# CPC COOPERATIVE PATENT CLASSIFICATION

## C07D HETEROCYCLIC COMPOUNDS

**Heterocyclic compounds having only nitrogen as ring hetero atom**

**C07D 201/00** **Preparation, separation, purification or stabilisation of unsubstituted lactams**

C07D 201/02 . Preparation of lactams

C07D 201/04 . . from or via oximes by Beckmann rearrangement

C07D 201/06 . . . from ketones by simultaneous oxime formation and rearrangement

C07D 201/08 . . from carboxylic acids or derivatives thereof, e.g. hydroxycarboxylic acids, lactones, nitriles

C07D 201/10 . . from cycloaliphatic compounds by simultaneous nitrosylation and rearrangement

C07D 201/12 . . by depolymerising polyamides

C07D 201/14 . Preparation of salts or adducts of lactams

C07D 201/16 . Separation or purification (separation of inorganic salts C01)

C07D 201/18 . Stabilisation

**Heterocyclic compounds having only nitrogen as ring hetero atom**

**C07D 203/00** **Heterocyclic compounds containing three-membered rings with one nitrogen atom as the only ring hetero atom**

C07D 203/02 . Preparation by ring-closure

C07D 203/04 . not condensed with other rings

C07D 203/06 . . having no double bonds between ring members or between ring members and non-ring members

C07D 203/08 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring nitrogen atom

C07D 203/10 . . . . Radicals substituted by singly bound oxygen atoms

C07D 203/12 . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical

C07D 203/14 . . . . with carbocyclic rings directly attached to the ring nitrogen atom

C07D 203/16 . . . with acylated ring nitrogen atoms

C07D 203/18 . . . . by carboxylic acids, or by sulfur or nitrogen analogues thereof

C07D 203/20 . . . . by carbonic acid, or by sulfur or nitrogen analogues thereof, e.g. carbamates

C07D 203/22 . . . with hetero atoms directly attached to the ring nitrogen atom

C07D 203/24 . . . . Sulfur atoms

C07D 203/26 . condensed with carbocyclic rings or ring systems

**C07D 205/00** **Heterocyclic compounds containing four-membered rings with one nitrogen atom as the only ring hetero atom**

C07D 205/02 . not condensed with other rings

C07D 205/04 . . having no double bonds between ring members or between ring members and non-ring members

C07D 205/06 . . having one double bond between ring members or between a ring member and a non-ring member

C07D 205/08 . . . with one oxygen atom directly attached in position 2, e.g. beta-lactams

C07D 205/085 . . . . with a nitrogen atom directly attached in position 3

C07D 205/09 . . . . with a sulfur atom directly attached in position 4

C07D 205/095 . . . . . and with a nitrogen atom directly attached in position 3

C07D 205/10 . . having two double bonds between ring members or between ring members and non-ring members

C07D 205/12 . condensed with carbocyclic rings or ring systems

**C07D 207/00** **Heterocyclic compounds containing five-membered rings not condensed with other rings, with one nitrogen atom as the only ring hetero atom**

**NOTE**

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

C07D 207/02 . with only hydrogen or carbon atoms directly attached to the ring nitrogen atom

C07D 207/04 . . having no double bonds between ring members or between ring members and non-ring members

C07D 207/06 . . . with radicals, containing only hydrogen and carbon atoms, attached to ring carbon atoms

C07D 207/08 . . . with hydrocarbon radicals, substituted by hetero atoms, attached to ring carbon atoms

C07D 207/09 . . . . Radicals substituted by nitrogen atoms, not forming part of a nitro radical

C07D 207/10 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms

C07D 207/12 . . . . Oxygen or sulfur atoms

C07D 207/14 . . . . Nitrogen atoms not forming part of a nitro radical

C07D 207/16 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals

C07D 207/18 . . having one double bond between ring members or between a ring member and a non-ring member

C07D 207/20 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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

C07D 207/24 . . . . Oxygen or sulfur atoms

C07D 207/26 . . . . . 2-Pyrrolidones

C07D 207/263 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms

C07D 207/267 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to the ring nitrogen atom

C07D 207/27 . . . . . with substituted hydrocarbon radicals directly attached to the ring nitrogen atom

C07D 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

C07D 207/277 . . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals

C07D 207/28 . . . . . 2-Pyrrolidone-5- carboxylic acids; Functional derivatives thereof, e.g. esters, nitriles

C07D 207/30 . . having two double bonds between ring members or between ring members and non-ring members

C07D 207/32 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 207/323 . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to the ring nitrogen atoms

C07D 207/325 . . . . with substituted hydrocarbon radicals directly attached to the ring nitrogen atom

C07D 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

C07D 207/33 . . . . with substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 207/333 . . . . . Radicals substituted by oxygen or sulfur atoms

C07D 207/335 . . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical

C07D 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

C07D 207/34 . . . with heteroatoms 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

C07D 207/36 . . . . Oxygen or sulfur atoms

C07D 207/38 . . . . . 2-Pyrrolones

C07D 207/40 . . . . . 2,5-Pyrrolidine-diones

C07D 207/404 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms, e.g. succinimide

C07D 207/408 . . . . . Radicals containing only hydrogen and carbon atoms attached to ring carbon atoms

C07D 207/412 . . . . . Acyclic radicals containing more than six carbon atoms

C07D 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

C07D 207/42 . . . . Nitro radicals

C07D 207/44 . . having three double bonds between ring members or between ring members and non-ring members

C07D 207/444 . . . having two doubly-bound oxygen atoms directly attached in positions 2 and 5

C07D 207/448 . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms directly attached to other ring carbon atoms, e.g. maleimide

C07D 207/452 . . . . . with hydrocarbon radicals, substituted by hetero atoms, directly attached to the ring nitrogen atom

C07D 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

C07D 207/46 . with hetero atoms directly attached to the ring nitrogen atom

C07D 207/48 . . Sulfur atoms

C07D 207/50 . . Nitrogen atoms

**C07D 209/00 Heterocyclic compounds containing five-membered rings, condensed with other rings, with one nitrogen atom as the only ring hetero atom**

C07D 209/02 . condensed with one carbocyclic ring

C07D 209/04 . . Indoles; Hydrogenated indoles

C07D 209/06 . . . Preparation of indole from coal-tar

C07D 209/08 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to carbon atoms of the hetero ring

C07D 209/10 . . . with substituted hydrocarbon radicals attached to carbon atoms of the hetero ring

C07D 209/12 . . . . Radicals substituted by oxygen atoms

C07D 209/14 . . . . Radicals substituted by nitrogen atoms, not forming part of a nitro radical

C07D 209/16 . . . . . Tryptamines

C07D 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

C07D 209/20 . . . . . substituted additionally by nitrogen atoms, e.g. tryptophane

C07D 209/22 . . . . . with an aralkyl radical attached to the ring nitrogen atom

C07D 209/24 . . . . . with an alkyl or cycloalkyl radical attached to the ring nitrogen atom

C07D 209/26 . . . . . with an acyl radical attached to the ring nitrogen atom

C07D 209/28 . . . . . 1-(4-Chlorobenzoyl)-2-methyl-indolyl-3-acetic acid, substituted in position 5 by an oxygen or nitrogen atom; Esters thereof

C07D 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

C07D 209/32 . . . . Oxygen atoms

C07D 209/34 . . . . . in position 2

C07D 209/36 . . . . . in position 3, e.g. adrenochrome

C07D 209/38 . . . . . in position 2 and 3, e.g. isatin

C07D 209/40 . . . . Nitrogen atoms, not forming part of a nitro radical, e.g. isatin semicarbazone

C07D 209/42 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals

C07D 209/43 . . . with an $-OCH_2CH(OH)CH_2NH_2$ radical, which may be further substituted, attached in positions 4, 5, 6 or 7

C07D 209/44 . . Iso-indoles; Hydrogenated iso-indoles

C07D 209/46 . . . with an oxygen atom in position 1

C07D 209/48 . . . with oxygen atoms in positions 1 and 3, e.g. phthalimide

C07D 209/49 . . . . and having in the molecule an acyl radical containing a saturated three-membered ring, e.g. chrysanthemumic acid esters

C07D 209/50 . . . with oxygen and nitrogen atoms in positions 1 and 3

C07D 209/52 . . condensed with a ring other than six-membered

C07D 209/54 . . Spiro-condensed

C07D 209/56 . Ring systems containing three or more rings

C07D 209/58 . . [b]- or [c]-condensed

C07D 209/60 . . . Naphtho [b] pyrroles; Hydrogenated naphtho [b] pyrroles

C07D 209/62 . . . Naphtho [c] pyrroles; Hydrogenated naphtho [c] pyrroles

C07D 209/64 . . . . with an oxygen atom in position 1

C07D 209/66 . . . . with oxygen atoms in positions 1 and 3

C07D 209/68 . . . . with oxygen and nitrogen atoms in positions 1 and 3

C07D 209/70 . . . containing carbocyclic rings other than six-membered

C07D 209/72 . . . 4,7-Endo-alkylene-iso-indoles

C07D 209/74 . . . . with an oxygen atom in position 1

C07D 209/76 . . . . with oxygen atoms in positions 1 and 3

C07D 209/78 . . . . with oxygen and nitrogen atoms in positions 1 and 3

C07D 209/80 . . [b, c]- or [b, d]-condensed

C07D 209/82 . . . Carbazoles; Hydrogenated carbazoles

C07D 209/84 . . . . Separation, e.g. from tar; Purification

C07D 209/86 . . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the ring system

C07D 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

C07D 209/90 . . . Benzo [c, d] indoles; Hydrogenated benzo [c, d] indoles

C07D 209/92 . . . . Naphthostyrils

C07D 209/94 . . . containing carbocyclic rings other than six-membered

C07D 209/96 . . Spiro-condensed ring systems

**C07D 211/00 Heterocyclic compounds containing hydrogenated pyridine rings, not condensed with other rings**

**NOTES**

1. For the purpose of this group, the term "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 the ring carbon atoms are classified in C07D 295/00

C07D 211/02 . Preparation by ring-closure or hydrogenation

C07D 211/04 . with only hydrogen or carbon atoms directly attached to the ring nitrogen atom

C07D 211/06 . . having no double bonds between ring members or between ring members and non-ring members

C07D 211/08 . . . with hydrocarbon or substituted hydrocarbon radicals directly attached to ring carbon atoms

C07D 211/10 . . . . with radicals containing only carbon and hydrogen atoms attached to ring carbon atoms

C07D 211/12 . . . . . with only hydrogen atoms attached to the ring nitrogen atom

C07D 211/14 . . . . . with hydrocarbon or substituted hydrocarbon radicals attached to the ring nitrogen atom

C07D 211/16 . . . . . with acylated ring nitrogen atom

C07D 211/18 . . . . with substituted hydrocarbon radicals attached to ring carbon atoms

C07D 211/20 . . . . . with hydrocarbon radicals, substituted by singly bound oxygen or sulfur atoms (bound to the same carbon atom C07D 211/30)

C07D 211/22 . . . . . by oxygen atoms

C07D 211/24 . . . . . by sulfur atoms to which a second hetero atom is attached

C07D 211/26 . . . . . with hydrocarbon radicals, substituted by nitrogen atoms

C07D 211/28 . . . . . to which a second hetero atom is attached

C07D 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

C07D 211/32 . . . . . by oxygen atoms

C07D 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

C07D 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

C07D 211/38 . . . . Halogen atoms or nitro radicals

C07D 211/40 . . . . Oxygen atoms

C07D 211/42 . . . . . attached in position 3 or 5

C07D 211/44 . . . . . attached in position 4

C07D 211/46 . . . . . having a hydrogen atom as the second substituent in position 4

C07D 211/48 . . . . . having an acyclic carbon atom attached in position 4

C07D 211/50 . . . . . Aroyl radical

C07D 211/52 . . . . . having an aryl radical as the second substituent in position 4

C07D 211/54 . . . . Sulfur atoms

C07D 211/56 . . . . Nitrogen atoms (nitro radicals C07D 211/38)

C07D 211/58 . . . . . attached in position 4

C07D 211/60 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals

C07D 211/62 . . . . . attached in position 4

C07D 211/64 . . . . . having an aryl radical as the second substituent in position 4

C07D 211/66 . . . . . having a hetero atom as the second substituent in position 4

C07D 211/68 . . having one double bond between ring members or between a ring member and a non-ring member

C07D 211/70 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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

C07D 211/74 . . . . Oxygen atoms

C07D 211/76 . . . . . attached in position 2 or 6

C07D 211/78 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 211/80 . . having two double bonds between ring members or between ring members and non-ring members

C07D 211/82 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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

C07D 211/86 . . . . Oxygen atoms

C07D 211/88 . . . . . attached in positions 2 and 6, e.g. glutarimide

C07D 211/90 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 211/92 . with a hetero atom directly attached to the ring nitrogen atom

C07D 211/94 . . Oxygen atom, e.g. piperidine N-oxide

C07D 211/96 . . Sulfur atom

C07D 211/98 . . Nitrogen atom

**C07D 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**

C07D 213/02 . having three double bonds between ring members or between ring members and non-ring members

C07D 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

C07D 213/06 . . . containing only hydrogen and carbon atoms in addition to the ring nitrogen atom

C07D 213/08 . . . . Preparation by ring-closure

C07D 213/09 . . . . . involving the use of ammonia, amines, amine salts, or nitriles

C07D 213/10 . . . . . from acetaldehyde or cyclic polymers thereof

C07D 213/12 . . . . . from unsaturated compounds

C07D 213/127 . . . . Preparation from compounds containing pyridine rings

C07D 213/133 . . . . Preparation by dehydrogenation of hydrogenated pyridine compounds

C07D 213/14 . . . . Preparation from compounds containing heterocyclic oxygen

C07D 213/16 . . . . Containing only one pyridine ring

C07D 213/18 . . . . . Salts thereof

C07D 213/20 . . . . . Quaternary compounds thereof

C07D 213/22 . . . . containing two or more pyridine rings directly linked together, e.g. bipyridyl

C07D 213/24 . . . with substituted hydrocarbon radicals attached to ring carbon atoms

C07D 213/26 . . . . Radicals substituted by halogen atoms or nitro radicals

C07D 213/28 . . . . Radicals substituted by singly-bound oxygen or sulfur atoms (bound to the same carbon atom C07D 213/44)

C07D 213/30 . . . . . Oxygen atoms

C07D 213/32 . . . . . Sulfur atoms

C07D 213/34 . . . . . to which a second heteroatom is attached

C07D 213/36 . . . . Radicals substituted by singly-bound nitrogen atoms (nitro radicals C07D 213/26)

C07D 213/38 . . . . . having only hydrogen, hydrocarbon radicals attached to the substituent nitrogen atom

C07D 213/40 . . . . . Acylated substituent nitrogen atom

C07D 213/42 . . . . . having hetero atoms attached to the substituent nitrogen atom (nitro radicals C07D 213/26)

