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.
Compounds containing elements of Groups 4 or 14 of the Periodic System

[Compounds without C-Metal linkages]

Silicon compounds

[Compounds without C-silicon linkages]

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.

**NOTE**

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

[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)]

[Compounds of unknown structure containing a Si-O-Si sequence]

[Preparation and treatment thereof]

[Reactions involving a bond of the Si-O-Si linkage]

[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]

[Si-C bond]

[Hydrosilylation reactions]

[Reactions not involving the Si atom of the Si-O-Si sequence]

[Treatments not covered by a preceding group]

[Compounds with a Si-O-N linkage]

[Compounds with a Si-O linkage]

[Compounds with a Si-H linkage]

[Compounds with a Si-S linkage]

[Containing nitrogen having a Si-N linkage]

[Organo silicon halides]

[Preparation or treatment not provided for in C07F 7/14, C07F 7/16 or C07F 7/20]

Cyclic esters

[Compounds having one or more C—Si linkages]

[General processes]

[Compounds with Si-C or Si-Si linkages]

[Compounds with a Si-O linkage]

[Compounds with a Si-O-O linkage]

[Compounds with a Si-O-N linkage]

[Preparation; Treatments not provided for in C07F 7/14, C07F 7/16 or C07F 7/20]

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.

**WARNING**

- Groups C07F 7/04, C07F 7/045, C07F 7/06 and C07F 7/07 should be considered in order to perform a complete search.

Cyclic esters

[Compounds having one or more C—Si linkages]

[General processes]

[Compounds with Si-C or Si-Si linkages]

[Compounds with a Si-H linkage]

[Compounds with a Si-S linkage]

[Compounds containing nitrogen having a Si-N linkage]

[Organo silicon halides]

[Preparation or treatment not provided for in C07F 7/14, C07F 7/16 or C07F 7/20]

Cyclic esters

[Compounds having one or more C—Si linkages]

[General processes]

[Compounds with Si-C or Si-Si linkages]

[Compounds with a Si-H linkage]

[Compounds with a Si-O linkage]

[Compounds with a Si-O-O linkage]

[Compounds with a Si-O-N linkage]

[Preparation; Treatments not provided for in C07F 7/14, C07F 7/16 or C07F 7/20]
Compounds containing elements of Groups 5 or 15 of the Periodic System

9/008 . . . . . . Compounds containing 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; C07H 21/00; nucleic acids C07H 21/00)

9/025 . . . . . . (Purification; Separation; Stabilisation; Desodisorisation of organophosphorus compounds of (natural phosphatides C07F 9/103; phosphines C07F 9/5095))

9/04 . . Reaction products of phosphorus sulfur compounds with hydrocarbons

9/06 . . . without P—C bonds

9/062 . . . [Organo-phosphoranes without P-C bonds]

9/065 . . . . [Phosphoranes containing the structure P=N-]

9/067 . . . . . . (Polyporphoranes containing the structure [P=O-n] (cyclic compounds C07F 9/65812)]

9/08 . . . . . . Esters of oxycids of phosphorus ((C07F 9/062 takes precedence))

9/09 . . . . . . Esters of phosphoric acids

9/091 . . . . . . [with hydroxyalkyl compounds with further substituted 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 aryllakanols]

9/095 . . . . . . [Compounds containing the structure P(=O)-O-acyl, 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(=0)-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 phosphorus 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 aryllakanols]

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 . . . . . . Esters of thiophosphoric acid or thiophosphorous acids

9/165 . . . . . . Esters of thiophosphoric acids

9/1651 . . . . . . [with hydroxyalkyl compounds with further substituents on alkyl]

9/1652 . . . . . . [Polyol derivatives esterified at least twice by (thio)phosphoric acid esters]

9/1653 . . . . . . [with aryllakanols]

9/1654 . . . . . . [Compounds containing the structure P(=X)n(=N)-X-acyl, P(=X)n(=N)-X-heteroatom, P(=X)n(=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; x)]]

9/1656 . . . . . . [Compounds containing the structure P(=X)n-Cl(=X)- (X = O, S, Se; n = 0, 1)]

