01]**

498/06 • • Peri-condensed systems **[2, 2006.01]**

498/08 • • Bridged systems **[2, 2006.01]**

498/10 • • Spiro-condensed systems **[2, 2006.01]**

498/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

498/14 • • Ortho-condensed systems **[2, 2006.01]**

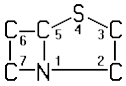
498/16 • • Peri-condensed systems **[2, 2006.01]**

498/18 • • Bridged systems **[2, 2006.01]**

498/20 • • Spiro-condensed systems **[2, 2006.01]**

498/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

499/00 **Heterocyclic compounds containing 4-thia-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:**



, e.g. penicillins, penems; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [2, 2006.01]

499/04 • Preparation **[2, 6, 2006.01]**

499/06 • • by forming the ring or condensed ring systems (by microbiological processes C12P 37/00) **[2, 6, 2006.01]**

499/08 • • Modification of a carboxyl radical directly attached in position 2, e.g. esterification **[2, 6, 2006.01]**

499/10 • • Modification of an amino radical directly attached in position 6 **[2, 6, 2006.01]**

499/12 • • • Acylation **[2, 6, 2006.01]**

499/14 • • Preparation of salts **[2, 6, 2006.01]**

499/16 • • • of alkali or alkaline earth metals **[2, 6, 2006.01]**

499/18 • • Separation; Purification **[2, 6, 2006.01]**

499/20 • • • via salts with organic bases **[2, 6, 2006.01]**

499/21 • with a nitrogen atom directly attached in position 6 and a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**

499/22 • • Salts with organic bases; Complexes with organic compounds **[2, 2006.01]**

499/24 • • • with acyclic or carbocyclic compounds containing amino radicals **[2, 2006.01]**

499/26 • • • with heterocyclic compounds **[2, 2006.01]**

499/28 • • with modified 2-carboxyl group **[2, 2006.01]**

499/30 • • • Acid anhydride **[2, 2006.01]**

499/32 • • • Esters **[2, 2006.01]**

499/34 • • • Thio-acid; Esters thereof **[2, 2006.01]**

499/36 • • • • O-esters **[2, 2006.01]**

499/38 • • • • S-esters **[2, 2006.01]**

499/40 • • • Amides; Hydrazides; Azides **[2, 2006.01]**

499/42 • • Compounds with a free primary amino radical attached in position 6 **[2, 2006.01]**

499/44 • • Compounds with an amino radical acylated by carboxylic acids, attached in position 6 **[2, 2006.01]**

499/46 • • • with acyclic hydrocarbon radicals or such radicals substituted by carbocyclic or heterocyclic rings, attached to the carboxamido radical **[2, 2006.01]**

499/48 • • • with a carbon chain, substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, attached to the carboxamido radical **[2, 2006.01]**

499/50 • • • • substituted in beta-position to the carboxamido radical **[2, 2006.01]**

499/52 • • • • • by oxygen or sulfur atoms **[2, 2006.01]**

499/54 • • • • • by nitrogen atoms **[2, 2006.01]**

499/56 • • • • • by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[2, 2006.01]**

499/58 • • • • substituted in alpha-position to the carboxamido radical **[2, 2006.01]**

499/60 • • • • • by oxygen atoms **[2, 2006.01]**

499/62 • • • • • by sulfur atoms **[2, 2006.01]**

499/64 • • • • • by nitrogen atoms **[2, 2006.01]**

499/66 • • • • • • with alicyclic rings as additional substituents on the carbon chain **[2, 2006.01]**

499/68 • • • • • • with aromatic rings as additional substituents on the carbon chain **[2, 2006.01]**

499/70 • • • • • • with hetero rings as additional substituents on the carbon chain **[2, 2006.01]**

499/72 • • • • • by carbon atoms having three bonds to hetero atoms **[2, 2006.01]**

499/74 • • • with carbocyclic rings directly attached to the carboxamido radical **[2, 2006.01]**

499/76 • • • with hetero rings directly attached to the carboxamido radical **[2, 2006.01]**

499/78 • • Compounds with an amino radical, acylated by carbonic acid, or by nitrogen or sulfur analogues thereof, attached in position 6 **[2, 2006.01]**

499/80 • • Compounds with a nitrogen-containing hetero ring, attached with the ring nitrogen atom in position 6 **[2, 2006.01]**

499/86 • with only atoms other than nitrogen atoms directly attached in position 6 and a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[5, 6, 2006.01]**

499/861 • • with a hydrocarbon radical or a substituted hydrocarbon radical, directly attached in position 6 **[6, 2006.01]**

499/865 • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 6 **[6, 2006.01]**

499/87 • Compounds being unsubstituted in position 3 or with substituents other than only two methyl radicals attached in position 3, and with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**

499/88 • Compounds with a double bond between positions 2 and 3 and a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[5, 6, 2006.01]**

499/881 • • with a hydrogen atom or an unsubstituted hydrocarbon radical, attached in position 3 **[6, 2006.01]**

499/883 • • with a substituted hydrocarbon radical attached in position 3 **[6, 2006.01]**