C07D 213/44 . . . . Radicals substituted by doubly-bound oxygen, sulfur, or nitrogen atoms, or by two such atoms singly-bound to the same carbon atom

C07D 213/46 . . . . . Oxygen atoms

C07D 213/48 . . . . . Aldehydo radicals

C07D 213/50 . . . . . Ketonic radicals

C07D 213/51 . . . . . Acetal radicals

C07D 213/52 . . . . . Sulfur atoms

C07D 213/53 . . . . . Nitrogen atoms

C07D 213/54 . . . . Radicals substituted by carbon atoms having three bonds to heteroatoms, with at the most one to halogen, e.g. ester or nitrile radicals

C07D 213/55 . . . . . Acids; Esters

C07D 213/56 . . . . . Amides

C07D 213/57 . . . . . Nitriles

C07D 213/58 . . . . . Amidines

C07D 213/59 . . . . . with at least one of the bonds being to sulfur

C07D 213/60 . . . with heteroatoms or with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms

C07D 213/61 . . . . Halogen atoms or nitro radicals

C07D 213/62 . . . . Oxygen or sulfur atoms

C07D 213/63 . . . . . One oxygen atom

C07D 213/64 . . . . . attached in position 2 or 6

C07D 213/643 . . . . . 2-Phenoxypyridines; Derivatives thereof

C07D 213/647 . . . . . and having in the molecule an acyl radical containing a saturated three-membered ring, e.g. chrysanthemumic acid esters

C07D 213/65 . . . . . attached in position 3 or 5

C07D 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

C07D 213/67 . . . . . 2-Methyl-3-hydroxy-4,5-bis(hydroxy-methyl)pyridine, i.e. pyridoxine

C07D 213/68 . . . . . attached in position 4

C07D 213/69 . . . . Two or more oxygen atoms

C07D 213/70 . . . . Sulfur atoms

C07D 213/71 . . . . . to which a second hetero atom is attached

C07D 213/72 . . . Nitrogen atoms (nitro radicals C07D 213/61)

C07D 213/73 . . . . Unsubstituted amino or imino radicals

C07D 213/74 . . . . Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals

C07D 213/75 . . . . Amino or imino radicals, acylated by carboxylic or carbonic acids, or by sulfur or nitrogen analogues thereof, e.g. carbamates

C07D 213/76 . . . . to which a second hetero atom is attached (nitro radicals C07D 213/61)

C07D 213/77 . . . . . Hydrazine radicals

C07D 213/78 . . . Carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals

C07D 213/79 . . . . Acids; Esters

C07D 213/80 . . . . . in position 3

C07D 213/803 . . . . . Processes of preparation

C07D 213/807 . . . . . by oxidation of pyridines or condensed pyridines

C07D 213/81 . . . . Amides; Imides

C07D 213/82 . . . . . in position 3

C07D 213/83 . . . . Thio-acids; Thio-esters; Thio-amides; Thio-imides

C07D 213/84 . . . . Nitriles

C07D 213/85 . . . . . in position 3

C07D 213/86 . . . . Hydrazides; Thio or imino analogues thereof

C07D 213/87 . . . . . in position 3

C07D 213/88 . . . . Nicotinoylhydrazones

C07D 213/89 . . with hetero atoms directly attached to the ring nitrogen atom

C07D 213/90 . having more than three double bonds between ring members or between ring members and non-ring members

**C07D 215/00 Heterocyclic compounds containing quinoline or hydrogenated quinoline ring systems**

C07D 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

C07D 215/04 . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to the ring carbon atoms

C07D 215/06 . . . having only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to the ring nitrogen atom

C07D 215/08 . . . with acylated ring nitrogen atom

C07D 215/10 . . . Quaternary compounds

C07D 215/12 . . with substituted hydrocarbon radicals attached to ring carbon atoms

C07D 215/14 . . . Radicals substituted by oxygen atoms

C07D 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

C07D 215/18 . . . Halogen atoms or nitro radicals

C07D 215/20 . . . Oxygen atoms (quinophthalones C09B 25/00)

C07D 215/22 . . . . attached in position 2 or 4

C07D 215/227 . . . . . only one oxygen atom which is attached in position 2

C07D 215/233 . . . . . only one oxygen atom which is attached in position 4

C07D 215/24 . . . . attached in position 8

C07D 215/26 . . . . . Alcohols; Ethers thereof

C07D 215/28 . . . . . with halogen atoms or nitro radicals in positions 5, 6 or 7

C07D 215/30 . . . . . Metal salts; Chelates

C07D 215/32 . . . . . Esters

C07D 215/34 . . . . . Carbamates

C07D 215/36 . . . Sulfur atoms (C07D 215/24 takes precedence)

C07D 215/38 . . . Nitrogen atoms (nitro radicals C07D 215/18)

C07D 215/40 . . . . attached in position 8

C07D 215/42 . . . . attached in position 4

C07D 215/44 . . . . . with aryl radicals attached to said nitrogen atoms

C07D 215/46 . . . . . with hydrocarbon radicals, substituted by nitrogen atoms, attached to said nitrogen atoms

C07D 215/48 . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 215/50 . . . . attached in position 4

C07D 215/52 . . . . . with aryl radicals attached in position 2

C07D 215/54 . . . . attached in position 3

C07D 215/56 . . . . . with oxygen atoms in position 4

C07D 215/58 . with hetero atoms directly attached to the ring nitrogen atom

C07D 215/60 . . N-oxides

**C07D 217/00 Heterocyclic compounds containing isoquinoline or hydrogenated isoquinoline ring systems**

C07D 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

C07D 217/04 . . with hydrocarbon or substituted hydrocarbon radicals attached to the ring nitrogen atom

C07D 217/06 . . with the ring nitrogen atom acylated by carboxylic or carbonic acids, or with sulfur or nitrogen analogues thereof, e.g. carbamates

C07D 217/08 . . with a hetero atom directly attached to the ring nitrogen atom

C07D 217/10 . . Quaternary compounds

C07D 217/12 . with radicals, substituted by hetero atoms, attached to carbon atoms of the nitrogen-containing ring

C07D 217/14 . . other than aralkyl radicals

C07D 217/16 . . . substituted by oxygen atoms

C07D 217/18 . . Aralkyl radicals

C07D 217/20 . . . with oxygen atoms directly attached to the aromatic ring of said aralkyl radical, e.g. papaverine

C07D 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

C07D 217/24 . . Oxygen atoms

C07D 217/26 . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

**C07D 219/00 Heterocyclic compounds containing acridine or hydrogenated acridine ring systems**

C07D 219/02 . with only hydrogen, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the ring system

C07D 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

C07D 219/06 . . Oxygen atoms

C07D 219/08 . . Nitrogen atoms (acridine dyes C09B 15/00)

C07D 219/10 . . . attached in position 9

C07D 219/12 . . . . Amino-alkyl-amino radicals attached in position 9

C07D 219/14 . with hydrocarbon radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom

C07D 219/16 . with acyl radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom

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

C07D 221/02 . condensed with carbocyclic rings or ring systems

C07D 221/04 . . ortho- or peri-condensed ring systems

C07D 221/06 . . . Ring systems of three rings

C07D 221/08 . . . . Aza-anthracenes (acridine C07D 219/00)

C07D 221/10 . . . . Aza-phenanthrenes

C07D 221/12 . . . . . Phenanthridines

C07D 221/14 . . . . Aza-phenalenes, e.g. 1,8-naphthalimide

C07D 221/16 . . . . containing carbocyclic rings other than six-membered

C07D 221/18 . . . Ring systems of four or more rings

C07D 221/20 . . Spiro-condensed ring systems

C07D 221/22 . . Bridged ring systems

C07D 221/24 . . . Camphidines

C07D 221/26 . . . Benzomorphans

C07D 221/28 . . . Morphinans

**C07D 223/00 Heterocyclic compounds containing seven-membered rings having one nitrogen atom as the only ring hetero atom**

**NOTE**

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

C07D 223/02 . not condensed with other rings

C07D 223/04 . . with only hydrogen atoms, halogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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)

C07D 223/08 . . . Oxygen atoms

C07D 223/10 . . . . attached in position 2

C07D 223/12 . . . Nitrogen atoms not forming part of a nitro radical

C07D 223/14 . condensed with carbocyclic rings or ring systems

C07D 223/16 . . Benzazepines; Hydrogenated benzazepines

C07D 223/18 . . Dibenzazepines; Hydrogenated dibenzazepines

C07D 223/20 . . . Dibenz [b, e] azepines; Hydrogenated dibenz [b, e] azepines

C07D 223/22 . . . Dibenz [b, f] azepines; Hydrogenated dibenz [b, f] azepines

C07D 223/24 . . . . with hydrocarbon radicals, substituted by nitrogen atoms, attached to the ring nitrogen atom

C07D 223/26 . . . . . having a double bond between positions 10 and 11

C07D 223/28 . . . . . having a single bond between positions 10 and 11

C07D 223/30 . . . . with hetero atoms directly attached to the ring nitrogen atom

C07D 223/32 . . containing carbocyclic rings other than six-membered

**C07D 225/00 Heterocyclic compounds containing rings of more than seven members having one nitrogen atom as the only ring hetero atom**

**NOTE**

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

C07D 225/02 . not condensed with other rings

C07D 225/04 . condensed with carbocyclic rings or ring systems

C07D 225/06 . . condensed with one six-membered ring

C07D 225/08 . . condensed with two six-membered rings

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

**NOTE**

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

C07D 227/02 . with only hydrogen or carbon atoms directly attached to the ring nitrogen atom

C07D 227/04 . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to ring carbon atoms

C07D 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

C07D 227/08 . . . Oxygen atoms

C07D 227/087 . . . . One doubly-bound oxygen atom in position 2, e.g. lactams

C07D 227/093 . . . . Two doubly-bound oxygen atoms attached to the carbon atoms adjacent to the ring nitrogen atom, e.g. dicarboxylic acid imides

C07D 227/10 . . . Nitrogen atoms not forming part of a nitro radical

C07D 227/12 . with hetero atoms directly attached to the ring nitrogen atom

**C07D 229/00** **Heterocyclic compounds containing rings of less than five members having two nitrogen atoms as the only ring hetero atoms**

C07D 229/02 . containing three-membered rings

**C07D 231/00** **Heterocyclic compounds containing 1,2-diazole or hydrogenated 1,2-diazole rings**

C07D 231/02 . not condensed with other rings

C07D 231/04 . . having no double bonds between ring members or between ring members and non-ring members

C07D 231/06 . . having one double bond between ring members or between ring members and non-ring members

C07D 231/08 . . . with oxygen or sulfur atoms directly attached to ring carbon atoms

C07D 231/10 . . having two or three double bonds between ring members or between ring members and non-ring members

C07D 231/12 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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

C07D 231/16 . . . . Halogen atoms or nitro radicals

C07D 231/18 . . . . One oxygen or sulfur atom

C07D 231/20 . . . . . One oxygen atom attached in positions 3 or 5

C07D 231/22 . . . . . with aryl radicals attached to ring nitrogen atoms

C07D 231/24 . . . . . having sulfone or sulfonic acid radicals in the molecule

C07D 231/26 . . . . . 1-Phenyl-3-methyl-5- pyrazolones, unsubstituted or substituted on the phenyl ring

C07D 231/28 . . . . Two oxygen or sulfur atoms

C07D 231/30 . . . . . attached in position 3 and 5

C07D 231/32 . . . . . Oxygen atoms

C07D 231/34 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached in position 4

C07D 231/36 . . . . . with hydrocarbon radicals, substituted by hetero atoms, attached in position 4

C07D 231/38 . . . . Nitrogen atoms (nitro radicals C07D 231/16)

C07D 231/40 . . . . . Acylated on said nitrogen atom

C07D 231/42 . . . . . Benzene-sulfonamido pyrazoles

C07D 231/44 . . . . Oxygen and nitrogen or sulfur and nitrogen atoms

C07D 231/46 . . . . . Oxygen atom in position 3 or 5 and nitrogen atom in position 4

C07D 231/48 . . . . . with hydrocarbon radicals attached to said nitrogen atom

C07D 231/50 . . . . . Acylated on said nitrogen atom

C07D 231/52 . . . . . Oxygen atom in position 3 and nitrogen atom in position 5, or vice-versa

C07D 231/54 . condensed with carbocyclic rings or ring-systems

C07D 231/56 . . Benzopyrazoles; Hydrogenated benzopyrazoles

**C07D 233/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, not condensed with other rings**

C07D 233/02 . having no double bonds between ring members or between ring members and non-ring members

C07D 233/04 . having one double bond between ring members or between a ring member and a non-ring member

C07D 233/06 . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms

C07D 233/08 . . . with alkyl radicals, containing more than four carbon atoms, directly attached to ring carbon atoms

C07D 233/10 . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring nitrogen atoms

C07D 233/12 . . . . with substituted hydrocarbon radicals attached to ring nitrogen atoms

C07D 233/14 . . . . . Radicals substituted by oxygen atoms

C07D 233/16 . . . . . Radicals substituted by nitrogen atoms

C07D 233/18 . . . . . Radicals substituted by carbon atoms having three bonds to hetero atoms with at the most one to halogen, e.g. ester or nitrile radicals

C07D 233/20 . . with substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 233/22 . . . Radicals substituted by oxygen atoms

C07D 233/24 . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical

C07D 233/26 . . . Radicals substituted by carbon atoms having three bonds to hetero atoms

C07D 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

C07D 233/30 . . . Oxygen or sulfur atoms

C07D 233/32 . . . . One oxygen atom

C07D 233/34 . . . . . ethylene-urea

C07D 233/36 . . . . . with hydrocarbon radicals, substituted by nitrogen atoms, attached to ring nitrogen atoms

C07D 233/38 . . . . . with acyl radicals or hetero atoms directly attached to ring nitrogen atoms

C07D 233/40 . . . . Two or more oxygen atoms

C07D 233/42 . . . . Sulfur atoms

C07D 233/44 . . . Nitrogen atoms not forming part of a nitro radical

C07D 233/46 . . . . with only hydrogen atoms attached to said nitrogen atoms

C07D 233/48 . . . . with acyclic hydrocarbon or substituted acyclic hydrocarbon radicals, attached to said nitrogen atoms

C07D 233/50 . . . . with acyclic hydrocarbon or substituted acyclic hydrocarbon radicals, attached to said nitrogen atoms

C07D 233/52 . . . . with hetero atoms directly attached to said nitrogen atoms

C07D 233/54 . having two double bonds between ring members or between ring members and non-ring members

C07D 233/56 . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring carbon atoms

C07D 233/58 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring nitrogen atoms

C07D 233/60 . . . with hydrocarbon radicals, substituted by oxygen or sulfur atoms, attached to ring nitrogen atoms