9/1657 . . . . . . [Compounds containing the structure P(=X)n-Cl-N (X = O, S, Se; n = 0, 1)]

9/1658 . . . . . . [Esters of thiopolyphosphoric acids or anhydrides]
CPC - 2019.08

9/17 . . . . . . with hydroxyalkyl 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-unsaturated acyclic acid]
9/2006 . . . . . . [containing the structure Hal-P-X-arylated]
9/201 . . . . . . Esters of thiophosphoric 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 . . . . . . Phosphinic acids R2P(=O)(OH); Thiophosphinic acids [], i.e. R2P(=X)(XH) (X = S, Se)
9/301 . . . . . . [Acyclic saturated acids which can have further substituents on alkyl]
9/302 . . . . . . [Acyclic unsaturated acids]
9/303 . . . . . . [Cyloaliphatic 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 hydroxyalkyl 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)]
9/34 . . . . . . Halides thereof
9/36 . . . . . . Amides thereof
9/38 . . . . . . Phosphinic acids R2P(=O)(OH); Thiophosphinic acids [], i.e. R2P(=X)(XH)2 (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)(XY)(Hal) (X, Y = O, S; R = H, or carboxylic acid derivatives)]
9/3891 . . . . . . . . [Acids containing the structure -C(=X)-P(=X)(XY)2 (X = O, S, Se)]
9/3895 . . . . . . . . [Phosphonic 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 arylalkanephosphonic acids
(C07F 9/4025 takes precedence)]
9/4059 . . . . . . . . [Compounds containing the structure (RY)2P(=X)(CH)n-C(=O)-(CH)n-Ar, (X, Y = O, S, Se; n>=1, m>=0)]
9/4062 . . . . . . . . [Esters of acids containing the structure -C(=X)-P(=X)2 or NC-P(=X) (XY)2, (X = O, S, Se)]
9/4065 . . . . . . . . [Esters of acids containing the structure -C(=X)-P(=X)(XY)2 (X = O, S, Se)]
9/4068 . . . . . . . . [Esters of pyrophosphonic acids; Esters of phosphonic acid anhydrides]
9/4071 . . . . . . . . [the acid moiety containing a substituent or a structure which is considered as characteristic]
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 arylalkanols]
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) (Y = 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 . . . . . . . . [Amides of acyclic saturated acids which can have further substituents on alkyl]
9/4411 . . . . . . . . [Amides of acyclic unsaturated acids]
9/4415 . . . . . . . . [Amides of cycloaliphatic acids]
9/4419 . . . . . . . . [Amides of aromatic acids (P-C aromatic linkage)]
9/4423 . . . . . . . . [Amides of poly(thio)phosphonic acids]
9/4426 . . . . . . . . [Amides of arylalkanephosphonic acids]
[Amides of acids containing the structure -C(=Y)-P(=X)(XR)-N or NC-P(=X)(XR)-N)]

[the ester moiety containing a substituent or a structure which is considered as characteristic]

[Ester with hydroxyalkyl compounds]

[Esters with unsaturated acyclic alcohols]

[Esters with cycloaliphatic alcohols]

[Esters with hydroxyaryl compounds]

[Esters with alylkanols]

[Compounds containing the structure C-P(=X)(X-acyl)-N or C-P(=X)(X-CN)-N (X, Y = O, S, S)]

[the amide moiety containing a substituent or a structure which is considered as characteristic]

[of aliphatic amines]

[of unsaturated acyclic amines]

[of cycloaliphatic amines]

[of aromatic amines (N-C aromatic linkage)]

[of aralkylamines]

[Compounds containing the structure C-P(=X)(N-acyl)-X, C-P(=X)(N-heteroatom)-X or C-P(=X)(N-CN)-X (X = O, S, Se)]

[Compounds containing the structure P(=X)(N-S)- (X = O, S, Se)]

[Compounds containing the structure P(=X)(N-C(=X)-X) (X = O, S, Se)]

[Compounds containing the structure P(=X)(N-N)- (X = O, S, Se)]

[Phosphinous acids R₂P=O=OH; Thiophosphinous acids; Aminophosphines R₂P-NH₂ (including R₃P(O)=OH; derivatives thereof)]