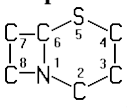
499/887 • • with a hetero atom or a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 3 **[6, 2006.01]**

499/893 • • with a hetero ring or a condensed hetero ring system, directly attached in position 3 **[6, 2006.01]**

499/897 • Compounds with substituents other than a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, directly attached in position 2 **[6, 2006.01]**

499/90 • further condensed with carbocyclic rings or ring systems **[5, 2006.01]**

501/00 Heterocyclic compounds containing 5-thia-1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:



, e.g. cephalosporins; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [2, 2006.01]

501/02 • Preparation **[2, 2006.01]**

501/04 • • from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents **[2, 2006.01]**

501/06 • • • Acylation of 7-aminocephalosporanic acid **[2, 2006.01]**

501/08 • • by forming the ring or condensed ring systems (by microbiological processes C12P 35/00) **[2, 2006.01]**

501/10 • • • from compounds containing the penicillin ring system **[2, 2006.01]**

501/12 • • Separation; Purification **[2, 2006.01]**

501/14 • Compounds having a nitrogen atom directly attached in position 7 **[2, 2006.01]**

501/16 • • with a double bond between positions 2 and 3 **[2, 2006.01]**

501/18 • • • 7-Aminocephalosporanic or substituted 7-aminocephalosporanic acids **[2, 2006.01]**

501/20 • • • 7-Acylaminocephalosporanic or substituted 7-acylaminocephalosporanic acids in which the acyl radicals are derived from carboxylic acids **[2, 2006.01]**

501/22 • • • • with radicals containing only hydrogen and carbon atoms, attached in position 3 **[2, 2006.01]**

501/24 • • • • with hydrocarbon radicals, substituted by hetero atoms or hetero rings, attached in position 3 **[2, 2006.01]**

501/26 • • • • • Methylene radicals, substituted by oxygen atoms; Lactones thereof with the 2-carboxyl group **[2, 2006.01]**

501/28 • • • • • • with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms **[2, 2006.01]**

501/30 • • • • • • with the 7-amino-radical acylated by an araliphatic carboxylic acid **[2, 2006.01]**

501/32 • • • • • • with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms **[2, 2006.01]**

501/34 • • • • • • with the 7-amino radical acylated by carboxylic acids containing hetero rings **[2, 2006.01]**

501/36 • • • • • Methylene radicals, substituted by sulfur atoms **[2, 2006.01]**

501/38 • • • • • Methylene radicals, substituted by nitrogen atoms; Lactams thereof with the 2-carboxyl group; Methylene radicals substituted by nitrogen-containing hetero rings attached by the ring nitrogen atom; Quaternary compounds thereof **[2, 2006.01]**

501/40 • • • • • • with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms **[2, 2006.01]**

501/42 • • • • • • with the 7-amino radical acylated by an araliphatic carboxylic acid **[2, 2006.01]**

501/44 • • • • • • with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms **[2, 2006.01]**

501/46 • • • • • • with the 7-amino radical acylated by carboxylic acids containing hetero rings **[2, 2006.01]**

501/48 • • • • • Methylene radicals, substituted by hetero rings (C07D 501/38-C07D 501/46 take precedence) **[2, 2006.01]**

501/50 • • • • • • with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms **[2, 2006.01]**

501/52 • • • • • • with the 7-amino radical acylated by an araliphatic carboxylic acid **[2, 2006.01]**

501/54 • • • • • • with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms **[2, 2006.01]**

501/56 • • • • • • with the 7-amino radical acylated by carboxylic acids containing hetero rings **[2, 2006.01]**

501/57 • • • • with a further substituent in position 7, e.g. cephamycines **[3, 2006.01]**

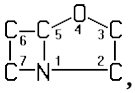
501/58 • • • with a nitrogen atom, which is a member of a hetero ring, attached in position 7 **[2, 2006.01]**

501/59 • • • with hetero atoms directly attached in position 3 **[3, 2006.01]**

501/60 • • with a double bond between positions 3 and 4 **[2, 2006.01]**

501/62 • Compounds further condensed with a carbocyclic ring or ring system **[3, 2006.01]**

503/00 Heterocyclic compounds containing 4-oxa-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:



, e.g. oxapenicillins, clavulanic acid derivatives; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [6, 2006.01]

503/02 • Preparation (by microbiological processes C12P 17/18) **[6, 2006.01]**

503/04 • • by forming the ring or condensed ring systems **[6, 2006.01]**

503/06 • • from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents **[6, 2006.01]**

503/08 • • • Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6, 2006.01]**

503/10 • with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**

503/12 • • unsubstituted in position 6 **[6, 2006.01]**

503/14 • • • with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, other than a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, attached in position 3 **[6, 2006.01]**

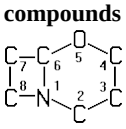
503/16 • • • • Radicals substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical **[6, 2006.01]**

503/18 • • • • • by oxygen atoms **[6, 2006.01]**

503/20 • • • • • by sulfur atoms **[6, 2006.01]**

503/22 • • • • • by nitrogen atoms **[6, 2006.01]**

505/00 Heterocyclic compounds containing 5-oxa-1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:



, e.g. oxacephalosporins; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring [6, 2006.01]