C07D 233/61 . . . with hydrocarbon radicals, substituted by nitrogen atoms not forming part of a nitro radical, attached to ring nitrogen atoms

C07D 233/62 . . . with triarylmethyl radicals attached to ring nitrogen atoms (triarylmethane dyes C09B 11/26)

C07D 233/64 . . with substituted hydrocarbon radicals attached to ring carbon atoms, e.g. histidine

C07D 233/66 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms

C07D 233/68 . . . Halogen atoms

C07D 233/70 . . . One oxygen atom

C07D 233/72 . . . Two oxygen atoms, e.g. hydantoin

C07D 233/74 . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to other ring members

C07D 233/76 . . . . with substituted hydrocarbon radicals attached to the third ring carbon atom

C07D 233/78 . . . . . Radicals substituted by oxygen atoms

C07D 233/80 . . . . with hetero atoms or acyl radicals directly attached to ring nitrogen atoms

C07D 233/82 . . . . . Halogen atoms

C07D 233/84 . . . Sulfur atoms

C07D 233/86 . . . Oxygen and sulfur atoms, e.g. thiohydantoin

C07D 233/88 . . . Nitrogen atoms, e.g. allantoin (nitro radicals C07D 233/91)

C07D 233/90 . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals

C07D 233/91 . . . Nitro radicals

C07D 233/92 . . . . attached in position 4 or 5

C07D 233/93 . . . . . with hydrocarbon radicals, substituted by halogen atoms, attached to other ring members

C07D 233/94 . . . . . with hydrocarbon radicals, substituted by oxygen or sulfur atoms, attached to other ring members

C07D 233/95 . . . . . with hydrocarbon radicals, substituted by nitrogen atoms, attached to other ring members

C07D 233/96 . having three double bonds between ring members or between ring members and non-ring members

**C07D 235/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, condensed with other rings**

C07D 235/02 . condensed with carbocyclic rings or ring systems

C07D 235/04 . . Benzimidazoles; Hydrogenated benzimidazoles

C07D 235/06 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2

C07D 235/08 . . . . Radicals containing only hydrogen and carbon atoms

C07D 235/10 . . . . Radicals substituted by halogen atoms or nitro radicals

C07D 235/12 . . . . Radicals substituted by oxygen atoms

C07D 235/14 . . . . Radicals substituted by nitrogen atoms (by nitro radicals C07D 235/10)

C07D 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

C07D 235/18 . . . with aryl radicals directly attached in position 2

C07D 235/20 . . . Two benzimidazolyl-2 radicals linked together directly or via a hydrocarbon or substituted hydrocarbon radical

C07D 235/22 . . . with hetero atoms directly attached to ring nitrogen atoms (C07D 235/10 takes precedence)

C07D 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

C07D 235/26 . . . . Oxygen atoms

C07D 235/28 . . . . Sulfur atoms

C07D 235/30 . . . . Nitrogen atoms not forming part of a nitro radical

C07D 235/32 . . . . . Benzimidazole-2-carbamic acids, unsubstituted or substituted; Esters thereof; Thio-analogues thereof

**C07D 237/00 Heterocyclic compounds containing 1,2-diazine or hydrogenated 1,2-diazine rings**

C07D 237/02 . not condensed with other rings

C07D 237/04 . . having less than three double bonds between ring members or between ring members and non-ring members

C07D 237/06 . . having three double bonds between ring members or between ring members and non-ring members

C07D 237/08 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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

C07D 237/12 . . . . Halogen atoms or nitro radicals

C07D 237/14 . . . . Oxygen atoms

C07D 237/16 . . . . . Two oxygen atoms

C07D 237/18 . . . . Sulfur atoms

C07D 237/20 . . . . Nitrogen atoms (nitro radicals C07D 237/12)

C07D 237/22 . . . . Nitrogen and oxygen atoms

C07D 237/24 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 237/26 . condensed with carbocyclic rings or ring systems

C07D 237/28 . . Cinnolines

C07D 237/30 . . Phthalazines

C07D 237/32 . . . with oxygen atoms directly attached to carbon atoms of the nitrogen-containing ring

C07D 237/34 . . . with nitrogen atoms directly attached to carbon atoms of the nitrogen-containing ring, e.g. hydrazine radicals

C07D 237/36 . . Benzo-cinnolines

**C07D 239/00 Heterocyclic compounds containing 1,3-diazine or hydrogenated 1,3-diazine rings**

C07D 239/02 . not condensed with other rings

C07D 239/04 . . having no double bonds between ring members or between ring members and non-ring members

C07D 239/06 . . having one double bond between ring members or between a ring member and a non-ring member

C07D 239/08 . . . with heteroatoms directly attached in position 2

C07D 239/10 . . . . Oxygen or sulfur atoms

C07D 239/12 . . . . Nitrogen atoms not forming part of a nitro radical

C07D 239/14 . . . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached to said nitrogen atoms

C07D 239/16 . . . . . acylated on said nitrogen atoms

C07D 239/18 . . . . . with hetero atoms attached to said nitrogen atoms, except nitro radicals, e.g. hydrazine radicals

C07D 239/20 . . having two double bonds between ring members or between ring members and non-ring members

C07D 239/22 . . . with hetero atoms directly attached to ring carbon atoms

C07D 239/24 . . having three or more double bonds between ring members or between ring members and non-ring members

C07D 239/26 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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

C07D 239/30 . . . . Halogen atoms or nitro radicals

C07D 239/32 . . . . One oxygen, sulfur or nitrogen atom

C07D 239/34 . . . . . One oxygen atom

C07D 239/36 . . . . . . as doubly bound atom or as unsubstituted hydroxy radical

C07D 239/38 . . . . . One sulfur atom

C07D 239/40 . . . . . . as doubly bound sulfur atom or as unsubstituted mercapto radical

C07D 239/42 . . . . . One nitrogen atom (nitro radicals C07D 239/30; benzenesulfonamido-pyrimidines C07D 239/69)

C07D 239/46 . . . . Two or more oxygen, sulfur or nitrogen atoms (benzenesulfonamido-pyrimidines C07D 239/69)

C07D 239/47 . . . . . One nitrogen atom and one oxygen or sulfur atom, e.g. cytosine

C07D 239/48 . . . . . Two nitrogen atoms

C07D 239/49 . . . . . . with an aralkyl radical, or substituted aralkyl radical, attached in position 5, e.g. trimethoprim

C07D 239/50 . . . . . Three nitrogen atoms

C07D 239/52 . . . . . Two oxygen atoms

C07D 239/54 . . . . . . as doubly bound oxygen atoms or as unsubstituted hydroxy radicals

C07D 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

C07D 239/553 . . . . . . . . with halogen atoms or nitro radicals directly attached to ring carbon atoms, e.g. fluorouracil

C07D 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

C07D 239/56 . . . . . One oxygen atom and one sulfur atom

C07D 239/58 . . . . . Two sulfur atoms

C07D 239/60 . . . . . Three or more oxygen or sulfur atoms

C07D 239/62 . . . . . . Barbituric acids

C07D 239/64 . . . . . . . Salts of organic bases; Organic double compounds

C07D 239/66 . . . . . . Thiobarbituric acids

C07D 239/68 . . . . . . . Salts or organic bases; Organic double compounds

C07D 239/69 . . . . Benzenesulfonamido-pyrimidines

C07D 239/70 . condensed with carbocyclic rings or ring systems

C07D 239/72 . . Quinazolines; Hydrogenated quinazolines

C07D 239/74 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached to ring carbon atoms of the hetero ring

C07D 239/76 . . . . N-oxides
C07D 239/78 . . . with hetero atoms directly attached in position 2
C07D 239/80 . . . . Oxygen atoms
C07D 239/82 . . . . . with an aryl radical attached in position 4
C07D 239/84 . . . . Nitrogen atoms
C07D 239/86 . . . with hetero atoms directly attached in position 4
C07D 239/88 . . . . Oxygen atoms
C07D 239/90 . . . . . with acyclic radicals attached in positions 2 or 3
C07D 239/91 . . . . . with aryl or aralkyl radicals attached in positions 2 or 3
C07D 239/92 . . . . . with hetero atoms directly attached to nitrogen atoms of the hetero ring
C07D 239/93 . . . . Sulfur atoms
C07D 239/94 . . . . Nitrogen atoms
C07D 239/95 . . . with hetero atoms directly attached in position 2 and 4
C07D 239/96 . . . . Two oxygen atoms

**C07D 241/00** **Heterocyclic compounds containing 1,4-diazine or hydrogenated 1,4-diazine rings**

**NOTE**

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

C07D 241/02 . not condensed with other rings
C07D 241/04 . . having no double bonds between ring members or between ring members and non-ring members
C07D 241/06 . . having one or two double bonds between ring members or between ring members and non-ring members
C07D 241/08 . . . with oxygen atoms directly attached to ring carbon atoms
C07D 241/10 . . having three double bonds between ring members or between ring members and non-ring members
C07D 241/12 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms
C07D 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
C07D 241/16 . . . . Halogen atoms; Nitro radicals
C07D 241/18 . . . . Oxygen or sulfur atoms
C07D 241/20 . . . . Nitrogen atoms (nitro radicals C07D 241/16)
C07D 241/22 . . . . . Benzenesulfonamido pyrazines
C07D 241/24 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals
C07D 241/26 . . . . . with nitrogen atoms directly attached to ring carbon atoms
C07D 241/28 . . . . . in which said hetero-bound carbon atoms have double bonds to oxygen, sulfur or nitrogen atoms

C07D 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

C07D 241/32 . . . . . (Amino-pyrazinoyl) guanidines

C07D 241/34 . . . . . (Amino-pyrazine carbonamido) guanidines [2,5]

C07D 241/36 . condensed with carbocyclic rings or ring systems

C07D 241/38 . . with only hydrogen or carbon atoms directly attached to the ring nitrogen atoms

C07D 241/40 . . . Benzopyrazines

C07D 241/42 . . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring

C07D 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

C07D 241/46 . . . Phenazines

C07D 241/48 . . . . with hydrocarbon radicals, substituted by nitrogen atoms, directly attached to the ring nitrogen atoms

C07D 241/50 . . with hetero atoms directly attached to ring nitrogen atoms

C07D 241/52 . . . Oxygen atoms

C07D 241/54 . . . Nitrogen atoms

**C07D 243/00 Heterocyclic compounds containing seven-membered rings having two nitrogen atoms as the only ring hetero atoms**

C07D 243/02 . having the nitrogen atoms in positions 1,2

C07D 243/04 . having the nitrogen atoms in positions 1,3

C07D 243/06 . having the nitrogen atoms in positions 1,4

C07D 243/08 . . not condensed with other rings

C07D 243/10 . . condensed with carbocyclic rings or ring systems

C07D 243/12 . . . 1,5-Benzodiazepines; Hydrogenated 1,5-benzodiazepines

C07D 243/14 . . . 1,4-Benzodiazepines; Hydrogenated 1,4-benzodiazepines

C07D 243/16 . . . . substituted in position 5 by aryl radicals

C07D 243/18 . . . . . substituted in position 2 by nitrogen, oxygen or sulfur atoms

C07D 243/20 . . . . . Nitrogen atoms

C07D 243/22 . . . . . Sulfur atoms

C07D 243/24 . . . . . Oxygen atoms

C07D 243/26 . . . . . Preparation from compounds already containing the benzodiazepine skeleton

C07D 243/28 . . . . . Preparation including building-up the benzodiazepine skeleton from compounds containing no hetero rings

C07D 243/30 . . . . . Preparation including building-up the benzodiazepine skeleton from compounds already containing hetero rings

C07D 243/32 . . . . . containing a phthalimide or hydrogenated phthalimide ring system

C07D 243/34 . . . . . containing a quinazoline or hydrogenated quinazoline ring system

C07D 243/36 . . . . . containing an indole or hydrogenated indole ring system

C07D 243/38 . . . [b, e]- or [b, f]-condensed with six-membered rings

**C07D 245/00 Heterocyclic compounds containing rings of more than seven members having two nitrogen atoms as the only ring hetero atoms**

C07D 245/02 . not condensed with other rings

C07D 245/04 . condensed with carbocyclic rings or ring systems

C07D 245/06 . . condensed with one six-membered ring

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

C07D 247/02 . having the nitrogen atoms in positions 1 and 3

**C07D 249/00 Heterocyclic compounds containing five-membered rings having three nitrogen atoms as the only ring hetero atoms**

C07D 249/02 . not condensed with other rings

C07D 249/04 . . 1,2,3-Triazoles; Hydrogenated 1,2,3-triazoles

C07D 249/06 . . . with aryl radicals directly attached to ring atoms

C07D 249/08 . . 1,2,4-Triazoles; Hydrogenated 1,2,4-triazoles

C07D 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

C07D 249/12 . . . . Oxygen or sulfur atoms

C07D 249/14 . . . . Nitrogen atoms

C07D 249/16 . condensed with carbocyclic rings or ring systems

C07D 249/18 . . Benzotriazoles

C07D 249/20 . . . with aryl radicals directly attached in position 2

C07D 249/22 . . Naphthotriazoles

C07D 249/24 . . . with stilbene radicals attached in position 2

**C07D 251/00 Heterocyclic compounds containing 1,3,5-triazine rings**

C07D 251/02 . not condensed with other rings

C07D 251/04 . . having no double bonds between ring members or between ring members and non-ring members

C07D 251/06 . . . with hetero atoms directly attached to ring nitrogen atoms

C07D 251/08 . . having one double bond between ring members or between a ring member and a non-ring member

C07D 251/10 . . having two double bonds between ring members or between ring members and non-ring members

C07D 251/12 . . having three double bonds between ring members or between ring members and non-ring members

C07D 251/14 . . . with hydrogen or carbon atoms directly attached to at least one ring carbon atom

C07D 251/16 . . . . to only one ring carbon atom

C07D 251/18 . . . . . with nitrogen atoms directly attached to the two other ring carbon atoms, e.g. guanamines

C07D 251/20 . . . . . with no nitrogen atoms directly attached to a ring carbon atom

C07D 251/22 . . . . to two ring carbon atoms

C07D 251/24 . . . . to three ring carbon atoms

C07D 251/26 . . . with only hetero atoms directly attached to ring carbon atoms

C07D 251/28 . . . . Only halogen atoms, e.g. cyanuric chloride

C07D 251/30 . . . . Only oxygen atoms

C07D 251/32 . . . . . Cyanuric acid; Isocyanuric acid

C07D 251/34 . . . . . Cyanuric or isocyanuric esters

C07D 251/36 . . . . . having halogen atoms directly attached to ring nitrogen atoms

C07D 251/38 . . . . Sulfur atoms

C07D 251/40 . . . . Nitrogen atoms

C07D 251/42 . . . . . One nitrogen atom

C07D 251/44 . . . . . with halogen atoms attached to the two other ring carbon atoms

C07D 251/46 . . . . . with oxygen or sulfur atoms attached to the two other ring carbon atoms

