CPC  COOPERATIVE PATENT CLASSIFICATION

C  CHEMISTRY; METALLURGY
(NOTES omitted)

CHEMISTRY

C07  ORGANIC CHEMISTRY
(NOTES omitted)

C07F  ACYCLIC, CARBOCYCLIC OR HETEROCYCLIC COMPOUNDS CONTAINING ELEMENTS OTHER THAN CARBON, HYDROGEN, HALOGEN, OXYGEN, NITROGEN, SULFUR, SELENIUM OR TELLURIUM (metal-containing porphyrins C07D 487/22)

NOTES
1. Attention is drawn to Note (3) C07, which defines the last place priority rule applied in the range of subclasses C07C-C07K and within these subclasses.
2. Attention is drawn to Note (6) following the title of class C07.
3. Attention is drawn to Note (3) after the title of section C, which Note indicates to which version of the periodic table of chemical elements the IPC refers.
4. In this subclass, organic acid salts, alcoholates, phenates, chelates or mercaptides are classified as the parent compounds.
5. Compounds containing Se or Te are classified with their sulfur homologues.
6. A hydrocarbon chain is considered to be terminated by a heteroatom or by a carbon atom having three bonds to heteroatoms with at the most one to halogen.
7. When groups, e.g. aromatic or aliphatic groups, are mentioned without further indications, it means that the group concerned can be further substituted. Otherwise it will be indicated, e.g. C07F 9/11 with hydroxyalkyl compounds without further substituents on alkyl.

WARNINGS
1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
   - C07F 9/6593 covered by C07F 9/65815
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00  Compounds containing elements of Groups 1 or 11 of the Periodic System
1/005  .  [without C-Metal linkages]
1/02  .  Lithium compounds
1/04  .  Sodium compounds
1/06  .  Potassium compounds
1/08  .  Copper compounds
1/10  .  Silver compounds
1/12  .  Gold compounds
3/00  Compounds containing elements of Groups 2 or 12 of the Periodic System
3/003  .  [without C-Metal linkages]
3/006  .  [Beryllium compounds]
3/02  .  Magnesium compounds
3/04  .  Calcium compounds
3/05  .  Zinc compounds
3/08  .  Cadmium compounds
3/10  .  Mercury compounds
3/103  .  [without C-Mercury linkages]
3/12  .  . Aromatic substances containing mercury
3/14  .  . Heterocyclic substances containing mercury
5/00  Compounds containing elements of Groups 3 or 13 of the Periodic System
5/003  .  [without C-Metal linkages]
5/02  .  Boron compounds
5/022  .  [without C-boron linkages]
5/025  .  [Boronic and borinic acid compounds]
5/027  .  [Organoboranes and organoborohydrides]
5/04  .  . Esters of boric acids
5/05  .  . Cyclic compounds having at least one ring containing boron but no carbon in the ring
5/06  .  . Aluminium compounds
5/061  .  . [with C-aluminium linkage]
5/062  .  . [Al linked exclusively to C]
5/064  .  . [compounds with an Al-Halogen linkage]
5/065  .  . [compounds with an Al-H linkage]
5/066  .  . [compounds with Al linked to an element other than Al, C, H or halogen (this includes Al-cyanide linkage)]
5/067  .  . . [compounds with Al also linked to H or halogen]
5/068  .  . . [preparation of alum(in)oxanes]
5/069  .  . . [without C-aluminium linkages]
Compounds containing elements of Groups 4 or 14 of the Periodic System

7/00 . . . Compounds containing elements of Groups 4 or 14 of the Periodic System
7/003 . . . (without C-Metal linkages)
7/02 . . . Silicon compounds
7/025 . . . (without C-silicon linkages)
7/04 . . . Esters of silicic acids

**WARNING**

Group C07F 7/04 is incomplete pending reclassification of documents from group C07F 7/045.
Group C07F 7/04 is impacted by reclassification into groups C07F 7/06 and C07F 7/07.
Groups C07F 7/04, C07F 7/045, C07F 7/06 and C07F 7/07 should be considered in order to perform a complete search.

7/045 . . . {Esters of monosilicic acid}

**WARNING**

Group C07F 7/045 is no longer used for the classification of documents as of August 1, 2018. The content of this group is being reclassified into groups C07F 7/04, C07F 7/06 and C07F 7/07.
Groups C07F 7/04, C07F 7/045, C07F 7/06 and C07F 7/07 should be considered in order to perform a complete search.

7/06 . . . with hydroxyaryl compounds

**WARNING**

Groups C07F 7/06 and C07F 7/07 are incomplete pending reclassification of documents from groups C07F 7/04 and C07F 7/045.
Groups C07F 7/04, C07F 7/045, C07F 7/06 and C07F 7/07 should be considered in order to perform a complete search.