505/02 • Preparation (by microbiological processes C12P 17/18) **[6, 2006.01]**

505/04 • • by forming the ring or condensed ring systems **[6, 2006.01]**

505/06 • • from compounds already containing the ring or condensed ring systems, e.g. by dehydrogenation of the ring, by introduction, elimination or modification of substituents **[6, 2006.01]**

505/08 • • • Modification of a carboxyl group directly attached in position 2, e.g. esterification **[6, 2006.01]**

505/10 • with a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2 **[6, 2006.01]**

505/12 • • substituted in position 7 **[6, 2006.01]**

505/14 • • • with hetero atoms directly attached in position 7 **[6, 2006.01]**

505/16 • • • • Nitrogen atoms **[6, 2006.01]**

505/18 • • • • • further acylated by radicals derived from carboxylic acids or by nitrogen or sulfur analogues thereof **[6, 2006.01]**

505/20 • • • • • • with the acylating radicals further substituted by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen **[6, 2006.01]**

505/22 • • • • • • • further substituted by singly-bound nitrogen atoms **[6, 2006.01]**

505/24 • • • • • • • further substituted by doubly-bound nitrogen atoms **[6, 2006.01]**

507/00 Heterocyclic compounds containing a condensed beta-lactam ring system, not provided for by groups C07D 463/00, C07D 477/00 or C07D 499/00-C07D 505/00; Such ring systems being further condensed [6, 2006.01]

507/02 • containing 3-oxa-1-azabicyclo [3.2.0] heptane ring systems **[6, 2006.01]**

507/04 • containing 2-oxa-1-azabicyclo [4.2.0] octane ring systems **[6, 2006.01]**

507/06 • containing 3-oxa-1-azabicyclo [4.2.0] octane ring systems **[6, 2006.01]**

507/08 • containing 4-oxa-1-azabicyclo [4.2.0] octane ring systems **[6, 2006.01]**

513/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for in groups C07D 463/00, C07D 477/00 or C07D 499/00-C07D 507/00 [2, 6, 2006.01]

513/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

513/04 • • Ortho-condensed systems **[2, 2006.01]**

513/06 • • Peri-condensed systems **[2, 2006.01]**

513/08 • • Bridged systems **[2, 2006.01]**

513/10 • • Spiro-condensed systems **[2, 2006.01]**

513/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

513/14 • • Ortho-condensed systems **[2, 2006.01]**

513/16 • • Peri-condensed systems **[2, 2006.01]**

513/18 • • Bridged systems **[2, 2006.01]**

513/20 • • Spiro-condensed systems **[2, 2006.01]**

513/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

515/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen, oxygen, and sulfur atoms as the only ring hetero atoms, not provided for in groups C07D 463/00, C07D 477/00 or C07D 499/00-C07D 507/00 [2, 2006.01]

515/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

515/04 • • Ortho-condensed systems **[2, 2006.01]**

515/06 • • Peri-condensed systems **[2, 2006.01]**

515/08 • • Bridged systems **[2, 2006.01]**

515/10 • • Spiro-condensed systems **[2, 2006.01]**

515/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**

515/14 • • Ortho-condensed systems **[2, 2006.01]**

515/16 • • Peri-condensed systems **[2, 2006.01]**

515/18 • • Bridged systems **[2, 2006.01]**

515/20 • • Spiro-condensed systems **[2, 2006.01]**

515/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

517/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having selenium, tellurium, or halogen atoms as ring hetero atoms [2, 2006.01]

517/02 • in which the condensed system contains two hetero rings **[2, 2006.01]**

517/04 • • Ortho-condensed systems **[2, 2006.01]**

517/06 • • Peri-condensed systems **[2, 2006.01]**

517/08 • • Bridged systems **[2, 2006.01]**

517/10 • • Spiro-condensed systems **[2, 2006.01]**
517/12 • in which the condensed system contains three hetero rings **[2, 2006.01]**
517/14 • • Ortho-condensed systems **[2, 2006.01]**
517/16 • • Peri-condensed systems **[2, 2006.01]**
517/18 • • Bridged systems **[2, 2006.01]**
517/20 • • Spiro-condensed systems **[2, 2006.01]**
517/22 • in which the condensed system contains four or more hetero rings **[2, 2006.01]**

519/00 Heterocyclic compounds containing more than one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system not provided for in groups C07D 453/00 or C07D 455/00 [2, 2006.01]

519/02 • Ergot alkaloids of the cyclic peptide type **[2, 2006.01]**
519/04 • Dimeric indole alkaloids, e.g. vincaleucoblastine **[2, 2006.01]**
519/06 • containing at least one condensed beta-lactam ring system, provided for by groups C07D 463/00, C07D 477/00 or C07D 499/00-C07D 507/00, e.g. a penem or a cepham system **[6, 2006.01]**

521/00 Heterocyclic compounds containing unspecified hetero rings [2, 2006.01]

Note(s) [2009.01]

This group is only used for the classification of heterocyclic compounds the chemical structure of which are not specified, i.e. only in those cases where the heterocyclic compounds cannot be classified in any of groups C07D 201/00-C07D 519/00.