C07D 251/48 . . . . . Two nitrogen atoms

C07D 251/50 . . . . . with a halogen atom attached to the third ring carbon atom

C07D 251/52 . . . . . with an oxygen or sulfur atom attached to the third ring carbon atom

C07D 251/54 . . . . . Three nitrogen atoms

C07D 251/56 . . . . . Preparation of melamine

C07D 251/58 . . . . . from cyanamide, dicyanamide or calcium cyanamide

C07D 251/60 . . . . . from urea or from carbon dioxide and ammonia

C07D 251/62 . . . . . Purification of melamine

C07D 251/64 . . . . . Condensation products of melamine with aldehydes; Derivatives thereof (polycondensation products C08G)

C07D 251/66 . . . . . Derivatives of melamine in which a hetero atom is directly attached to a nitrogen atom of melamine

C07D 251/68 . . . . . Triazinylamino stilbenes

C07D 251/70 . . . . . Other substituted melamines

C07D 251/72 . condensed with carbocyclic rings or ring systems

**C07D 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**

C07D 253/02 . not condensed with other rings

C07D 253/04 . . 1,2,3-Triazines

C07D 253/06 . . 1,2,4-Triazines

C07D 253/065 . . . having three double bonds between ring members or between ring members and non-ring members

C07D 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

C07D 253/075 . . . . . Two hetero atoms, in positions 3 and 5

C07D 253/08 . condensed with carbocyclic rings or ring systems

C07D 253/10 . . Condensed 1, 2,4-triazines; Hydrogenated condensed 1,2,4-triazines

**C07D 255/00 Heterocyclic compounds containing rings having three nitrogen atoms as the only ring hetero atoms, not provided for by groups C07D 249/00 to C07D 253/00**

C07D 255/02 . not condensed with other rings

C07D 255/04 . condensed with carbocyclic rings or ring systems

**C07D 257/00 Heterocyclic compounds containing rings having four nitrogen atoms as the only ring hetero atoms**

C07D 257/02 . not condensed with other rings

C07D 257/04 . . Five-membered rings

C07D 257/06 . . . with nitrogen atoms directly attached to the ring carbon atom

C07D 257/08 . . Six-membered rings

C07D 257/10 . condensed with carbocyclic rings or ring systems

C07D 257/12 . . Six-membered rings having four nitrogen atoms

**C07D 259/00 Heterocyclic compounds containing rings having more than four nitrogen atoms as the only ring hetero atoms**

**Heterocyclic compounds having nitrogen and oxygen as the only ring hetero atoms**

**C07D 261/00 Heterocyclic compounds containing 1,2-oxazole or hydrogenated 1,2-oxazole rings**

C07D 261/02 . not condensed with other rings

C07D 261/04 . . having one double bond between ring members or between a ring member and a non-ring member

C07D 261/06 . . having two or more double bonds between ring members or between ring members and non-ring members

C07D 261/08 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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

C07D 261/12 . . . . Oxygen atoms

C07D 261/14 . . . . Nitrogen atoms

C07D 261/16 . . . . . Benzene-sulphonamido isoxazoles

C07D 261/18 . . . . Carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen

C07D 261/20 . condensed with carbocyclic rings or ring systems

**C07D 263/00** **Heterocyclic compounds containing 1,3-oxazole or hydrogenated 1,3-oxazole rings**

C07D 263/02 . not condensed with other rings

C07D 263/04 . . having no double bonds between ring members or between ring members and non-ring members

C07D 263/06 . . . with hydrocarbon radicals, substituted by oxygen atoms, attached to ring carbon atoms

C07D 263/08 . . having one double bond between ring members or between a ring member and a non-ring member

C07D 263/10 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 263/12 . . . . with radicals containing only hydrogen and carbon atoms

C07D 263/14 . . . . with radicals substituted by oxygen atoms

C07D 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

C07D 263/18 . . . . Oxygen atoms

C07D 263/20 . . . . . attached in position 2

C07D 263/22 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to other ring carbon atoms

C07D 263/24 . . . . . with hydrocarbon radicals, substituted by oxygen atoms, attached to other ring carbon atoms

C07D 263/26 . . . . . with hetero atoms or acyl radicals directly attached to the ring nitrogen atom

C07D 263/28 . . . . Nitrogen atoms not forming part of a nitro radical

C07D 263/30 . . having two or three double bonds between ring members or between ring members and non-ring members

C07D 263/32 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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

C07D 263/36 . . . . One oxygen atom

C07D 263/38 . . . . . attached in position 2

C07D 263/40 . . . . . attached in position 4

C07D 263/42 . . . . . attached in position 5

C07D 263/44 . . . . Two oxygen atoms

C07D 263/46 . . . . Sulfur atoms

C07D 263/48 . . . . Nitrogen atoms not forming part of a nitro radical

C07D 263/50 . . . . . Benzene-sulphonamido oxazoles

C07D 263/52 . condensed with carbocyclic rings or ring systems

C07D 263/54 . . Benzoxazoles; Hydrogenated benzoxazoles

C07D 263/56 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2

C07D 263/57 . . . . Aryl or substituted aryl radicals

C07D 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

C07D 263/60 . . Naphthoxazoles; Hydrogenated naphthoxazoles

C07D 263/62 . . having two or more ring systems containing condensed 1,3-oxazole rings

C07D 263/64 . . . linked in positions 2 and 2' by chains containing six-membered aromatic rings or ring systems containing such rings

**C07D 265/00 Heterocyclic compounds containing six-membered rings having one nitrogen atom and one oxygen atom as the only ring hetero atoms**

**NOTE**

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

C07D 265/02 . 1,2-Oxazines; Hydrogenated 1,2-oxazines

C07D 265/04 . 1,3-Oxazines; Hydrogenated 1,3-oxazines

C07D 265/06 . . not condensed with other rings

C07D 265/08 . . . having one double bond between ring members or between a ring member and a non-ring member

C07D 265/10 . . . . with oxygen atoms directly attached to ring carbon atoms

C07D 265/12 . . condensed with carbocyclic rings or ring systems

C07D 265/14 . . . condensed with one six-membered ring

C07D 265/16 . . . . with only hydrogen or carbon atoms directly attached in positions 2 and 4

C07D 265/18 . . . . with hetero atoms directly attached in position 2

C07D 265/20 . . . . with hetero atoms directly attached in position 4

C07D 265/22 . . . . . Oxygen atoms

C07D 265/24 . . . . with hetero atoms directly attached in positions 2 and 4

C07D 265/26 . . . . . Two oxygen atoms, e.g. isatoic anhydride

C07D 265/28 . 1,4-Oxazines; Hydrogenated 1,4-oxazines

C07D 265/30 . . not condensed with other rings

C07D 265/32 . . . with oxygen atoms directly attached to ring carbon atoms

C07D 265/33 . . . . Two oxygen atoms, in positions 3 and 5

C07D 265/34 . . condensed with carbocyclic rings

C07D 265/36 . . . condensed with one six-membered ring

C07D 265/38 . . . [b, e]-condensed with two six-membered rings

**C07D 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**

C07D 267/02 . Seven-membered rings

C07D 267/04 . . having the hetero atoms in positions 1 and 2

C07D 267/06 . . having the hetero atoms in positions 1 and 3

C07D 267/08 . . having the hetero atoms in positions 1 and 4

C07D 267/10 . . . not condensed with other rings

C07D 267/12 . . . condensed with carbocyclic rings or ring systems

C07D 267/14 . . . . condensed with one six-membered ring

C07D 267/16 . . . . condensed with two six-membered rings

C07D 267/18 . . . . . [b, e]-condensed

C07D 267/20 . . . . . [b, f]-condensed

C07D 267/22 . Eight-membered rings

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

C07D 269/02 . having the hetero atoms in positions 1 and 3

**C07D 271/00** **Heterocyclic compounds containing five-membered rings having two nitrogen atoms and one oxygen atom as the only ring hetero atoms**

C07D 271/02 . not condensed with other rings

C07D 271/04 . . 1,2,3-Oxadiazoles; Hydrogenated 1,2,3-oxadiazoles

C07D 271/06 . . 1,2,4-Oxadiazoles; Hydrogenated 1,2,4-oxadiazoles

C07D 271/07 . . . with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical

C07D 271/08 . . 1,2,5-Oxadiazoles; Hydrogenated 1,2,5-oxadiazoles

C07D 271/10 . . 1,3,4-Oxadiazoles; Hydrogenated 1,3,4-oxadiazoles

C07D 271/107 . . . with two aryl or substituted aryl radicals attached in positions 2 and 5

C07D 271/113 . . . with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical

C07D 271/12 . condensed with carbocyclic rings or ring systems

**C07D 273/00** **Heterocyclic compounds containing rings having nitrogen and oxygen atoms as the only ring hetero atoms, not provided for by groups C07D 261/00 to C07D 271/00**

C07D 273/01 . having one nitrogen atom

C07D 273/02 . having two nitrogen atoms and only one oxygen atom

C07D 273/04 . . Six-membered rings

C07D 273/06 . . Seven-membered rings

C07D 273/08 . having two nitrogen atoms and more than one oxygen atom

**Heterocyclic compounds having nitrogen and sulfur as the only ring hetero atoms**

**C07D 275/00** **Heterocyclic compounds containing 1,2-thiazole or hydrogenated 1,2-thiazole rings**

C07D 275/02 . not condensed with other rings

C07D 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

C07D 275/04 . condensed with carbocyclic rings or ring systems

C07D 275/06 . . with hetero atoms directly attached to the ring sulfur atom

**C07D 277/00 Heterocyclic compounds containing 1,3-thiazole or hydrogenated 1,3-thiazole rings**

C07D 277/02 . not condensed with other rings

C07D 277/04 . . having no double bonds between ring members or between ring members and non-ring members

C07D 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

C07D 277/08 . . having one double bond between ring members or between a ring member and a non-ring member

C07D 277/10 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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

C07D 277/14 . . . . Oxygen atoms

C07D 277/16 . . . . Sulfur atoms

C07D 277/18 . . . . Nitrogen atoms

C07D 277/20 . . having two or three double bonds between ring members or between ring members and non-ring members

C07D 277/22 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 277/24 . . . . Radicals substituted by oxygen atoms

C07D 277/26 . . . . Radicals substituted by sulfur atoms

C07D 277/28 . . . . Radicals substituted by nitrogen atoms

C07D 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

C07D 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

C07D 277/34 . . . . Oxygen atoms

C07D 277/36 . . . . Sulfur atoms

C07D 277/38 . . . . Nitrogen atoms

C07D 277/40 . . . . . Unsubstituted amino or imino radicals

C07D 277/42 . . . . . Amino or imino radicals substituted by hydrocarbon or substituted hydrocarbon radicals

C07D 277/44 . . . . . Acylated amino or imino radicals

C07D 277/46 . . . . . by carboxylic acids, or sulfur or nitrogen analogues thereof

C07D 277/48 . . . . . by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof, e.g. carbonylguanidines

C07D 277/50 . . . . . Nitrogen atoms bound to hetero atoms (nitro radicals C07D 277/58)

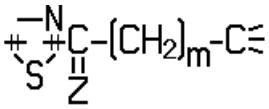
C07D 277/52 . . . . . to sulfur atoms, e.g. sulfonamides

C07D 277/54 . . . . Nitrogen and either oxygen or sulfur atoms

C07D 277/56 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 277/58 . . . . Nitro radicals

C07D 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

C07D 277/593 . . . . Z being doubly bound oxygen or doubly bound nitrogen, which nitrogen is part of a possibly substituted oximino radical

C07D 277/60 . condensed with carbocyclic rings or ring-systems

C07D 277/62 . . Benzothiazoles

C07D 277/64 . . . with only hydrocarbon or substituted hydrocarbon radicals attached in position 2

C07D 277/66 . . . . with aromatic rings or ring systems directly attached in position 2

C07D 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

C07D 277/70 . . . . Sulfur atoms

C07D 277/72 . . . . . 2-Mercaptobenzothiazole

C07D 277/74 . . . . . Sulfur atoms substituted by carbon atoms

C07D 277/76 . . . . . Sulfur atoms attached to a second hetero atom

C07D 277/78 . . . . . to a sulfur atom

C07D 277/80 . . . . . to a nitrogen atom

C07D 277/82 . . . . Nitrogen atoms

C07D 277/84 . . Naphthothiazoles

**C07D 279/00** **Heterocyclic compounds containing six-membered rings having one nitrogen atom and one sulfur atom as the only ring hetero atoms**

**NOTE**

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

C07D 279/02 . 1,2-Thiazines; Hydrogenated 1,2-thiazines

C07D 279/04 . 1,3-Thiazines; Hydrogenated 1,3-thiazines

C07D 279/06 . . not condensed with other rings

C07D 279/08 . . condensed with carbocyclic rings or ring systems

C07D 279/10 . 1,4-Thiazines; Hydrogenated 1,4-thiazines
C07D 279/12 . . not condensed with other rings
C07D 279/14 . . condensed with carbocyclic rings or ring systems
C07D 279/16 . . . condensed with one six-membered ring
C07D 279/18 . . . [b, e]-condensed with two six-membered rings
C07D 279/20 . . . . with hydrogen atoms directly attached to the ring nitrogen atom
C07D 279/22 . . . . with carbon atoms directly attached to the ring nitrogen atom
C07D 279/24 . . . . . with hydrocarbon radicals, substituted by amino radicals, attached to the ring nitrogen atom
C07D 279/26 . . . . . . without other substituents attached to the ring system
C07D 279/28 . . . . . . with other substituents attached to the ring system
C07D 279/30 . . . . . with acyl radicals attached to the ring nitrogen atom
C07D 279/32 . . . . with hetero atoms directly attached to the ring nitrogen atom
C07D 279/34 . . . . with hetero atoms directly attached to the ring sulfur atom
C07D 279/36 . . . [b, e]-condensed, at least one with a further condensed benzene ring

**C07D 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**

C07D 281/02 . Seven-membered rings
C07D 281/04 . . having the hetero atoms in positions 1 and 4
C07D 281/06 . . . not condensed with other rings
C07D 281/08 . . . condensed with carbocyclic rings or ring systems
C07D 281/10 . . . . condensed with one six-membered ring
C07D 281/12 . . . . condensed with two six-membered rings
C07D 281/14 . . . . . [b, e]-condensed
C07D 281/16 . . . . . [b, f]-condensed
C07D 281/18 . Eight-membered rings

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

C07D 283/02 . having the hetero atoms in positions 1 and 3

**C07D 285/00** **Heterocyclic compounds containing rings having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by groups C07D 275/00 to C07D 283/00**