7/07 . . . Cyclic esters
7/08 . . . Compounds having one or more C—Si linkages
7/0801 . . . {General processes}
7/0803 . . . {Compounds with Si-C or Si-Si linkages}
7/0805 . . . {comprising only Si, C or H atoms}
7/0807 . . . {comprising Si as a ring atom}
7/081 . . . {comprising at least one atom selected from the elements N, O, halogen, S, Se or Te}
7/0812 . . . {comprising a heterocyclic ring}
7/0814 . . . {said ring is substituted at a C ring atom by Si}
7/0816 . . . {said ring comprising Si as a ring atom}
7/0825 . . . {Preparations of compounds not comprising Si-Si or Si-cyano linkages}
7/0827 . . . {Syntheses with formation of a Si-C bond}
7/0829 . . . {Hydrosilylation reactions}
7/083 . . . {Syntheses without formation of a Si-C bond}
7/0832 . . . {Other preparations}
7/0834 . . . {Compounds having one or more O-Si linkage (for compounds with C-O-Si linkages see C07F 7/18)}
7/0836 . . . {Compounds with one or more Si-OH or Si-O-metal linkage}

7/0838 . . . {Compounds with one or more Si-O-Si sequences (compounds with a ring containing only alternating Si and O atoms, i.e. cyclosilanes C07F 7/21)}
7/087 . . . {Compounds of unknown structure containing a Si-O-Si sequence}
7/0872 . . . {Preparation and treatment thereof}
7/0874 . . . {Reactions involving a bond of the Si-O-Si linkage}
7/0876 . . . {Reactions involving the formation of bonds to a Si atom of a Si-O-Si sequence other than a bond of the Si-O-Si linkage}
7/0878 . . . {[Si-C bond]}
7/0879 . . . {Hydrosilylation reactions}
7/0889 . . . {Reactions not involving the Si atom of the Si-O-Si sequence}
7/089 . . . {Treatments not covered by a preceding group}
7/0892 . . . {Compounds with a Si-O-N linkage}
7/0894 . . . {Compounds with a Si-O-O linkage}
7/0896 . . . {Compounds with a Si-H linkage}
7/0898 . . . {Compounds with a Si-S linkage}
7/10 . . . containing nitrogen {having a Si-N linkage}
7/12 . . . Organo silicon halides
7/121 . . . {Preparation or treatment not provided for in C07F 7/14, C07F 7/16 or C07F 7/20}

**NOTE**

The silicon atom involved in the reaction that is attached or becomes attached to the highest number of halide atoms determines classification.