[Phosphonous acids R=PO(OH); Thiophosphonous acids (including RHP=O(OH); Derivatives thereof)]

[the acid moiety containing a substituent or structure which is considered as characteristic]

[Acyclic saturated acids or derivatives which can have further substituents on alyl]

[Acyclic unsaturated acids or derivatives]

[Cycloaliphatic acids or derivatives]

[Aromatic acids or derivatives (P-C aromatic linkage)]

[Polyphosphonous acids or derivatives]

[Acids or derivatives containing the structure -C(=X)-P(=X)(XR)₂ or NC-P(=X)(XR)₂ (X = O, S, Se)]

[the ester moiety containing a substituent or structure which is considered as characteristic]

[Esters with hydroxy aryl compounds]

[Amides or esteramides thereof, e.g. RP(NR₃)₂ or RP(XR)(NR₃)₂ (X = O, S)]

[Monohalide derivatives RP(XR')(Hal) (X = O, S, N) (dihalide derivatives C07F 9/52)]

[Organo-phosphines]

[Acyclic saturated phosphines]

[substituted by B, Si, P or a metal (C07F 9/5027 takes precedence)]

[Acyclic unsaturated phosphines]

[Cycloaliphatic phosphines]

[Aromatic phosphines (P-C aromatic linkage)]

[Polyphosphines]

[Arylalkane phosphines (C07F 9/5027 takes precedence)]

[Phosphines containing the structure -C(=X)-P or NC-P]

[Organo-phosphines containing a P-P bond]

[Complexes or chelates of phosphines with metallic compounds or metals]

[Preparation; Separation; Purification; Stabilisation]

[by a process in which the phosphorus atom is not involved]

[by addition of phosphorus compounds to alkenes or alkynes]

[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)]

[from starting materials having the structure >P-Hal]

[from starting materials having the structure P-H (C07F 9/5059 takes precedence)]

[from starting materials having the structure P-Hal]

[from starting materials having the structure >P-Het, Het being an heteroatom different from Hal or Metal]

[from phosphonium salts as starting materials]

[by reduction of pentavalent phosphorus derivatives, e.g. -P=X with X = O, S, Se or -P-Hal2]

[Separation; Purification; Stabilisation]

[Halophosphines]

[Organo-phosphate oxides; Organo-phosphate thiioxides]

[Acyclic saturated phosphate oxides or thioxides]

[substituted by B, Si, P or a metal]

[substituted by a phosphorus atom (C07F 9/5322 takes precedence)]

[Unsaturated acyclic phosphate oxides or thiioxides]

[Cycloaliphatic phosphate oxides or thiioxides]

[Aromatic phosphate oxides or thiioxides (P-C aromatic linkage)]

[Polyphosphate oxides or thiioxides]

[Arylalkane phosphate oxides or thiioxides (C07F 9/5329 takes precedence)]

[Phosphine oxides or thiioxides containing the structure -C(=X)-P(=X) or NC-P(=X) (X = O, S, Se)]