C07D 285/01 . Five-membered rings
C07D 285/02 . . Thiadiazoles; Hydrogenated thiadiazoles
C07D 285/04 . . . not condensed with other rings
C07D 285/06 . . . . 1,2,3-Thiadiazoles; Hydrogenated 1,2,3-thiadiazoles
C07D 285/08 . . . . 1,2,4-Thiadiazoles; Hydrogenated 1,2,4-thiadiazoles
C07D 285/10 . . . . 1,2,5-Thiadiazoles; Hydrogenated 1,2,5-thiadiazoles
C07D 285/12 . . . . 1,3,4-Thiadiazoles; Hydrogenated 1,3,4-thiadiazoles

C07D 285/125 . . . . . with oxygen, sulfur or nitrogen atoms, directly attached to ring carbon atoms, the nitrogen atoms not forming part of a nitro radical

C07D 285/13 . . . . . Oxygen atoms

C07D 285/135 . . . . . Nitrogen atoms

C07D 285/14 . . . condensed with carbocyclic rings or ring systems

C07D 285/15 . Six-membered rings

C07D 285/16 . . Thiadiazines; Hydrogenated thiadiazines

C07D 285/18 . . . 1,2,4-Thiadiazines; Hydrogenated 1,2,4-thiadiazines

C07D 285/20 . . . . condensed with carbocyclic rings or ring systems

C07D 285/22 . . . . . condensed with one six-membered ring

C07D 285/24 . . . . . with oxygen atoms directly attached to the ring sulfur atom

C07D 285/26 . . . . . substituted in position 6 or 7 by sulfamoyl or substituted sulfamoyl radicals

C07D 285/28 . . . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached in position 3

C07D 285/30 . . . . . with hydrocarbon radicals, substituted by hetero atoms attached in position 3

C07D 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

C07D 285/34 . . . 1,3,5-Thiadiazines; Hydrogenated 1,3,5-thiadiazines

C07D 285/36 . Seven-membered rings

C07D 285/38 . Eight-membered rings

**C07D 291/00 Heterocyclic compounds containing rings having nitrogen, oxygen and sulfur atoms as the only ring hetero atoms**

C07D 291/02 . not condensed with other rings

C07D 291/04 . . Five-membered rings

C07D 291/06 . . Six-membered rings

C07D 291/08 . condensed with carbocyclic rings or ring systems

**C07D 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**

C07D 293/02 . not condensed with other rings

C07D 293/04 . . Five-membered rings

C07D 293/06 . . . Selenazoles; Hydrogenated selenazoles

C07D 293/08 . . Six-membered rings

C07D 293/10 . condensed with carbocyclic rings or ring systems

C07D 293/12 . . Selenazoles; Hydrogenated selenazoles

**C07D 295/00 Heterocyclic compounds containing polymethylene-imine rings with at least five ring members, 3-azabicylo [3.2.2.] nonane, piperazine, morpholine or thiomorpholine rings, having only hydrogen atoms directly attached to the ring carbon atoms**

C07D 295/02 . containing only hydrogen and carbon atoms in addition to the ring hetero elements

C07D 295/023 . . Preparation; Separation; Stabilisation; Use of additives

C07D 295/027 . . containing only one hetero ring

C07D 295/03 . . . with the ring nitrogen atoms directly attached to acyclic carbon atoms

C07D 295/033 . . . with the ring nitrogen atoms directly attached to carbocyclic rings

C07D 295/037 . . with quaternary ring nitrogen atoms

C07D 295/04 . with substituted hydrocarbon radicals attached to ring nitrogen atoms

C07D 295/06 . . substituted by halogen atoms or nitro radicals

C07D 295/067 . . . with the ring nitrogen atoms and the substituents attached to the same carbon chain, which is not interrupted by carbocyclic rings

C07D 295/073 . . . with the ring nitrogen atoms and the substituents separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings

C07D 295/08 . . substituted by singly bound oxygen or sulfur atoms

C07D 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

C07D 295/088 . . . . to an acyclic saturated chain

C07D 295/092 . . . . with aromatic radicals attached to the chain

C07D 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

C07D 295/10 . . substituted by doubly bound oxygen or sulfur atoms (acylated ring nitrogen atoms C07D 295/16)

C07D 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

C07D 295/108 . . . . to an acyclic saturated chain

C07D 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

C07D 295/116 . . . . with the doubly bound oxygen or sulfur atoms directly attached to a carbocyclic ring

C07D 295/12 . . substituted by singly or doubly bound nitrogen atoms (nitro radicals C07D 295/06)

C07D 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

C07D 295/13 . . . . to an acyclic saturated chain

C07D 295/135 . . . with the ring nitrogen atoms and the substituent nitrogen atoms separated by carbocyclic rings or by carbon chains interrupted by carbocyclic rings

C07D 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

C07D 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

C07D 295/15 . . . . to an acyclic saturated chain

C07D 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

C07D 295/16 . acylated on ring nitrogen atoms

C07D 295/18 . . by radicals derived from carboxylic acids, or sulfur or nitrogen analogues thereof
C07D 295/182 . . . Radicals derived from carboxylic acids
C07D 295/185 . . . . from aliphatic carboxylic acids
C07D 295/192 . . . . from aromatic carboxylic acids
C07D 295/194 . . . Radicals derived from thio- or thiono carboxylic acids
C07D 295/195 . . . Radicals derived from nitrogen analogues of carboxylic acids
C07D 295/20 . . by radicals derived from carbonic acid, or sulfur or nitrogen analogues thereof
C07D 295/205 . . . Radicals derived from carbonic acid
C07D 295/21 . . . Radicals derived from sulfur analogues of carbonic acid
C07D 295/215 . . . Radicals derived from nitrogen analogues of carbonic acid
C07D 295/22 . with hetero atoms directly attached to ring nitrogen atoms
C07D 295/24 . . Oxygen atoms
C07D 295/26 . . Sulfur atoms
C07D 295/28 . . Nitrogen atoms
C07D 295/30 . . . non-acylated
C07D 295/32 . . . acylated with carboxylic or carbonic acids, or their nitrogen or sulfur analogues

**Heterocyclic compounds having oxygen atoms with or without sulfur, selenium or tellurium, as ring hetero atoms**

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

C07D 301/32 . Separation; Purification

C07D 301/36 . Use of additives, e.g. for stabilisation

**C07D 303/00 Compounds containing three-membered rings having one oxygen atom as the only ring heteroatom**

C07D 303/02 . Compounds containing oxirane rings

C07D 303/04 . . containing only hydrogen and carbon atoms in addition to the ring oxygen atoms

C07D 303/06 . . . in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings

C07D 303/08 . . with hydrocarbon radicals, substituted by halogen atoms, nitro radicals or nitroso radicals

C07D 303/10 . . . in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings (steroids C07J)

C07D 303/12 . . with hydrocarbon radicals substituted by singly or doubly bound oxygen atoms

C07D 303/14 . . . by free hydroxyl radicals

C07D 303/16 . . . by esterified hydroxyl radicals

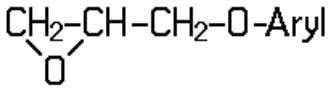
C07D 303/17 . . . . containing oxirane rings condensed with carbocyclic ring systems having three or more relevant rings

C07D 303/18 . . . by etherified hydroxyl radicals

C07D 303/20 . . . . Ethers with hydroxy compounds containing no oxirane rings

C07D 303/22 . . . . . with monohydroxy compounds

C07D 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.



C07D 303/24 . . . . . with polyhydroxy compounds

C07D 303/26 . . . . . having one or more free hydroxyl radicals

C07D 303/27 . . . . . having all hydroxyl radicals etherified with oxirane containing compounds

C07D 303/28 . . . . Ethers with hydroxy compounds containing oxirane rings

C07D 303/30 . . . . . ethers of oxirane-containing polyhydroxy compounds in which all hydroxyl radicals are etherified with oxirane-containing hydroxy compounds

C07D 303/31 . . . . in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings

C07D 303/32 . . . by aldehydo- or ketonic radicals

C07D 303/34 . . with hydrocarbon radicals substituted by sulfur, selenium or tellurium atoms

C07D 303/36 . . with hydrocarbon radicals substituted by nitrogen atoms (nitro, nitroso radicals C07D 303/08)

C07D 303/38 . . with hydrocarbon radicals substituted by carbon atoms having three bonds to heteroatoms with at the most one bond to halogen, e.g. ester or nitrile radicals

C07D 303/40 . . . by ester radicals

C07D 303/42 . . . . Acyclic compounds having a chain of seven or more carbon atoms, e.g. epoxidised fats

C07D 303/44 . . . . Esterified with oxirane-containing hydroxy compounds

C07D 303/46 . . . by amide or nitrile radicals

C07D 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

**C07D 305/00 Heterocyclic compounds containing four-membered rings having one oxygen atom as the only ring hetero atom**

C07D 305/02 . not condensed with other rings

C07D 305/04 . . having no double bonds between ring members or between ring members and non-ring members

C07D 305/06 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring atoms

C07D 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

C07D 305/10 . . having one or more double bonds between ring members or between ring members and non-ring members

C07D 305/12 . . . Beta-lactones

C07D 305/14 . condensed with carbocyclic rings or ring systems

**C07D 307/00 Heterocyclic compounds containing five-membered rings having one oxygen atom as the only ring hetero atom**

C07D 307/02 . not condensed with other rings

C07D 307/04 . . having no double bonds between ring members or between ring members and non-ring members

C07D 307/06 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms

C07D 307/08 . . . . Preparation of tetrahydrofuran

C07D 307/10 . . . with substituted hydrocarbon radicals attached to ring carbon atoms

C07D 307/12 . . . . Radicals substituted by oxygen atoms

C07D 307/14 . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical

C07D 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

C07D 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

C07D 307/20 . . . . Oxygen atoms

C07D 307/22 . . . . Nitrogen atoms not forming part of a nitro radical

C07D 307/24 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 307/26 . . having one double bond between ring members or between a ring member and a non-ring member

C07D 307/28 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 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

C07D 307/32 . . . . Oxygen atoms

C07D 307/33 . . . . . in position 2, the oxygen atom being in its keto or unsubstituted enol form

C07D 307/34 . . having two or three double bonds between ring members or between ring members and non-ring members

C07D 307/36 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms

C07D 307/38 . . . with substituted hydrocarbon radicals attached to ring carbon atoms

C07D 307/40 . . . . Radicals substituted by oxygen atoms

C07D 307/42 . . . . . Singly bound oxygen atoms (two oxygen atoms bound to the same carbon atom C07D 307/46)

C07D 307/44 . . . . . Furfuryl alcohol

C07D 307/45 . . . . . Oxygen atoms acylated by a cyclopropane containing carboxylic acyl radical, e.g. chrysanthemumates

C07D 307/46 . . . . . Doubly bound oxygen atoms, or two oxygen atoms singly bound to the same carbon atom

C07D 307/48 . . . . . Furfural

C07D 307/50 . . . . . Preparation from natural products

C07D 307/52 . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical

C07D 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

C07D 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

C07D 307/58 . . . . One oxygen atom, e.g. butenolide

C07D 307/60 . . . . Two oxygen atoms, e.g. succinic anhydride

C07D 307/62 . . . . Three oxygen atoms, e.g. ascorbic acid

C07D 307/64 . . . . Sulfur atoms

C07D 307/66 . . . . Nitrogen atoms (nitro radicals C07D 307/70)

C07D 307/68 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 307/70 . . . . Nitro radicals

C07D 307/71 . . . . . attached in position 5

C07D 307/72 . . . . . with hydrocarbon radicals, substituted by nitrogen-containing radicals, attached in position 2

C07D 307/73 . . . . . by amino or imino, or substituted amino or imino radicals

C07D 307/74 . . . . . by hydrazino or hydrazono or such substituted radicals

C07D 307/75 . . . . . having carboxylic acyl radicals or their thio or nitrogen analogues directly attached to the hydrazino or hydrazono radical, e.g. hydrazides

C07D 307/76 . . . . . having carbonic acyl radicals or their thio or nitrogen analogues directly attached to the hydrazino or hydrazono radical, e.g. semicarbazides

C07D 307/77 . ortho- or peri-condensed with carbocyclic rings or ring systems

C07D 307/78 . . Benzo [b] furans; Hydrogenated benzo [b] furans

C07D 307/79 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals directly attached to carbon atoms of the hetero ring

C07D 307/80 . . . . Radicals substituted by oxygen atoms

C07D 307/81 . . . . Radicals substituted by nitrogen atoms not forming part of a nitro radical

C07D 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

C07D 307/83 . . . . Oxygen atoms

C07D 307/84 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 307/85 . . . . . attached in position 2

C07D 307/86 . . . with an oxygen atom directly attached in position 7

C07D 307/87 . . Benzo [c] furans; Hydrogenated benzo [c] furans

C07D 307/88 . . . with one oxygen atom directly attached in position 1 or 3

C07D 307/885 . . . . 3,3-Diphenylphthalides

C07D 307/89 . . . with two oxygen atoms directly attached in positions 1 and 3

C07D 307/90 . . . with an oxygen atom in position 1 and a nitrogen atom in position 3, or vice-versa

C07D 307/91 . . Dibenzofurans; Hydrogenated dibenzofurans

C07D 307/92 . . Naphthofurans; Hydrogenated naphthofurans

C07D 307/93 . . condensed with a ring other than six-membered

C07D 307/935 . . . Not further condensed cyclopenta [b] furans or hydrogenated cyclopenta [b] furans

C07D 307/937 . . . . with hydrocarbon or substituted hydrocarbon radicals directly attached in position 2, e.g. prostacyclins

C07D 307/94 . spiro-condensed with carbocyclic rings or ring systems, e.g. griseofulvins

**C07D 309/00 Heterocyclic compounds containing six-membered rings having one oxygen atom as the only ring hetero atom, not condensed with other rings**

C07D 309/02 . having no double bonds between ring members or between ring members and non-ring members

C07D 309/04 . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to ring carbon atoms

C07D 309/06 . . . Radicals substituted by oxygen atoms

C07D 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

C07D 309/10 . . . Oxygen atoms

C07D 309/12 . . . . Only hydrogen atoms and one oxygen atom directly attached to ring carbon atoms, e.g. tetrahydropyranyl ethers

C07D 309/14 . . . Nitrogen atoms not forming part of a nitro radical {(nitro radical C07D 309/08)}

C07D 309/16 . having one double bond between ring members or between a ring member and a non-ring member

C07D 309/18 . . containing only hydrogen and carbon atoms in addition to the ring hetero atom

C07D 309/20 . . with hydrogen atoms and substituted hydrocarbon radicals directly attached to ring carbon atoms

C07D 309/22 . . . Radicals substituted by oxygen atoms

C07D 309/24 . . . . Methylol radicals

C07D 309/26 . . . . Carboxaldehyde radicals

C07D 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

C07D 309/30 . . . Oxygen atoms, e.g. delta-lactones

C07D 309/32 . having two double bonds between ring members or between ring members and non-ring members

C07D 309/34 . having three or more double bonds between ring members or between ring members and non-ring members