7/0839 . . . {by reactions involving the formation of Si-C linkages (hydrosilylation reactions C07F 7/14; direct synthesis C07F 7/16)}
7/123 . . . {by reactions involving the formation of Si-halogen linkages}
7/125 . . . {by reactions involving both Si-C and Si-halogen linkages, the Si-C and Si-halogen linkages can be to the same or to different Si atoms, e.g. redistribution reactions}
7/126 . . . {by reactions involving the formation of Si-Y linkages, where Y is not a carbon or halogen atom}
7/127 . . . {by reactions not affecting the linkages to the silicon atom}
7/128 . . . {by reactions covered by more than one of the groups C07F 7/122 - C07F 7/127 and of which the starting material is unknown or insufficiently determined}
7/14 . . . Preparation thereof from [optionally substituted] halogenated silanes and hydrocarbons [hydrosilylation reactions]
7/16 . . . Preparation thereof from silicon and halogenated hydrocarbons [direct synthesis]
7/18 . . . Compounds having one or more C—Si linkages as well as one or more C—O—Si linkages
7/1804 . . . {Compounds having Si-O-C linkages (Si-O-acyl linkages C07F 7/1896)}
7/1872 . . . {Preparation; Treatments not provided for in C07F 7/20}
7/1876 . . . . [by reactions involving the formation of Si-C linkages]
7/188 . . . . [by reactions involving the formation of Si-O linkages]
7/1884 . . . . [by dismutation]
7/1888 . . . . [by reactions involving the formation of other Si-linkages, e.g. Si-N]
7/1892 . . . . [by reactions not provided for in C07F 7/1876 - C07F 7/1888]
7/1896 . . . . [Compounds having one or more Si-O-acyl linkages]
7/20 . . . . Purification, separation
7/21 . . . . Cyclic compounds having at least one ring containing silicon, but no carbon in the ring
7/22 . . . . Tin compounds
7/2204 . . . . [Not belonging to the groups C07F 7/2208 - C07F 7/2296]
7/2208 . . . . [Compounds having tin linked only to carbon, hydrogen and/or halogen]
7/2224 . . . . [Compounds having one or more tin-oxygen linkages]
7/226 . . . . [Compounds with one or more Sn-S linkages]
7/2284 . . . . [Compounds with one or more Sn-N linkages]
7/2288 . . . . [Compounds with one or more Sn-metal linkages]
7/2296 . . . . [Purification, stabilisation, isolation]
7/24 . . . . Lead compounds
7/26 . . . . Tetra-alkyl lead compounds
7/28 . . . . Titanium compounds
7/30 . . . . Germanium compounds
9/00 Compounds containing elements of Groups 5 or 15 of the Periodic System
9/005 . . . [Compounds of elements of Group 5 of the Periodic System without metal-carbon linkages]
9/02 . . . . Phosphorus compounds (sugar phosphates C07H 11/04; nucleotides C07H 19/00; nucleic acids C07H 21/00; C07H 21/00)
9/025 . . . . [Purification; Separation; Stabilisation; Desodisorisation of organo-phosphorus compounds of natural phosphatides C07F 9/103; phosphines C07F 9/5095]
9/04 . . . . Reaction products of phosphorus sulfur compounds with hydrocarbons
9/06 . . . . [Compounds containing the structure P=O-N]
9/062 . . . . [Organo-phosphoranes without P-C bonds]
9/065 . . . . [Phosphoranes containing the structure P=O-N]
9/067 . . . . [Polyphosphazenes containing the structure [P=O-N] (cyclic compounds C07F 9/65812)]
9/08 . . . . Esters of oxycacids of phosphorus ([(C07F 9/062 takes precedence)]
9/09 . . . . Esters of phosphoric acids
9/091 . . . . [with hydroxyalkyl compounds with further substituents on alkyl]
9/092 . . . . [substituted by B, Si or a metal]
9/093 . . . . [Polyol derivatives esterified at least twice by phosphoric rests]
9/094 . . . . [with aryllalkanols]
9/095 . . . . [Compounds containing the structure P(=O)-O-acil, P(=O)-O-heteroatom, P(=O)-O-CN]
9/096 . . . . [Compounds containing the structure P(=O)-O-C(=X)-(X = O, S, Se)]
9/097 . . . . [Compounds containing the structure P(=O)-O-N]
9/098 . . . . [Esters of polyphosphoric acids or anhydrides]
9/10 . . . . Phosphatides, e.g. lecithin
9/103 . . . . [Extraction or purification by physical or chemical treatment of natural phosphatides; Preparation of compositions containing phosphatides of unknown structure]
9/106 . . . . [Adducts, complexes, salts of phosphatides]
9/11 . . . . [with hydroxyalkyl compounds without further substituents on alkyl]