[Organo-phosphate oxides or thiioxides containing a P-P bond]
9/5345 . . . . . . [Complexes or chelates of phosphine-oxides or oxoixides with metallic compounds or metals]
9/535 . . . . . . Organo-phosphoranes
9/5352 . . . . . . [Phosphoranes containing the structure \( \text{P}=\text{C} \)]
9/5355 . . . . . . [Phosphoranes containing the structure \( \text{P}=\text{N} \)]
9/5357 . . . . . . [Polyphosphazenes containing the structure \( \text{P}=\text{N}\text{-in (cyclic phosphazenes C07F 9/65812)} \)
9/54 . . . . . . Quaternary phosphonium compounds
9/5407 . . . . . . [Acyclic saturated phosphonium compounds]
9/5414 . . . . . . [substituted by B, Si, P or a metal]
9/5421 . . . . . . [substituted by a phosphorus atom (C07F 9/5449 takes precedence)]
9/5428 . . . . . . [Acyclic unsaturated phosphonium compounds]
9/5435 . . . . . . [Cycloaliphatic phosphonium compounds]
9/5442 . . . . . . [Aromatic phosphonium compounds (P-C aromatic linkage)]
9/5449 . . . . . . [Polyporphonium compounds]
9/5456 . . . . . . [Arylalkanephosphonium compounds]
9/5463 . . . . . . [Compounds of the type “quasi-phosphonium”, e.g. (C)\(a\)-P-(Y)\(b\) wherein \(a+b=4\), \(b\geq 1\) and \(Y=\text{heteroatom, generally N or O})]
9/547 . . . . . . Heterocyclic compounds, e.g. containing phosphorus as a ring hetero atom
9/5475 . . . . . . 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
9/553 . . . . . . having one nitrogen atom as the only ring hetero atom
9/5532 . . . . . . [Seven-(or more) membered rings]
9/5535 . . . . . . [condensed with carboxyclic rings or ring systems]
9/5537 . . . . . . [the heteroring containing the structure - C(=O)-N-C(=O)- (both carbon atoms belong to the heteroring)]
9/564 . . . . . . Three-membered rings
9/568 . . . . . . Four-membered rings
9/5686 . . . . . . [condensed with carboxyclic rings or ring systems]
9/572 . . . . . . Five-membered rings
9/5728 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/576 . . . . . . Six-membered rings
9/5765 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/58 . . . . . . Pyridine rings
9/59 . . . . . . Hydrogenated pyridine rings
9/60 . . . . . . Quinoline or hydrogenated quinoline ring systems
9/62 . . . . . . Isoquinoline or hydrogenated isoquinoline ring systems
9/64 . . . . . . Acridine or hydrogenated acridine ring systems
9/645 . . . . . . having two nitrogen atoms as the only ring hetero atoms
9/6503 . . . . . . Five-membered rings
9/65031 . . . . . . [having the nitrogen atoms in the positions 1 and 2]
9/65038 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/6506 . . . . . . having the nitrogen atoms in positions 1 and 3
9/65068 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/6509 . . . . . . Six-membered rings
9/650905 . . . . . . [having the nitrogen atoms in the positions 1 and 2]
9/650947 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/650952 . . . . . . [having the nitrogen atoms in the positions 1 and 4]
9/650994 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/6512 . . . . . . having the nitrogen atoms in positions 1 and 3
9/65128 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/6515 . . . . . . having three nitrogen atoms as the only ring hetero atoms
9/6518 . . . . . . Five-membered rings
9/65188 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/6521 . . . . . . Six-membered rings
9/65218 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/6524 . . . . . . having four or more nitrogen atoms as the only ring hetero atoms
9/6527 . . . . . . having nitrogen and oxygen atoms as the only ring hetero atoms
9/653 . . . . . . Five-membered rings
9/65306 . . . . . . [containing two nitrogen atoms]
9/65312 . . . . . . [having the two nitrogen atoms in positions 1 and 2]
9/65318 . . . . . . [having the two nitrogen atoms in positions 1 and 3]
9/65324 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/6533 . . . . . . Six-membered rings
9/65335 . . . . . . [condensed with carboxyclic rings or carboxyclic ring systems]
9/6536 . . . . . . having nitrogen and sulfur atoms with or without oxygen atoms, as the only ring hetero atoms
9/6539 . . . . . . Five-membered rings
9/65392 . . . . . . [containing two nitrogen atoms]
9/65395 . . . . . . [having the two nitrogen atoms in positions 1 and 2]
9/65397 . . . . . . [having the two nitrogen atoms in positions 1 and 3]
9/6541 . . . . . . condensed with carboxyclic rings or [carboxyclic] ring systems
9/6544 . . . . . . Six-membered rings
9/6547 . . . . . . condensed with carboxyclic rings or [carboxyclic] ring systems
9/655 . . . . . . having oxygen atoms, with or without sulfur, selenium, or tellurium, as the only ring hetero atoms
9/65502 . . . . . . [the oxygen atom being part of a three-membered ring]
condensed hetero rings or ring system, with or without non-condensed with a common carbocyclic ring containing at least two different or differently substituted hetero rings neither condensed among themselves nor condensed with a common carbocyclic ring or ring system

9/65553 . . . . . . having sulfur atoms, with or without selenium or tellurium atoms, as the only ring hetero atoms