C07D 309/36 . . with oxygen atoms directly attached to ring carbon atoms

C07D 309/38 . . . One oxygen atom in position 2 or 4, e.g. pyrones

C07D 309/40 . . . Oxygen atoms attached in position 3 and 4, e.g. maltol

**C07D 311/00 Heterocyclic compounds containing six-membered rings having one oxygen atom as the only hetero atom, condensed with other rings**

C07D 311/02 . ortho- or peri-condensed with carbocyclic rings or ring systems

C07D 311/04 . . Benzo[b]pyrans, not hydrogenated in the carbocyclic ring

C07D 311/06 . . . with oxygen or sulfur atoms directly attached in position 2

C07D 311/08 . . . . not hydrogenated in the hetero ring

C07D 311/10 . . . . . unsubstituted

C07D 311/12 . . . . . substituted in position 3 and unsubstituted in position 7

C07D 311/14 . . . . . substituted in position 6 and unsubstituted in position 7

C07D 311/16 . . . . . substituted in position 7

C07D 311/18 . . . . . substituted otherwise than in position 3 or 7 (substituted in position 4 by oxygen or sulfur C07D 311/42)

C07D 311/20 . . . . hydrogenated in the hetero ring

C07D 311/22 . . . with oxygen or sulfur atoms directly attached in position 4

C07D 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

C07D 311/26 . . . . with aromatic rings attached in position 2 or 3

C07D 311/28 . . . . . with aromatic rings attached in position 2 only

C07D 311/30 . . . . . not hydrogenated in the hetero ring, e.g. flavones

C07D 311/32 . . . . . 2,3-Dihydro derivatives, e.g. flavanones

C07D 311/34 . . . . . with aromatic rings attached in position 3 only

C07D 311/36 . . . . . not hydrogenated in the hetero ring, e.g. isoflavones

C07D 311/38 . . . . . 2,3-Dihydro derivated, e.g. isoflavanones

C07D 311/40 . . . . . Separation, e.g. from natural material; Purification
C07D 311/42 . . . with oxygen or sulfur atoms in position 2 and 4
C07D 311/44 . . . . with one hydrogen atom in position 3
C07D 311/46 . . . . . unsubstituted in the carbocyclic ring
C07D 311/48 . . . . . with two such benzopyran radicals linked together by a carbon chain
C07D 311/50 . . . . . with elements other than carbon and hydrogen in position 3
C07D 311/52 . . . . . Enol-esters or -ethers, or sulfur analogues thereof
C07D 311/54 . . . . . substituted in the carbocyclic ring
C07D 311/56 . . . . without hydrogen atoms in position 3
C07D 311/58 . . . other than with oxygen or sulfur atoms in positions 2 or 4
C07D 311/60 . . . . with aryl radicals attached in position 2
C07D 311/62 . . . . . with oxygen atoms directly attached in position 3 e.g. anthocyanidins
C07D 311/64 . . . . with oxygen atoms directly attached in position 8
C07D 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
C07D 311/68 . . . . with nitrogen atoms directly attached in position 4
C07D 311/70 . . . . with two hydrocarbon radicals attached in position 2 and elements other than carbon and hydrogen in position 6
C07D 311/72 . . . . . 3,4-Dihydro-derivatives having in position 2 at least one methyl radical and in position 6 an oxygen atom, e.g. tocopherols
C07D 311/74 . . Benzo[b]pyrans, hydrogenated in the carbocyclic ring
C07D 311/76 . . Benzo[c]pyrans
C07D 311/78 . . Ring systems having three or more relevant rings
C07D 311/80 . . . Dibenzopyrans; Hydrogenated dibenzopyrans
C07D 311/82 . . . . Xanthenes
C07D 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
C07D 311/86 . . . . . Oxygen atoms, e.g. xanthones
C07D 311/88 . . . . . Nitrogen atoms
C07D 311/90 . . . . . with hydrocarbon radicals substituted by amino radicals, directly attached in position 9
C07D 311/92 . . . Naphthopyrans; Hydrogenated naphthopyrans
C07D 311/94 . . condensed with rings other than six-membered
C07D 311/96 . spiro-condensed with carbocyclic rings or ring systems

**C07D 313/00 Heterocyclic compounds containing rings of more than six members having one oxygen atom as the only ring hetero atom**

C07D 313/02 . Seven-membered rings
C07D 313/04 . . not condensed with other rings
C07D 313/06 . . condensed with carbocyclic rings or ring systems
C07D 313/08 . . . condensed with one six-membered ring

C07D 313/10 . . . condensed with two six-membered rings
C07D 313/12 . . . . [b,e]-condensed
C07D 313/14 . . . . [b,f]-condensed
C07D 313/16 . Eight-membered rings
C07D 313/18 . . not condensed with other rings
C07D 313/20 . . condensed with carbocyclic rings or ring systems

**C07D 315/00 Heterocyclic compounds containing rings having one oxygen atom as the only ring hetero atom according to more than one of groups C07D 303/00 to C07D 313/00**

**C07D 317/00 Heterocyclic compounds containing five-membered rings having two oxygen atoms as the only ring hetero atoms**

C07D 317/02 . having the hetero atoms in positions 1 and 2
C07D 317/04 . . not condensed with other rings
C07D 317/06 . . condensed with carbocyclic rings or ring systems
C07D 317/08 . having the hetero atoms in positions 1 and 3
C07D 317/10 . . not condensed with other rings
C07D 317/12 . . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, directly attached to ring carbon atoms
C07D 317/14 . . . with substituted hydrocarbon radicals attached to ring carbon atoms
C07D 317/16 . . . . Radicals substituted by halogen atoms or nitro radicals
C07D 317/18 . . . . Radicals substituted by singly bound oxygen or sulfur atoms
C07D 317/20 . . . . . Free hydroxyl or mercaptan
C07D 317/22 . . . . . etherified
C07D 317/24 . . . . . esterified
C07D 317/26 . . . . Radicals substituted by doubly bound oxygen or sulfur atoms or by two such atoms singly bound to the same carbon atom
C07D 317/28 . . . . Radicals substituted by nitrogen atoms (by nitro radicals C07D 317/16)
C07D 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
C07D 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
C07D 317/34 . . . . Oxygen atoms
C07D 317/36 . . . . . Alkylene carbonates; Substituted alkylene carbonates
C07D 317/38 . . . . . . Ethylene carbonate
C07D 317/40 . . . . . Vinylene carbonate; Substituted vinylene carbonates
C07D 317/42 . . . . Halogen atoms or nitro radicals
C07D 317/44 . . ortho- or peri-condensed with carbocyclic rings or ring systems
C07D 317/46 . . . condensed with one six-membered ring
C07D 317/48 . . . . Methylenedioxybenzenes or hydrogenated methylenedioxybenzenes unsubstituted on the hetero ring

C07D 317/50 . . . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to atoms of the carbocyclic ring

C07D 317/52 . . . . . Radicals substituted by halogen atoms or nitro radicals

C07D 317/54 . . . . . Radicals substituted by oxygen atoms

C07D 317/56 . . . . . Radicals substituted by sulfur atoms

C07D 317/58 . . . . . Radicals substituted by nitrogen atoms (by nitro radicals C07D 317/52)

C07D 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

C07D 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

C07D 317/64 . . . . . Oxygen atoms

C07D 317/66 . . . . . Nitrogen atoms not forming part of a nitro radical

C07D 317/68 . . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 317/70 . . . condensed with ring systems containing two or more relevant rings

C07D 317/72 . . spiro-condensed with carbocyclic rings

**C07D 319/00 Heterocyclic compounds containing six-membered rings having two oxygen atoms as the only ring hetero atoms**

C07D 319/02 . 1,2-Dioxanes; Hydrogenated 1,2-dioxanes

C07D 319/04 . 1,3-Dioxanes; Hydrogenated 1,3-dioxanes

C07D 319/06 . . not condensed with other rings

C07D 319/08 . . condensed with carbocyclic rings or ring systems

C07D 319/10 . 1,4-Dioxanes; Hydrogenated 1,4-dioxanes

C07D 319/12 . . not condensed with other rings

C07D 319/14 . . condensed with carbocyclic rings or ring systems

C07D 319/16 . . . condensed with one six-membered ring

C07D 319/18 . . . . Ethylenedioxybenzenes, not substituted on the hetero ring

C07D 319/20 . . . . with substituents attached to the hetero ring

C07D 319/22 . . . condensed with one naphthalene or hydrogenated naphthalene ring system

C07D 319/24 . . . [b,e]-condensed with two six-membered rings

**C07D 321/00 Heterocyclic compounds containing rings having two oxygen atoms as the only ring hetero atoms, not provided for by groups C07D 317/00 to C07D 319/00**

C07D 321/02 . Seven-membered rings

C07D 321/04 . . not condensed with other rings

C07D 321/06 . . . 1,3-Dioxepines; Hydrogenated 1,3-dioxepines

C07D 321/08 . . . 1,4-Dioxepines; Hydrogenated 1,4-dioxepines

C07D 321/10 . . condensed with carbocyclic rings or ring systems

C07D 321/12 . Eight-membered rings

**C07D 323/00** **Heterocyclic compounds containing more than two oxygen atoms as the only ring hetero atoms**

C07D 323/02 . Five-membered rings

C07D 323/04 . Six-membered rings

C07D 323/06 . . trioxane

**C07D 325/00** **Heterocyclic compounds containing rings having oxygen as the only ring hetero atoms according to more than one of the main groups C07D 303/00 to C07D 323/00**

**C07D 327/00** **Heterocyclic compounds containing rings having oxygen and sulfur atoms as the only ring hetero atoms**

C07D 327/02 . One oxygen atom and one sulfur atom

C07D 327/04 . . Five-membered rings

C07D 327/06 . . Six-membered rings

C07D 327/08 . . . [b,e]-condensed with two six-membered carbocyclic rings

C07D 327/10 . Two oxygen atoms and one sulfur atom, e.g. cyclic sulfates

**C07D 329/00** **Heterocyclic compounds containing rings having oxygen and selenium or oxygen and tellurium atoms as the only ring hetero atoms**

**Heterocyclic compounds having sulfur, selenium or tellurium as the only ring hetero atoms**

**C07D 331/00** **Heterocyclic compounds containing rings of less than five members, having one sulfur atom as the only ring hetero atom**

C07D 331/02 . Three-membered rings

C07D 331/04 . Four-membered rings

**C07D 333/00** **Heterocyclic compounds containing five-membered rings having one sulfur atom as the only ring hetero atom**

C07D 333/02 . not condensed with other rings

C07D 333/04 . . not substituted on the ring sulfur

C07D 333/06 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring carbon atoms

C07D 333/08 . . . . Hydrogen atoms or radicals containing only hydrogen and carbon atoms

C07D 333/10 . . . . . Thiophene

C07D 333/12 . . . . Radicals substituted by halogen atoms or nitro or nitroso radicals

C07D 333/14 . . . . Radicals substituted by singly bound hetero atoms other than halogen

C07D 333/16 . . . . . by oxygen atoms

C07D 333/18 . . . . . by sulfur atoms

C07D 333/20 . . . . . by nitrogen atoms (nitro, nitroso radicals C07D 333/12)

C07D 333/22 . . . . Radicals substituted by doubly bound hetero atoms, or by two hetero atoms other than halogen singly bound to the same carbon atom

C07D 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

C07D 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

C07D 333/28 . . . . Halogen atoms

C07D 333/30 . . . . Hetero atoms other than halogen

C07D 333/32 . . . . . Oxygen atoms

C07D 333/34 . . . . . Sulfur atoms

C07D 333/36 . . . . . Nitrogen atoms (nitro, nitroso radicals C07D 333/42)

C07D 333/38 . . . . Carbon atoms having three bonds to hetero atoms, with at the most one bond to halogen, e.g. ester or nitrile radicals

C07D 333/40 . . . . . Thiophene-2-carboxylic acid [2]

C07D 333/42 . . . . with nitro or nitroso radicals directly attached to ring carbon atoms

C07D 333/44 . . . . . attached in position 5

C07D 333/46 . . substituted on the ring sulfur atom

C07D 333/48 . . . by oxygen atoms

C07D 333/50 . condensed with carbocyclic rings or ring systems

C07D 333/52 . . Benzo[b]thiophenes; Hydrogenated benzo[b]thiophenes

C07D 333/54 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to carbon atoms of the hetero ring

C07D 333/56 . . . . Radicals substituted by oxygen atoms

C07D 333/58 . . . . Radicals substituted by nitrogen atoms

C07D 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

C07D 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

C07D 333/64 . . . . Oxygen atoms

C07D 333/66 . . . . Nitrogen atoms not forming part of a nitro radical

C07D 333/68 . . . . Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 333/70 . . . . . attached in position 2

C07D 333/72 . . Benzo[c]thiophenes; Hydrogenated benzo[c]thiophenes

C07D 333/74 . . Naphthothiophenes

C07D 333/76 . . Dibenzothiophenes

C07D 333/78 . . condensed with rings other than six-membered or with ring systems containing such rings

C07D 333/80 . . . Seven-membered rings

**C07D 335/00 Heterocyclic compounds containing six-membered rings having one sulfur atom as the only ring hetero atom**

C07D 335/02 . not condensed with other rings

C07D 335/04 . condensed with carbocyclic rings or ring systems

C07D 335/06 . . Benzothiopyrans; Hydrogenated benzothiopyrans

C07D 335/08 . . Naphthothiopyrans; Hydrogenated naphthothiopyrans

C07D 335/10 . . Dibenzothiopyrans; Hydrogenated dibenzothiopyrans

C07D 335/12 . . . Thioxanthenes

C07D 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

C07D 335/16 . . . . . Oxygen atoms, e.g. thioxanthones

C07D 335/18 . . . . . Nitrogen atoms

C07D 335/20 . . . . with hydrocarbon radicals, substituted by amino radicals, directly attached in position 9

**C07D 337/00 Heterocyclic compounds containing rings of more than six members having one sulfur atom as the only ring hetero atom**

C07D 337/02 . Seven-membered rings

C07D 337/04 . . not condensed with other rings

C07D 337/06 . . condensed with carbocyclic rings or ring systems

C07D 337/08 . . . condensed with one six-membered ring

C07D 337/10 . . . condensed with two six-membered rings

C07D 337/12 . . . . [b,e]-condensed

C07D 337/14 . . . . [b,f]-condensed

C07D 337/16 . Eight-membered rings

**C07D 339/00 Heterocyclic compounds containing rings having two sulfur atoms as the only ring hetero atoms**

C07D 339/02 . Five-membered rings

C07D 339/04 . . having the hetero atoms in position 1,2, e.g. lipoic acid

C07D 339/06 . . having the hetero atoms in position 1,3, e.g. cyclic dithiocarbonates