9/113 . . . . with unsaturated acyclic alcohols
9/117 . . . . with cycloaliphatic alcohols
9/12 . . . . [with hydroxyaryl compounds
9/14 . . . . containing P(=O)-halide groups
9/1403 . . . . [containing the structure Hal-P(=O)-O-unsaturated acyl rest]
9/1406 . . . . [containing the structure Hal-P(=O)-O-aryl]
9/141 . . . . Esters of phosphoric acids
9/1411 . . . . [with hydroxyalkyl compounds with further substituents on alkyl]
9/1412 . . . . [Polyol derivatives esterified at least twice by phosphorous acid rests]
9/1414 . . . . [with aryllalkanols]
9/1415 . . . . [Compounds containing the structure P-O-acyl, P-O-heteroatom, P-O-CN]
9/1417 . . . . [Compounds containing the structure P-O-C(=X)-(X = O, S, Se)]
9/1418 . . . . [Compounds containing the structure P-O-N]
9/142 . . . . with hydroxyalkyl compounds without further substituents on alkyl
9/143 . . . . with unsaturated acyclic alcohols
9/144 . . . . with cycloaliphatic alcohols
9/145 . . . . [with hydroxyaryl compounds
9/146 . . . . containing P-halide groups
9/16 . . . . Ester of thiophosphoranes acids or thiophosphoruses acids
9/165 . . . . Ester of thiophosphoranes acids
9/1651 . . . . [with hydroxyalkyl compounds with further substituents on alkyl]
9/1652 . . . . [Polyol derivatives esterified at least twice by thiophosphoric acid esters]
9/1653 . . . . [with aryllalkanols]
9/1654 . . . . [Compounds containing the structure P(=X)n-X-acyl, P(=X)n-X-heteroatom, P(=X)n-X-CN (X = O, S, Se; n = 0, 1)]
9/1655 . . . . [Compounds containing the structure P(=X)n-S-(S)x- (X = O, S, Se; n = 0, 1)]
9/1656 . . . . [Compounds containing the structure P(=X)n-X-C(=X)-(X = O, S, Se; n = 0, 1)]
9/1657 . . . . [Compounds containing the structure P(=X)n-X-N (X = O, S, Se; n = 0, 1)]
9/1658 . . . . [Esters of thiopolyphosphoric acids or anhydrides]
9/17 . . . . with hydroxalkyl compounds without further substituents on alkyl
9/173 . . . . with unsaturated acyclic alcohols
9/177 . . . . with cycloaliphatic alcohols
9/18 . . . . with hydroxyaryl compounds
9/20 . . . . containing P-halide groups
9/2003 . . . . [containing the structure Hal-P-X-unaturated acyclic rest]
9/2006 . . . . [containing the structure Hal-P-X-aryl]
9/201 . . . . Esters of thio phosphorus acids
9/2015 . . . . [with hydroxyalkyl compounds with further substituents on alkyl]
9/202 . . . . with hydroxyl compounds without further substituents on alkyl
9/203 . . . . with unsaturated acyclic alcohols
9/204 . . . . with cycloaliphatic alcohols
9/205 . . . . with hydroxyaryl compounds
9/206 . . . . containing P-halide groups
9/22 . . . . Amides of acids of phosphorus
9/222 . . . . [Amides of phosphoric acids]
9/224 . . . . [Phosphorus triamides]
9/226 . . . . [containing the structure P-isocyanates]
9/228 . . . . [containing the structure P-N-N, e.g. azides, hydrazides]
9/24 . . . . Esteramides
9/2404 . . . . [the ester moiety containing a substituent or a structure which is considered as characteristic]
9/2408 . . . . [of hydroxyalkyl compounds]
9/2412 . . . . [of unsaturated acyclic alcohols]
9/2416 . . . . [of cycloaliphatic alcohols]
9/242 . . . . [of hydroxyaryl compounds]
9/2425 . . . . [containing the structure (RX)
9/2429 . . . . [of arylalkanols]
9/2433 . . . . [Compounds containing the structure N-P(=X)n-X-acyl, N-P(=X)n-X-heteroatom, N-P(=X)n-X-CN (X = O, S, Se; n = 0, 1)]
9/2437 . . . . [Compounds containing the structure N-P(=X)n-S-(S)x-(X = O, S, Se; n = 0, 1, \(x = 1\))]
9/2441 . . . . [containing the structure N-P(=X)n-X-C(=X) (X = O, S, Se; n = 0, 1)]
9/2445 . . . . [containing the structure N-P(=X)n-X-N (X = O, S, Se; n = 0, 1)]
9/245 . . . . [containing the structure N-P(=X)n-X-P (X = O, S, Se; n = 0, 1)]
9/2454 . . . . [the amide moiety containing a substituent or a structure which is considered as characteristic]
9/2458 . . . . [of aliphatic amines]
9/2462 . . . . [of unsaturated acyclic amines]
9/2466 . . . . [of cycloaliphatic amines]
9/247 . . . . [of aromatic amines (N-C aromatic linkage)]
9/2475 . . . . [of aralkylamines]
9/2479 . . . . [Compounds containing the structure P(=X)n-N-acyl, P(=X)n-N-heteroatom, P(=X)n-N-CN (X = O, S, Se; n = 0, 1)]
9/2483 . . . . [containing the structure P(=X)n-N-S (X = O, S, Se; n = 0, 1)]