9/655309 . . . . . . [the sulfur atom being part of a three-membered ring]
9/655318 . . . . . . [condensed with carbocyclic rings or carbocyclic ring systems]
9/655327 . . . . . . [the sulfur atom being part of a four-membered ring]
9/655336 . . . . . . [condensed with carbocyclic rings or carbocyclic ring systems]
9/655345 . . . . . . [the sulfur atom being part of a five-membered ring]
9/655354 . . . . . . [condensed with carbocyclic rings or carbocyclic ring systems]
9/655363 . . . . . . [the sulfur atom being part of a six-membered ring]
9/655372 . . . . . . [condensed with carbocyclic rings or carbocyclic ring systems]
9/655381 . . . . . . [the sulfur atom being part of a seven-(or more) membered ring]
9/65539 . . . . . . [condensed with carbocyclic rings or carbocyclic ring systems]
9/6558 . . . . containing at least two different or differently substituted hetero rings neither condensed among themselves nor condensed with a common carbocyclic ring or ring system

9/65583 . . . . . . [each of the hetero rings containing nitrogen as ring hetero atom]
9/65586 . . . . . . [at least one of the hetero rings does not contain nitrogen as ring hetero atom]
9/6561 . . . . containing systems of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring or ring system, with or without other non-condensed hetero rings

9/65611 . . . . . . [containing the ring system (X = CH₂, O, S, NH) optionally with an additional double bond and/or substituents, e.g. penicillins and analogs]

9/65613 . . . . . . [containing the ring system

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

9/65615 . . . . . . [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]

9/65616 . . . . . . [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]

9/65618 . . . . . . [containing the ring system, e.g. flavins or analogues]

9/6564 . . . . having phosphorus atoms, with or without nitrogen, oxygen, sulfur, selenium or tellurium atoms, as ring hetero atoms

9/6568 . . . . having phosphorus atoms as the only ring hetero atoms

9/65681 . . . . . . [the ring phosphorus atom being part of a (thio)phosphinic acid ester]
9/65683 . . . . . . [the ring phosphorus atom being part of a phosphine]
9/65685 . . . . . . [the ring phosphorus atom being part of a phosphine oxide or thioxide]
9/65686 . . . . . . [the ring phosphorus atom being part of an organo-phosphorane]
9/65688 . . . . . . [the ring phosphorus atom being part of a phosphonium compound]
9/6571 . . . . having phosphorus and oxygen atoms as the only ring hetero atoms

9/657109 . . . . . . [esters of oxyacids of phosphorus in which one or more oxocyclic oxygen atoms have been replaced by (a) sulfur atom(s)]
9/657118 . . . . . . [non-condensed with carbocyclic rings or heterocyclic rings or ring systems]
9/657127 . . . . . . [condensed with carbocyclic or heterocyclic rings or ring systems]
9/657136 . . . . . . [the molecule containing more than one cyclic phosphorus atom]
9/657145 . . . . . . [the cyclic phosphorus atom belonging to more than one ring system]
9/657154 . . . . . . [Cyclic esteramides of oxyacids of phosphorus]
9/657163 . . . . . . [the ring phosphorus atom being bound to at least one carbon atom]
9/657172 . . . . . . [the ring phosphorus atom and one oxygen atom being part of a (thio)phosphinic acid ester:

(X = O, S)]
9/657181 . . . . . . [the ring phosphorus atom and, at least, one ring oxygen atom being part of a (thio)phosphonic acid derivative]
Arsenic compounds

Organo-arsenic compounds without As—C bonds

Aliphatic compounds

Aromatic compounds

Containing hydroxyl groups

Containing amino groups

Heterocyclic compounds

Arsenic compounds containing one or more pyridine rings

Arsenic compounds containing one or more quinoline ring systems

Arsenic compounds containing one or more isoquinoline ring systems

Compounds containing elements of Groups 6 or 16 of the Periodic System

Compounds containing elements of Groups 7 or 17 of the Periodic System

Compounds containing elements of Groups 8, 9, 10 or 18 of the Periodic System

Metal compounds according to more than one of main groups C07F 1000 - C07F 1700