C07D 339/08 . Six-membered rings

**C07D 341/00 Heterocyclic compounds containing rings having three or more sulfur atoms as the only ring hetero atoms**

**C07D 343/00 Heterocyclic compounds containing rings having sulfur and selenium or sulfur and tellurium atoms as the only ring hetero atoms**

**C07D 345/00 Heterocyclic compounds containing rings having selenium or tellurium atoms as the only ring hetero atoms**

**C07D 347/00 Heterocyclic compounds containing rings having halogen atoms as ring hetero atoms**

**Heterocyclic compounds containing two or more hetero rings**

| | |
|---|---|
| **C07D 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** |
| C07D 401/02 | . containing two hetero rings |
| C07D 401/04 | . . directly linked by a ring-member-to-ring-member bond |
| C07D 401/06 | . . linked by a carbon chain containing only aliphatic carbon atoms |
| C07D 401/08 | . . linked by a carbon chain containing alicyclic rings |
| C07D 401/10 | . . linked by a carbon chain containing aromatic rings |
| C07D 401/12 | . . linked by a chain containing hetero atoms as chain links |
| C07D 401/14 | . containing three or more hetero rings |
| **C07D 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** |
| C07D 403/02 | . containing two hetero rings |
| C07D 403/04 | . . directly linked by a ring-member-to-ring-member bond |
| C07D 403/06 | . . linked by a carbon chain containing only aliphatic carbon atoms |
| C07D 403/08 | . . linked by a carbon chain containing alicyclic rings |
| C07D 403/10 | . . linked by a carbon chain containing aromatic rings |
| C07D 403/12 | . . linked by a chain containing hetero atoms as chain links |
| C07D 403/14 | . containing three or more hetero rings |
| **C07D 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** |
| C07D 405/02 | . containing two hetero rings |
| C07D 405/04 | . . directly linked by a ring-member-to-ring-member bond |
| C07D 405/06 | . . linked by a carbon chain containing only aliphatic carbon atoms |
| C07D 405/08 | . . linked by a carbon chain containing alicyclic rings |
| C07D 405/10 | . . linked by a carbon chain containing aromatic rings |
| C07D 405/12 | . . linked by a chain containing hetero atoms as chain links |
| C07D 405/14 | . containing three or more hetero rings |
| **C07D 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** |
| C07D 407/02 | . containing two hetero rings |
| C07D 407/04 | . . directly linked by a ring-member-to-ring-member bond |
| C07D 407/06 | . . linked by a carbon chain containing only aliphatic carbon atoms |
| C07D 407/08 | . . linked by a carbon chain containing alicyclic rings |
| C07D 407/10 | . . linked by a carbon chain containing aromatic rings |

C07D 407/12 . . linked by a chain containing hetero atoms as chain links

C07D 407/14 . containing three or more hetero rings

**C07D 409/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having sulfur atoms as the only ring hetero atoms**

C07D 409/02 . containing two hetero rings

C07D 409/04 . . directly linked by a ring-member-to-ring-member bond

C07D 409/06 . . linked by a carbon chain containing only aliphatic carbon atoms

C07D 409/08 . . linked by a carbon chain containing alicyclic rings

C07D 409/10 . . linked by a carbon chain containing aromatic rings

C07D 409/12 . . linked by a chain containing hetero atoms as chain links

C07D 409/14 . containing three or more hetero rings

**C07D 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**

C07D 411/02 . containing two hetero rings

C07D 411/04 . . directly linked by a ring-member-to-ring-member bond

C07D 411/06 . . linked by a carbon chain containing only aliphatic carbon atoms

C07D 411/08 . . linked by a carbon chain containing alicyclic rings

C07D 411/10 . . linked by a carbon chain containing aromatic rings

C07D 411/12 . . linked by a chain containing hetero atoms as chain links

C07D 411/14 . containing three or more hetero rings

**C07D 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**

C07D 413/02 . containing two hetero rings

C07D 413/04 . . directly linked by a ring-member-to-ring-member bond

C07D 413/06 . . linked by a carbon chain containing only aliphatic carbon atoms

C07D 413/08 . . linked by a carbon chain containing alicyclic rings

C07D 413/10 . . linked by a carbon chain containing aromatic rings

C07D 413/12 . . linked by a chain containing hetero atoms as chain links

C07D 413/14 . containing three or more hetero rings

**C07D 415/00 Heterocyclic compounds containing the thiamine skeleton**

**C07D 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**

C07D 417/02 . containing two hetero rings

C07D 417/04 . . directly linked by a ring-member-to-ring-member bond

C07D 417/06 . . linked by a carbon chain containing only aliphatic carbon atoms

C07D 417/08 . . linked by a carbon chain containing alicyclic rings

C07D 417/10 . . linked by a carbon chain containing aromatic rings

C07D 417/12 . . linked by a chain containing hetero atoms as chain links

C07D 417/14 . containing three or more hetero rings

**C07D 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**

C07D 419/02 . containing two hetero rings

C07D 419/04 . . directly linked by a ring-member-to-ring-member bond

C07D 419/06 . . linked by a carbon chain containing only aliphatic carbon atoms

C07D 419/08 . . linked by a carbon chain containing alicyclic rings

C07D 419/10 . . linked by a carbon chain containing aromatic rings

C07D 419/12 . . linked by a chain containing hetero atoms as chain links

C07D 419/14 . containing three or more hetero rings

**C07D 421/00 Heterocyclic compounds containing two or more hetero rings, at least one ring having selenium, tellurium, or halogen atoms as ring hetero atoms**

C07D 421/02 . containing two hetero rings

C07D 421/04 . . directly linked by a ring-member-to-ring-member bond

C07D 421/06 . . linked by a carbon chain containing only aliphatic carbon atoms

C07D 421/08 . . linked by a carbon chain containing alicyclic rings

C07D 421/10 . . linked by a carbon chain containing aromatic rings

C07D 421/12 . . linked by a chain containing hetero atoms as chain links

C07D 421/14 . containing three or more hetero rings

**Heterocyclic compounds containing condensed hetero ring systems C07D 451/00 - C07D 517/00 cover compounds containing one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system, with or without other non-condensed hetero rings. 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. 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. 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.**

**C07D 451/00 Heterocyclic compounds containing 8-azabicyclo [3.2.1] octane, 9-azabicyclo [3.3.1] nonane, or 3-oxa-9-azatricyclo [3.3.1.0<2,4>] nonane ring systems, e.g. tropane or granatane alkaloids, scopolamine; Cyclic acetals thereof**

C07D 451/02 . containing not further condensed 8-azabicyclo [3.2.1] octane or 3-oxa-9-azatricyclo [3.3.1.0<2,4>] nonane ring systems, e.g. tropane; Cyclic acetals thereof

C07D 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 [3.3.1.0<2,4>] nonane ring system

C07D 451/06 . . . Oxygen atoms

C07D 451/08 . . . . Diarylmethoxy radicals

C07D 451/10 . . . . acylated by aliphatic or araliphatic carboxylic acids, e.g. atropine, scopolamine

C07D 451/12 . . . . acylated by aromatic or heteroaromatic carboxylic acids, e.g. cocaine

C07D 451/14 . containing 9-azabicyclo [3.3.1] nonane ring systems, e.g. granatane, 2-aza-adamantane; Cyclic acetals thereof

**C07D 453/00** **Heterocyclic compounds containing quinuclidine or iso-quinuclidine ring systems, e.g. quinine alkaloids**

C07D 453/02 . containing not further condensed quinuclidine ring systems

C07D 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

C07D 453/06 . containing isoquinuclidine ring systems

**C07D 455/00** **Heterocyclic compounds containing quinolizine ring systems, e.g. emetine alkaloids, protoberberine; Alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine**

C07D 455/02 . containing not further condensed quinolizine ring systems

C07D 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

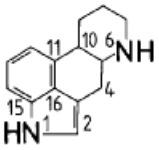
**WARNING**

Group C07D 455/03 is temporarily incomplete. See provisionally also other CPC subgroups of C07D 455/00

C07D 455/04 . . containing a quinolizine ring system condensed with only one six-membered carbocyclic ring, e.g. julolidine

C07D 455/06 . . . containing benzo [a] quinolizine ring systems

C07D 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

**C07D 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)

C07D 457/02 . with hydrocarbon or substituted hydrocarbon radicals, attached in position 8

C07D 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

C07D 457/06 . . Lysergic acid amides

C07D 457/08 . . . in which the amide nitrogen is a member of a heterocyclic ring

C07D 457/10 . with hetero atoms directly attached in position 8

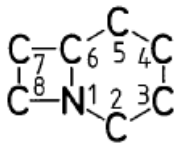
C07D 457/12 . . Nitrogen atoms

C07D 457/14 . containing indolo [4, 3-f, g] quinoline ring systems condensed with carbocyclic rings or ring systems

**C07D 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**

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

**C07D 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**

**WARNING**

The IPC subgroups of C07D 463/00, introduced in the CPC scheme in October 2007, might be temporarily incomplete as a number of documents presently classified in CPC subgroups of C07D 463/00 still needs reclassification to these IPC subgroups

C07D 463/02 . Preparation (by microbiological processes C12P 17/18)

C07D 463/04 . . by forming the ring or condensed ring systems

C07D 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

C07D 463/08 . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification

C07D 463/10 . with a carbon atom having three bonds to hetero atoms with atthe most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 2

C07D 463/12 . . with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals attached in position 7

C07D 463/14 . . with hetero atoms directly attached in position 7

C07D 463/16 . . . Nitrogen atoms

C07D 463/18 . . . . further acylated by radicals derived from carboxylic acids or by nitrogen or sulfur analogues thereof

C07D 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

C07D 463/22 . . . . . further substituted by nitrogen atoms

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

C07D 471/02 . in which the condensed system contains two hetero rings

C07D 471/04 . . Ortho-condensed systems (carbacephalosporins C07D 463/00)
C07D 471/06 . . Peri-condensed systems
C07D 471/08 . . Bridged systems
C07D 471/10 . . Spiro-condensed systems
C07D 471/12 . in which the condensed system contains three hetero rings
C07D 471/14 . . Ortho-condensed systems
C07D 471/16 . . Peri-condensed systems
C07D 471/18 . . Bridged systems
C07D 471/20 . . Spiro-condensed systems
C07D 471/22 . in which the condensed system contains four or more hetero rings

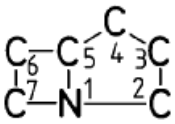
**C07D 473/00 Heterocyclic compounds containing purine ring systems**
C07D 473/02 . with oxygen, sulfur or nitrogen atoms directly attached in positions 2 and 6
C07D 473/04 . . two oxygen atoms
C07D 473/06 . . . with radicals containing only hydrogen and carbon atoms, attached in position 1 or 3
C07D 473/08 . . . . with methyl radicals in positions 1 and 3, e.g. theophylline
C07D 473/10 . . . . with methyl radicals in positions 3 and 7, e.g. theobromine
C07D 473/12 . . . . with methyl radicals in positions 1, 3 and 7, e.g. caffeine
C07D 473/14 . . . . with two methyl radicals in positions 1 and 3 and two methyl radicals in positions 7, 8 or 9
C07D 473/16 . . two nitrogen atoms
C07D 473/18 . . one oxygen and one nitrogen atom, e.g. guanine
C07D 473/20 . . two sulfur atoms
C07D 473/22 . . one oxygen and one sulfur atom
C07D 473/24 . . one nitrogen and one sulfur atom
C07D 473/26 . with an oxygen, sulfur or nitrogen atom directly attached in position 2 or 6, but not in both
C07D 473/28 . . Oxygen atom
C07D 473/30 . . . attached in position 6, e.g. hypoxanthine
C07D 473/32 . . Nitrogen atom
C07D 473/34 . . . attached in position 6, e.g. adenine
C07D 473/36 . . Sulfur atom
C07D 473/38 . . . attached in position 6
C07D 473/40 . with halogen atoms or perhalogeno-alkyl radicals directly attached in positions 2 or 6

**C07D 475/00 Heterocyclic compounds containing pteridine ring systems**
C07D 475/02 . with an oxygen atom directly attached in position 4
C07D 475/04 . . with a nitrogen atom directly attached in position 2
C07D 475/06 . with a nitrogen atom directly attached in position 4
C07D 475/08 . . with a nitrogen atom directly attached in position 2
C07D 475/10 . . with an aromatic or hetero-aromatic ring directly attached in position 2

C07D 475/12 . containing pteridine ring systems condensed with carbocyclic rings or ring systems

C07D 475/14 . . Benz [g] pteridines, e.g. riboflavin

**C07D 477/00 Heterocyclic compounds containing 1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:**



**, carbapenicillins, thienamycins; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring**

C07D 477/02 . Preparation (by microbiological processes C12P 17/18)

C07D 477/04 . . by forming the ring or condensed ring systems

C07D 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

C07D 477/08 . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification

C07D 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

C07D 477/12 . . with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 6

C07D 477/14 . . . with hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, attached in position 3

C07D 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

C07D 477/18 . . . . Oxygen atoms

C07D 477/20 . . . . Sulfur atoms

C07D 477/22 . . . . Nitrogen atoms

C07D 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

C07D 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

**C07D 487/00 Heterocyclic compounds containing nitrogen atoms as the only ring hetero atoms in the condensed system, not provided for by C07D 451/00 to C07D 477/00**

C07D 487/02 . in which the condensed system contains two hetero rings

C07D 487/04 . . Ortho-condensed systems (carbapenams, e.g. thienamycins, C07D 477/00)

C07D 487/06 . . Peri-condensed systems

C07D 487/08 . . Bridged systems

C07D 487/10 . . Spiro-condensed systems

C07D 487/12 . in which the condensed system contains three hetero rings

C07D 487/14 . . Ortho-condensed systems

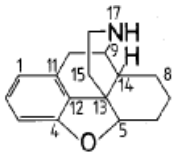
C07D 487/16 . . Peri-condensed systems

C07D 487/18 . . Bridged systems

C07D 487/20 . . Spiro-condensed systems

C07D 487/22 . in which the condensed system contains four or more hetero rings

**C07D 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:**




C07D 489/02 . with oxygen atoms attached in positions 3 and 6, e.g. morphine, morphinone

C07D 489/04 . . Salts; Organic complexes

C07D 489/06 . with a hetero atom directly attached in position 14

C07D 489/08 . . Oxygen atom

C07D 489/09 . containing 4aH-8, 9 c-Iminoethano- phenanthro [4, 5-b, c, d] furan ring systems condensed with carbocyclic rings or ring systems

C07D 489/10 . . with a bridge between positions 6 and 14

C07D 489/12 . . . the bridge containing only two carbon atoms

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

C07D 491/02 . in which the condensed system contains two hetero rings

C07D 491/04 . . Ortho-condensed systems

C07D 491/044 . . . with only one oxygen atom as ring hetero atom in the oxygen-containing ring