9/2487 . . . . [containing the structure P(=X)n-N-C(=X) (X = O, S, Se; n = 0, 1)]
9/2491 . . . . [containing the structure P(=X)n-N-N (X = O, S, Se; n = 0, 1)]
9/2495 . . . . [containing the structure P(=X)n-N-P (X = O, S, Se; n = 0, 1)]
9/26 . . . . containing P-halide groups
9/28 . . . . with one or more P-C bonds
9/30 . . . . Phosphonic acids R-P(=O)(OH);
Thiophosphonic acids \(\{\text{i.e. R}_2P(=X)(XH)\} (X = S, Se)\)
9/301 . . . . [Acyclic saturated acids which can have further substituents on alkyl]
9/302 . . . . [Acyclic unsaturated acids]
9/303 . . . . [Cycloaliphatic acids]
9/304 . . . . [Aromatic acids (P-C aromatic linkage)]
9/305 . . . . [Poly(thio)phosphinic acids]
9/306 . . . . [Arylalkanephosphinic acids, e.g. Ar-(CH2)n-P(=X)(XH) (X = O, S, Se; n = 1)]
9/307 . . . . [Acids containing the structure -C(=X)-P(=X)(XH) or NC-P(=X)(XH) (X = O, S, Se)]
9/308 . . . . [Pyrophosphinic acids; Phosphinic acid anhydrides]
9/32 . . . . Esters thereof
9/3205 . . . . [the acid moiety containing a substituent or a structure which is considered as characteristic]
9/3211 . . . . [Esters of acyclic saturated acids which can have further substituents on alkyl]
9/3217 . . . . [Esters of acyclic unsaturated acids]
9/3223 . . . . [Esters of cycloaliphatic acids]
9/3229 . . . . [Esters of aromatic acids (P-C aromatic linkage)]
9/3235 . . . . [Esters of poly(thio)phosphinic acids]
9/3241 . . . . [Esters of arylalkanephosphinic acids]
9/3247 . . . . [Esters of acids containing the structure -C(=X)-P(=X)(XH) or NC-P(=X)(XH) (XH) (X = O, S, Se)]
9/3252 . . . . [containing the structure -C(=X)-P(=X)(XH) (X = O, S, Se)]
9/3258 . . . . [the ester moiety containing a substituent or a structure which is considered as characteristic]
9/3264 . . . . [Esters with hydroxalkyl compounds]
9/327 . . . . [Esters with unsaturated acyclic alcohols]
9/3276 . . . . [Esters with cycloaliphatic alcohols]
9/3282 . . . . [Esters with hydroxyaryl compounds]
9/3288 . . . . [Esters with arylalkanols]
9/3294 . . . . [Compounds containing the structure R2P(=X)-X-acyl, R2P(=X)-X-heteroatom, R2P(=X)-X-CN (X = O, S, Se)]
9/334 . . . . Halides thereof
9/336 . . . . Amides thereof
9/338 . . . . Phosphonic acids R(=O)(OH); Thiophosphonic acids \(\{\text{i.e. R}_2P(=X)(XH)\} (X = S, Se)\)
9/3804 . . . . [not used, see subgroups]
9/3808 . . . . . . . [Acyclic saturated acids which can have further substituents on alkyl]
9/3813 . . . . . . . [N-Phosphonomethylglycine; Salts or complexes thereof]
9/3817 . . . . . . . [Acids containing the structure
(RX)2P(=X)-alk-N...P (X = O, S, Se)]
9/3821 . . . . . . . [substituted by B, Si, P or a metal
(C07F 9/3839 takes precedence)]
9/3826 . . . . . . . [Acyclic unsaturated acids]
9/383 . . . . . . . . [Cycloaliphatic acids]
9/3834 . . . . . . . [Aromatic acids (P-C aromatic linkage)]
9/3839 . . . . . . . [Polyphosphonic acids]
9/3843 . . . . . . . [containing no further substituents than
-PO2H2 groups]
9/3847 . . . . . . . [Acyclic unsaturated derivatives]
9/3852 . . . . . . . [Cycloaliphatic derivatives]
9/3856 . . . . . . . [containing halogen or nitro(so)
substituents]
9/386 . . . . . . . [containing hydroxy substituents in the
hydrocarbon radicals]
9/3865 . . . . . . . [containing sulfur substituents]
9/3869 . . . . . . . [containing carboxylic acid or
carboxylic acid derivative substituents]
9/3873 . . . . . . . [containing nitrogen substituents, e.g.
N...H or N-hydrocarbon rest which can be
substituted by halogen or nitro(so),
N....O, N....S, N....C(=X)- (X =O, S),
N....N, N....C(=X)...N (X =O, S)]
9/3878 . . . . . . . [containing substituents selected from
B, Si, P (other than -PO2H2 groups) or a metal]
9/3882 . . . . . . . [Arylalkanephosphonic acids
(C07F 9/3839 takes precedence)]
9/3886 . . . . . . . [Acids containing the structure -C(=X)-
P(=X)(XH)2 or NC-P(=X)(XH)2, (X = O,
S, Se)]
9/3891 . . . . . . . [Acids containing the structure -C(=X)-
P(=X)(XH)2, (X = O, S, Se)]
9/3895 . . . . . . . [Pyrophosphonic acids; phosphonic acid
anhydrides]
9/40 . . . . . . . . . . . . . Esters thereof
9/4003 . . . . . . . [the acid moiety containing a substituent or
a structure which is considered as characteristic]
9/4006 . . . . . . . [Esters of acyclic acids which can have
further substituents on alkyl]
9/4009 . . . . . . . [Esters containing the structure
(RX)2P(=X)-alk-N...P (X = O, S,
Se)]
9/4012 . . . . . . . [substituted by B, Si, P or a metal
(C07F 9/4025 takes precedence)]
9/4015 . . . . . . . [Esters of acyclic unsaturated acids]
9/4018 . . . . . . . [Esters of cycloaliphatic acids]
9/4021 . . . . . . . [Esters of aromatic acids (P-C aromatic
linkage)]
9/4025 . . . . . . . [Esters of poly(thio)phosphonic acids]
9/4028 . . . . . . . [containing no further substituents than
-PO2H2 groups in free or
esterified form]
9/4031 . . . . . . . . . . . . . . . . . . . . . . . [Acyclic unsaturated derivatives]
9/4034 . . . . . . . . . [Cycloaliphatic derivatives]
9/4037 . . . . . . . . . [containing halogen or nitro(so)
substituents]
9/404 . . . . . . . [containing hydroxy substituents in the
hydrocarbon radicals]
9/4043 . . . . . . . [containing sulfur substituents]
9/4046 . . . . . . . [containing carboxylic acid
or carboxylic acid derivative
substituents]
9/405 . . . . . . . [containing nitrogen substituents, e.g.
N...H or N-hydrocarbon rest which can be
substituted by halogen or
nitro(so), N....O, N....S, N....C(=X)-
(X =O, S), N....N, N....C(=X)...N (X
=O, S)]
9/4053 . . . . . . . [containing substituents selected from
B, Si, P (other than -PO2H2 groups in
free or esterified form), or a metal]
9/4056 . . . . . . . [Esters of aryalkanephosphonic acids
(C07F 9/4025 takes precedence)]
9/4059 . . . . . . . [Compounds containing the structure
(RY)2P(=X)-(CH)nm-C(=O)-(CH)mn-Ar,
(X,Y = O, S, Se; m>1, n>0)]
9/4062 . . . . . . . [Esters of acids containing the
structure -C(=X)-P(=X)(XH)2 or NC-P(=X)
(XH)2, (X = O, S, Se)]
9/4065 . . . . . . . [Esters of acids containing the
structure -C(=X)-P(=X)(XH)2 or
(X = O, S, Se)]
9/4068 . . . . . . . [Esters of pyrophosphonic acids; Esters of
phosphonic acid anhydrides]
9/4071 . . . . . . . [Esters of acyclic acids which can have
further substituents on alkyl]
9/4075 . . . . . . . [Esters with hydroxyalkyl compounds]
9/4078 . . . . . . . [Esters with unsaturated acyclic
alcohols]
9/4081 . . . . . . . [Esters with cycloaliphatic alcohols]
9/4084 . . . . . . . [Esters with hydroxyaryl compounds]
9/4087 . . . . . . . [Esters with aryalkanolos]
9/409 . . . . . . . [Compounds containing the structure
P(=X)-X-acyl, P(=X)-X-heteroatom,
P(=X)-X-CN (X = O, S, Se)]
9/4093 . . . . . . . [Compounds containing the structure
P(=X)-X-C(=X)- (X = O, S, Se)]
9/4096 . . . . . . . [Compounds containing the structure
P(=X)-X-N (X = O, S, Se)]
9/42 . . . . . . . . . . . . . Halides thereof
9/425 . . . . . . . . . . . . . [Acid or estermonohalides thereof, e.g.
RP(=X)YR(Hal) (Hal, X = O, S; R = H, or
hydrocarbon group)]
9/44 . . . . . . . . . . . . . Amides thereof
9/4403 . . . . . . . [the acid moiety containing a substituent or
a structure which is considered as characteristic]
9/4407 . . . . . . . [Compounds containing the structure
P(=X)-X-C(=X)- (X = O, S, Se)]
9/4411 . . . . . . . [Compounds of phosphoric acids (P-C
aromatic linkage)]
9/4415 . . . . . . . [Compounds of phosphonic acids (P-C
aromatic linkage)]
9/4419 . . . . . . . [Compounds of poly(thio)phosphonic
acids]
9/4422 . . . . . . . [Compounds of poly(thio)phosphonic
acids]
9/443 . . . . . . [Amides of acids containing the structure -C(=Y)-P(X)R- or NC-P(X)R-]
9/4434 . . . . . . (the ester moiety containing a substituent or a structure which is considered as characteristic)
9/4438 . . . . . . [Ester with hydroxyalkyl compounds]
9/4442 . . . . . . [Esters with unsaturated acyclic alcohols]
9/4446 . . . . . . [Esters with cycloaliphatic alcohols]
9/4449 . . . . . . [Esters with hydroxaryl compounds]
9/4453 . . . . . . [Esters with aroylalkanols]
9/4457 . . . . . . [Compounds containing the structure C-P(=X)(X-acyl)-N or C-P(=X)(X-CN)-N (Y = O, S, Se)]
9/4461 . . . . . . (the amide moiety containing a substituent or a structure which is considered as characteristic)
9/4465 . . . . . . [of aliphatic amines]
9/4469 . . . . . . [of unsaturated acyclic amines]
9/4473 . . . . . . [of cycloaliphatic amines]
9/4476 . . . . . . [of aromatic amines (N-C aromatic linkage)]