C07D 491/048 . . . . the oxygen-containing ring being five-membered

C07D 491/052 . . . . the oxygen-containing ring being six-membered

C07D 491/056 . . . with two or more oxygen atoms as ring hetero atoms in the oxygen-containing ring

C07D 491/06 . . Peri-condensed systems

C07D 491/08 . . Bridged systems

C07D 491/10 . . Spiro-condensed systems

C07D 491/107 . . . with only one oxygen atom as ring hetero atom in the oxygen-containing ring

C07D 491/113 . . . with two or more oxygen atoms as ring hetero atoms in the oxygen-containing ring

C07D 491/12 . in which the condensed system contains three hetero rings

C07D 491/14 . . Ortho-condensed systems (alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine, C07D 455/03)

C07D 491/147 . . . the condensed system containing one ring with oxygen as ring hetero atom and two rings with nitrogen as ring hetero atom

C07D 491/153 . . . the condensed system containing two rings with oxygen as ring hetero atom and one ring with nitrogen as ring hetero atom

C07D 491/16 . . Peri-condensed systems

C07D 491/18 . . Bridged systems (3-oxa-9-azatricyclo [3.3.1.0<2,4>] nonane ring systems, e.g. scopolamine, C07D 451/00)

C07D 491/20 . . Spiro-condensed systems

C07D 491/22 . in which the condensed system contains four or more hetero rings

**C07D 493/00 Heterocyclic compounds containing oxygen atoms as the only ring hetero atoms in the condensed system**

C07D 493/02 . in which the condensed system contains two hetero rings

C07D 493/04 . . Ortho-condensed systems

C07D 493/06 . . Peri-condensed systems

C07D 493/08 . . Bridged systems

C07D 493/10 . . Spiro-condensed systems

C07D 493/12 . in which the condensed system contains three hetero rings

C07D 493/14 . . Ortho-condensed systems

C07D 493/16 . . Peri-condensed systems

C07D 493/18 . . Bridged systems

C07D 493/20 . . Spiro-condensed systems

C07D 493/22 . in which the condensed system contains four or more hetero rings

**C07D 495/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having sulfur atoms as the only ring hetero atoms**

C07D 495/02 . in which the condensed system contains two hetero rings

C07D 495/04 . . Ortho-condensed systems

C07D 495/06 . . Peri-condensed systems

C07D 495/08 . . Bridged systems

C07D 495/10 . . Spiro-condensed systems

C07D 495/12 . in which the condensed system contains three hetero rings

C07D 495/14 . . Ortho-condensed systems

C07D 495/16 . . Peri-condensed systems

C07D 495/18 . . Bridged systems

C07D 495/20 . . Spiro-condensed systems

C07D 495/22 . in which the condensed system contains four or more hetero rings

**C07D 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**

C07D 497/02 . in which the condensed system contains two hetero rings

C07D 497/04 . . Ortho-condensed systems

C07D 497/06 . . Peri-condensed systems

C07D 497/08 . . Bridged systems

C07D 497/10 . . Spiro-condensed systems

C07D 497/12 . in which the condensed system contains three hetero rings

C07D 497/14 . . Ortho-condensed systems

C07D 497/16 . . Peri-condensed systems

C07D 497/18 . . Bridged systems

C07D 497/20 . . Spiro-condensed systems

C07D 497/22 . in which the condensed system contains four or more hetero rings

**C07D 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)

C07D 498/02 . in which the condensed system contains two hetero rings

C07D 498/04 . . Ortho-condensed systems

C07D 498/06 . . Peri-condensed systems

C07D 498/08 . . Bridged systems

C07D 498/10 . . Spiro-condensed systems

C07D 498/12 . in which the condensed system contains three hetero rings

C07D 498/14 . . Ortho-condensed systems

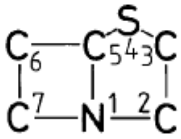
C07D 498/16 . . Peri-condensed systems

C07D 498/18 . . Bridged systems

C07D 498/20 . . Spiro-condensed systems

C07D 498/22 . in which the condensed system contains four or more hetero rings

**C07D 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**

C07D 499/04 . Preparation

C07D 499/06 . . by forming the ring or condensed ring systems (by microbiological processes C12P 37/00)

C07D 499/08 . . Modification of a carboxyl radical directly attached in position 2, e.g. esterification

C07D 499/10 . . Modification of an amino radical directly attached in position 6

C07D 499/12 . . . Acylation

C07D 499/14 . . Preparation of salts

C07D 499/16 . . . of alkali or alkaline earth metals

C07D 499/18 . . Separation; Purification

C07D 499/20 . . . via salts with organic bases

C07D 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

C07D 499/22 . . Salts with organic bases; Complexes with organic compounds

C07D 499/24 . . . with acyclic or carbocyclic compounds containing amino radicals

C07D 499/26 . . . with heterocyclic compounds

C07D 499/28 . . with modified 2-carboxyl group

C07D 499/30 . . . Acid anhydride

C07D 499/32 . . . Esters

C07D 499/34 . . . Thio-acid; Esters thereof

C07D 499/36 . . . . O-esters

C07D 499/38 . . . . S-esters

C07D 499/40 . . . Amides; Hydrazides; Azides

C07D 499/42 . . Compounds with a free primary amino radical attached in position 6

C07D 499/44 . . Compounds with an amino radical acylated by carboxylic acids, attached in position 6

C07D 499/46 . . . with acyclic hydrocarbon radicals or such radicals substituted by carbocyclic or heterocyclic rings, attached to the carboxamido radical

C07D 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

C07D 499/50 . . . . substituted in beta-position to the carboxamido radical

C07D 499/52 . . . . . by oxygen or sulfur atoms

C07D 499/54 . . . . . by nitrogen atoms

C07D 499/56 . . . . . by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen

C07D 499/58 . . . . substituted in alpha-position to the carboxamido radical

C07D 499/60 . . . . . by oxygen atoms

C07D 499/62 . . . . . by sulfur atoms

C07D 499/64 . . . . . by nitrogen atoms

C07D 499/66 . . . . . with alicyclic rings as additional substituents on the carbon chain

C07D 499/68 . . . . . with aromatic rings as additional substituents on the carbon chain

C07D 499/70 . . . . . with hetero rings as additional substituents on the carbon chain

C07D 499/72 . . . . . by carbon atoms having three bonds to hetero atoms

C07D 499/74 . . . with carbocyclic rings directly attached to the carboxamido radical

C07D 499/76 . . . with hetero rings directly attached to the carboxamido radical

C07D 499/78 . . Compounds with an amino radical, acylated by carbonic acid, or by nitrogen or sulfur analogues thereof, attached in position 6

C07D 499/80 . . Compounds with a nitrogen-containing hetero ring, attached with the ring nitrogen atom in position 6

C07D 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

C07D 499/861 . . with a hydrocarbon radical or a substituted hydrocarbon radical, directly attached in position 6

C07D 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

C07D 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

C07D 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

C07D 499/881 . . with a hydrogen atom or an unsubstituted hydrocarbon radical, attached in position 3

C07D 499/883 . . with a substituted hydrocarbon radical attached in position 3

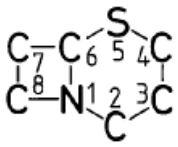
C07D 499/887 . . with a hetero atom or a carbon atom having three bonds to hetero atoms with at the most one bond to halogen, e.g. an ester or nitrile radical, directly attached in position 3

C07D 499/893 . . with a hetero ring or a condensed hetero ring system, directly attached in position 3

C07D 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

C07D 499/90 . further condensed with carbocyclic rings or ring systems [5]

**C07D 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**

C07D 501/02 . Preparation

C07D 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

C07D 501/06 . . . Acylation of 7-aminocephalosporanic acid

C07D 501/08 . . by forming the ring or condensed ring systems (by microbiological processes C12P 35/00)

C07D 501/10 . . . from compounds containing the penicillin ring system

C07D 501/12 . . Separation; Purification

C07D 501/14 . Compounds having a nitrogen atom directly attached in position 7

C07D 501/16 . . with a double bond between positions 2 and 3

C07D 501/18 . . . 7-Aminocephalosporanic or substituted 7-aminocephalosporanic acids

C07D 501/20 . . . 7-Acylaminocephalosporanic or substituted 7-acylaminocephalosporanic acids in which the acyl radicals are derived from carboxylic acids

C07D 501/22 . . . . with radicals containing only hydrogen and carbon atoms, attached in position 3

C07D 501/24 . . . . with hydrocarbon radicals, substituted by hetero atoms or hetero rings, attached in position 3

C07D 501/26 . . . . . Methylene radicals, substituted by oxygen atoms; Lactones thereof with the 2-carboxyl group

C07D 501/28 . . . . . with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms

C07D 501/30 . . . . . with the 7-amino-radical acylated by an araliphatic carboxylic acid

C07D 501/32 . . . . . with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms

C07D 501/34 . . . . . with the 7-amino radical acylated by carboxylic acids containing hetero rings

C07D 501/36 . . . . . Methylene radicals, substituted by sulfur atoms

C07D 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

C07D 501/40 . . . . . with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms

C07D 501/42 . . . . . with the 7-amino radical acylated by an araliphatic carboxylic acid

C07D 501/44 . . . . . with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms

C07D 501/46 . . . . . with the 7-amino radical acylated by carboxylic acids containing hetero rings

C07D 501/48 . . . . . Methylene radicals, substituted by hetero rings (C07D 501/38 to C07D 501/46 take precedence)

C07D 501/50 . . . . . with the 7-amino radical acylated by an aliphatic carboxylic acid, which is substituted by hetero atoms

C07D 501/52 . . . . . with the 7-amino radical acylated by an araliphatic carboxylic acid

C07D 501/54 . . . . . with the 7-amino radical acylated by an araliphatic carboxylic acid, which is substituted on the aliphatic radical by hetero atoms

C07D 501/56 . . . . . with the 7-amino radical acylated by carboxylic acids containing hetero rings

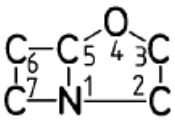
C07D 501/57 . . . . with a further substituent in position 7, e.g. cephamycines

C07D 501/58 . . . with a nitrogen atom, which is a member of a hetero ring, attached in position 7

C07D 501/59 . . . with hetero atoms directly attached in position 3

C07D 501/60 . . with a double bond between positions 3 and 4

C07D 501/62 . Compounds further condensed with a carbocyclic ring or ring system

**C07D 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**

C07D 503/02 . Preparation (by microbiological processes C12P 17/18)

C07D 503/04 . . by forming the ring or condensed ring systems

C07D 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

C07D 503/08 . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification

C07D 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

C07D 503/12 . . unsubstituted in position 6

C07D 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

C07D 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

C07D 503/18 . . . . . by oxygen atoms

C07D 503/20 . . . . . by sulfur atoms

C07D 503/22 . . . . . by nitrogen atoms

**C07D 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**

C07D 505/02 . Preparation (by microbiological processes C12P 17/18)

C07D 505/04 . . by forming the ring or condensed ring systems

C07D 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

C07D 505/08 . . . Modification of a carboxyl group directly attached in position 2, e.g. esterification

C07D 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

C07D 505/12 . . substituted in position 7

C07D 505/14 . . . with hetero atoms directly attached in position 7

C07D 505/16 . . . . Nitrogen atoms

C07D 505/18 . . . . . further acylated by radicals derived from carboxylic acids or by nitrogen or sulfur analogues thereof

C07D 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

C07D 505/22 . . . . . further substituted by singly-bound nitrogen atoms

C07D 505/24 . . . . . further substituted by doubly-bound nitrogen atoms

**C07D 507/00** **Heterocyclic compounds containing a condensed beta-lactam ring system, not provided for by groups C07D 463/00, C07D 477/00 or C07D 499/00 to C07D 505/00; Such ring systems being further condensed**

C07D 507/02 . containing 3-oxa-1-azabicyclo [3.2.0] heptane ring systems

C07D 507/04 . containing 2-oxa-1-azabicyclo [4.2.0] octane ring systems

C07D 507/06 . containing 3-oxa-1-azabicyclo [4.2.0] octane ring systems

C07D 507/08 . containing 4-oxa-1-azabicyclo [4.2.0] octane ring systems

**C07D 513/00** **Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for in groups C07D 463/00, C07D 477/00 or C07D 499/00 to C07D 507/00**

C07D 513/02 . in which the condensed system contains two hetero rings

C07D 513/04 . . Ortho-condensed systems

C07D 513/06 . . Peri-condensed systems

C07D 513/08 . . Bridged systems

C07D 513/10 . . Spiro-condensed systems

C07D 513/12 . in which the condensed system contains three hetero rings

C07D 513/14 . . Ortho-condensed systems

C07D 513/16 . . Peri-condensed systems

C07D 513/18 . . Bridged systems

C07D 513/20 . . Spiro-condensed systems

C07D 513/22 . in which the condensed system contains four or more hetero rings

**C07D 515/00** **Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen, oxygen, and sulfur atoms as the only ring hetero atoms, not provided for in groups C07D 463/00, C07D 477/00 or C07D 499/00 to C07D 507/00**

C07D 515/02 . in which the condensed system contains two hetero rings

C07D 515/04 . . Ortho-condensed systems

C07D 515/06 . . Peri-condensed systems

C07D 515/08 . . Bridged systems

C07D 515/10 . . Spiro-condensed systems

C07D 515/12 . in which the condensed system contains three hetero rings

C07D 515/14 . . Ortho-condensed systems

C07D 515/16 . . Peri-condensed systems

C07D 515/18 . . Bridged systems

C07D 515/20 . . Spiro-condensed systems

C07D 515/22 . in which the condensed system contains four or more hetero rings

**C07D 517/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having selenium, tellurium or halogen atoms as ring hetero atoms**

C07D 517/02 . in which the condensed system contains two hetero rings

C07D 517/04 . . Ortho-condensed systems

C07D 517/06 . . Peri-condensed systems

C07D 517/08 . . Bridged systems

C07D 517/10 . . Spiro-condensed systems

C07D 517/12 . in which the condensed system contains three hetero rings

C07D 517/14 . . Ortho-condensed systems

C07D 517/16 . . Peri-condensed systems

C07D 517/18 . . Bridged systems

C07D 517/20 . . Spiro-condensed systems

C07D 517/22 . in which the condensed system contains four or more hetero rings

**C07D 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**

C07D 519/02 . Ergot alkaloids of the cyclic peptide type

C07D 519/04 . Dimeric indole alkaloids, e.g. vincaleucoblastine

C07D 519/06 . containing at least one condensed beta-lactam ring system, provided for by groups C07D 463/00, C07D 477/00 or C07D 499/00 to C07D 507/00, e.g. a penem or a cepham system

**C07D 521/00 Heterocyclic compounds containing unspecified hetero rings**

**NOTE**

This group is only used for the classification of heterocyclic compounds the chemical structure of which is not specified, i.e. only in those cases where the heterocyclic compounds cannot be classified in any of groups C07D 201/00 to C07D 519/00