9/448 . . . . . . . . . . [of aralkylamines]
9/4484 . . . . . . [Compounds containing the structure C-P(=X)(N-acetyl)-N or C-P(=X)(N-heteroatom)-N or C-P(=X)(N-CN)-N (X = O, S, Se)]
9/4488 . . . . . . [Compounds containing the structure P(=X)(N=S)- (X = O, S, Se)]
9/4492 . . . . . . [Compounds containing the structure P(=X)(N-C(=X))- (X = O, S, Se)]
9/4496 . . . . . . [Compounds containing the structure P(=X)(N-N)- (X = O, S, Se)]
9/46 . . . . . . Phosphinous acids R₂P=OH;
Thiophosphinous acids; Aminophosphinines
R₃-P-NH₂ [including R₃P(=O)OH; derivatives thereof]
Thiophosphonous acids [including RHP(=O)(OH); Derivatives thereof]
9/4808 . . . . . . [the acid moiety containing a substituent or structure which is considered as characteristic]
9/4816 . . . . . . [Acyclic saturated acids or derivatives which can have further substituents on ayl]
9/4825 . . . . . . [Acyclic unsaturated acids or derivatives]
9/4833 . . . . . . [Cycloaliphatic acids or derivatives]
9/4841 . . . . . . [Aromatic acids or derivatives (P-C aromatic linkage)]
9/485 . . . . . . [Polyphosphonous acids or derivatives]
9/4858 . . . . . . [Acids or derivatives containing the structure -C(=X)-P(XR)₂ or NC-P(XR)₂ (X = O, S, Se)]
9/4866 . . . . . . [the ester moiety containing a substituent or structure which is considered as characteristic]
9/4875 . . . . . . [Esters with hydroxyl aryl compounds]
9/4883 . . . . . . [Amides or esteramides thereof, e.g. RP(NR'₂)₂ or RP(XR')(NR'₂)₂ (X = O, S)]
9/4891 . . . . . . [Monohalide derivatives RP(XR')(Hal) (X = O, S, N) (dihalide derivatives C07F 9/52)]
9/50 . . . . . . Organo-phosphines
9/5004 . . . . . . [Acyclic saturated phosphines]
9/5009 . . . . . . [substituted by B, Si, P or a metal (C07F 9/5027 takes precedence)]
9/5013 . . . . . . [Acyclic unsaturated phosphines]
9/5018 . . . . . . [Cycloaliphatic phosphines]
9/5022 . . . . . . [Aromatic phosphines (P-C aromatic linkage)]
9/5027 . . . . . . [Polyphosphines]
9/5031 . . . . . . [Arylalkane phosphines (C07F 9/5027 takes precedence)]
9/5036 . . . . . . [Phosphines containing the structure -C(=X)-P or NC-P]
9/504 . . . . . . [Organo-phosphines containing a P-P bond]
9/5045 . . . . . . [Complexes or chelates of phosphines with metallic compounds or metals]
9/505 . . . . . . [Preparation; Separation; Purification; Stabilisation]
9/5054 . . . . . . [by a process in which the phosphorus atom is not involved]
9/5059 . . . . . . [by addition of phosphorus compounds to alkenes or alkynes]
9/5063 . . . . . . [from compounds having the structure P-H or P-Heteroatom, in which one or more of such bonds are converted into P-C bonds (C07F 9/5059 takes precedence)]
9/5068 . . . . . . [from starting materials having the structure >P-Hal]
9/5072 . . . . . . [from starting materials having the structure P-H (C07F 9/5059 takes precedence)]
9/5077 . . . . . . [from starting materials having the structure P-Metal, including R₃P(M⁺)]
9/5081 . . . . . . [from starting materials having the structure >P-Het, Het being an heteroatom different from Hal or Metal]
9/5086 . . . . . . [from phosphonium salts as starting materials]
9/509 . . . . . . [by reduction of pentavalent phosphorus derivatives, e.g. -P=O with X = O, S, Se or -P-Hal2]
9/5095 . . . . . . [Separation; Purification; Stabilisation]
9/52 . . . . . . Halophosphines
9/53 . . . . . . Organo-phosphine oxides; Organo-phosphine thioxides
9/5304 . . . . . . [Acyclic saturated phosphine oxides or thioxides]
9/5308 . . . . . . [substituted by B, Si, P or a metal]
9/5312 . . . . . . [substituted by a phosphorus atom (C07F 9/5322 takes precedence)]
9/5316 . . . . . . [Unsaturated acyclic phosphine oxides or thioxides]
9/532 . . . . . . Cycloaliphatic phosphine oxides or thioxides
9/5325 . . . . . . [Aromatic phosphine oxides or thioxides (P-C aromatic linkage)]
9/5329 . . . . . . [Polyphosphine oxides or thioxides]
9/5333 . . . . . . [Arylalkane phosphine oxides or thioxides (C07F 9/5329 takes precedence)]
9/5337 . . . . . . [Phosphine oxides or thioxides containing the structure -C(=X)-P(=O) or NC-P(=O) (X = O, S, Se)]
9/5341 . . . . . . [Organo-phosphine oxides or thioxides containing a P-P bond]
Phosphorus as a ring hetero atom

Heterocyclic compounds, e.g. containing hetero atoms having two nitrogen atoms as the only ring hetero atom

or sulfur as ring hetero atoms

or oxygen or sulfur as ring hetero atoms; having

Organo-phosphoranes

Five-membered rings

Six-membered rings

Five-membered rings

Four-membered rings

Three-membered rings

to the heteroring)

C(=O)-N-C(=O)- (both carbon atoms belong to the heteroring containing the structure -

Seven-(or more) membered rings

or O}

phosphonium”, e.g. (C)a-P-(Y)b wherein a

compounds or metals}

Aromatic phosphonium compounds (P-C aromatic linkage)

Polyphosphonium compounds

Arylalkanephosphonium compounds

Compounds of the type “quasi-

Compounds of the type “quasi-

Aromatic phosphonium compounds

Polyphosphazenes containing the structure [P=N-]n (cyclic phosphazenes C07F 9/65812)

Acyclic unsaturated phosphonium compounds

Cycloaliphatic phosphonium compounds

Aromatic phosphonium compounds

Polyphosphonium compounds

Acyclic saturated phosphonium compounds

Heterocyclic compounds, e.g. containing phosphorus as a ring hetero atom

having nitrogen and selenium with or without oxygen or sulfur as ring hetero atoms; having nitrogen and tellurium with or without oxygen or sulfur as ring hetero atoms

having one nitrogen atom as the only ring hetero atom

{Seven-(or more) membered rings]

{condensed with carbocyclic rings or ring systems}

{the heteroring containing the structure - C(=O)-N-C(=O)- (both carbon atoms belong to the heteroring)"

Three-membered rings

Four-membered rings

{condensed with carbocyclic rings or ring systems}

Five-membered rings

{condensed with carbocyclic rings or carbocyclic ring systems}

Six-membered rings

{condensed with carbocyclic rings or carbocyclic ring systems}

Pyridine rings

Hydrogenated pyridine rings

Quinoline or hydrogenated quinoline ring systems

Isoquinoline or hydrogenated isoquinoline ring systems

Acridine or hydrogenated acridine ring systems

having two nitrogen atoms as the only ring hetero atoms

Five-membered rings

having having nitrogen atoms in the positions 1 and 2]

having the nitrogen atoms in positions 1 and 3

having the nitrogen atoms in positions 1 and 3

having the nitrogen atoms in the positions 1 and 2

having the nitrogen atoms in the positions 1 and 4]

having the nitrogen atoms in positions 1 and 3

having three nitrogen atoms as the only ring hetero atoms

Five-membered rings

Six-membered rings

having four or more nitrogen atoms as the only ring hetero atoms

having four or more nitrogen atoms as the only ring hetero atoms

Five-membered rings

having nitrogen and oxygen atoms as the only ring hetero atoms

having nitrogen and oxygen atoms as the only ring hetero atoms

Five-membered rings

Five-membered rings

having two nitrogen atoms in positions 1 and 2]

having the two nitrogen atoms in positions 1 and 2]

having the two nitrogen atoms in positions 1 and 3]

having the two nitrogen atoms in positions 1 and 3]

having the two nitrogen atoms in positions 1 and 2]

having the two nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in the positions 1 and 2]

having the nitrogen atoms in the positions 1 and 2]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]

having the nitrogen atoms in positions 1 and 3]
condensed hetero rings or ring system, with or without other non-condensed with a common carbocyclic ring or containing systems of two or more relevant among themselves nor condensed with a carbocyclic ring or ring system, with or without other non-condensed hetero rings

containing at least two different or differently substituted hetero rings neither condensed among themselves nor condensed with a common carbocyclic ring or ring system

each of the hetero rings containing nitrogen as ring hetero atom

at least one of the hetero rings does not contain nitrogen as ring hetero atom

containing systems of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring or ring system, with or without other non-condensed hetero rings

containing the ring system

(X = CH₂, O, S, NH) optionally with an additional double bond and/or substituents, e.g. penicillins and analogs)

(contains the ring system

(X = CH₂, O, S, NH) optionally with an additional double bond and/or substituents, e.g. cephalosporins and analogs)

containing a spiro condensed ring system of the formula where at least one of the atoms X or Y is a hetero atom, e.g. S

containing the ring system having three or more than three double bonds between ring members or between ring members and non-ring members, e.g. purine or analogs

containing the ring system, e.g. flavins or analogues

having phosphorus atoms, with or without nitrogen, oxygen, sulfur, selenium or tellurium atoms, as the only ring hetero atoms

having phosphorus atoms as the only ring hetero atoms

having phosphorus atoms as the only ring hetero atoms

having phosphorus atoms as the only ring hetero atoms

having phosphorus atoms as the only ring hetero atoms

having phosphorus atoms as the only ring hetero atoms

containing at least two different or differently substituted hetero rings neither condensed among themselves nor condensed with a common carbocyclic ring or ring system

containing at least two different or differently substituted hetero rings neither condensed among themselves nor condensed with a common carbocyclic ring or ring system

containing at least two different or differently substituted hetero rings neither condensed among themselves nor condensed with a common carbocyclic ring or ring system

containing at least two different or differently substituted hetero rings neither condensed among themselves nor condensed with a common carbocyclic ring or ring system

containing at least two different or differently substituted hetero rings neither condensed among themselves nor condensed with a common carbocyclic ring or ring system

containing the ring system

(X = CH₂, O, S, NH) optionally with an additional double bond and/or substituents, e.g. penicillins and analogs)

containing the ring system

(X = CH₂, O, S, NH) optionally with an additional double bond and/or substituents, e.g. penicillins and analogs)
Arsenic compounds

Organo-arsenic compounds

Aliphatic compounds

Aromatic compounds

Containing hydroxyl groups

Containing amino groups

Heterocyclic compounds

Arsonic compounds containing one or more pyridine rings

Arsonic compounds containing one or more quinoline ring systems

Arsonic compounds containing one or more isoquinoline ring systems