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 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.

<table>
<thead>
<tr>
<th>1/00</th>
<th>Compounds containing elements of Groups 1 or 11 of the Periodic System</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/005</td>
<td>.  { without C-Metal linkages }</td>
</tr>
<tr>
<td>1/02</td>
<td>.  Lithium compounds</td>
</tr>
<tr>
<td>1/04</td>
<td>.  Sodium compounds</td>
</tr>
<tr>
<td>1/06</td>
<td>.  Potassium compounds</td>
</tr>
<tr>
<td>1/08</td>
<td>.  Copper compounds</td>
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<tr>
<td>1/10</td>
<td>.  Silver compounds</td>
</tr>
<tr>
<td>1/12</td>
<td>.  Gold compounds</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>3/00</th>
<th>Compounds containing elements of Groups 2 or 12 of the Periodic System</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/003</td>
<td>.  { without C-Metal linkages }</td>
</tr>
<tr>
<td>3/006</td>
<td>.  { Beryllium compounds }</td>
</tr>
<tr>
<td>3/02</td>
<td>.  Magnesium compounds</td>
</tr>
<tr>
<td>3/04</td>
<td>.  Calcium compounds</td>
</tr>
<tr>
<td>3/06</td>
<td>.  Zinc compounds</td>
</tr>
<tr>
<td>3/08</td>
<td>.  Cadmium compounds</td>
</tr>
<tr>
<td>3/10</td>
<td>.  Mercury compounds</td>
</tr>
<tr>
<td>3/103</td>
<td>.  { without C-Mercury linkages }</td>
</tr>
<tr>
<td>3/12</td>
<td>.  Aromatic substances containing mercury</td>
</tr>
<tr>
<td>3/14</td>
<td>.  Heterocyclic substances containing mercury</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>5/00</th>
<th>Compounds containing elements of Groups 3 or 13 of the Periodic System</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/003</td>
<td>.  { without C-Metal linkages }</td>
</tr>
<tr>
<td>5/02</td>
<td>.  Boron compounds</td>
</tr>
<tr>
<td>5/022</td>
<td>.  { without C-boron linkages }</td>
</tr>
<tr>
<td>5/025</td>
<td>.  { Boronic and borinic acid compounds }</td>
</tr>
<tr>
<td>5/027</td>
<td>.  { Organoboranes and organoborohydrides }</td>
</tr>
<tr>
<td>5/04</td>
<td>.  Esters of boric acids</td>
</tr>
<tr>
<td>5/05</td>
<td>.  Cyclic compounds having at least one ring containing boron but no carbon in the ring</td>
</tr>
<tr>
<td>5/06</td>
<td>.  Aluminium compounds</td>
</tr>
<tr>
<td>5/061</td>
<td>.  { with C-aluminium linkage }</td>
</tr>
<tr>
<td>5/062</td>
<td>.  { Al linked exclusively to C }</td>
</tr>
<tr>
<td>5/064</td>
<td>.  { compounds with an Al-Halogen linkage }</td>
</tr>
<tr>
<td>5/065</td>
<td>.  { compounds with an Al-H linkage }</td>
</tr>
<tr>
<td>5/066</td>
<td>.  { compounds with Al linked to an element other than Al, C, H or halogen (this includes Al-cyanide linkage)}</td>
</tr>
<tr>
<td>5/067</td>
<td>.  .  .  { compounds with Al also linked to H or halogen }</td>
</tr>
<tr>
<td>5/068</td>
<td>.  .  .  { preparation of alum(in)oxanes }</td>
</tr>
<tr>
<td>5/069</td>
<td>.  .  .  { without C-aluminium linkages }</td>
</tr>
</tbody>
</table>
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 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.

7/122 . . . . . . . [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]
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, C07H 21/00; nucleic acids C07H 21/00)

9/025 [Purification; Separation; Stabilisation; Desodorisation 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 without P—C bonds

9/062 [Organophosphorus without P-C bonds]

9/065 [Phosphoranes containing the structure P=O—N]

9/067 [Polyporphosphazenes containing the structure [P=O—N]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 aryllalkanes]

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)—Sn—(O), (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 acyclic 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 phosphoric acid rests]

9/1414 [with aryllalkanes]

9/1415 [Compounds containing the structure P—O—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 thio phosphatides

9/165 Ester of thio phosphoric 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 aryllalkanes]

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—(X = O, S, Se; n = 0, 1; x > 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]
Amides of acids of phosphorus

Esteramides

containing the structure P-N-N, e.g. azides,

Phosphorus triamides

characteristic

or a structure which is considered as

the amide moiety containing a substituent

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

[of hydroxyalkyl compounds]

[of hydroxyaryl compounds]

[containing the structure (RX)

(RR'N)P(=Y)-Z-(C)n-Z'-P(=Y)(XR)2 (X = O, S, NR; Y = O, S, electron pair; Z = O, S; Z' = O, S)]

[of aryalkanols]

[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)]

[Compounds containing the structure N-P(=X)n-S-(S)x-(X = O, S, Se; x = 1)]

[containing the structure N-P(=X)n-X-C(=X) (X = O, S, Se; n = 0, 1)]

[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 P(=X)n-N-acyl, P(=X)n-N-heteroatom, P(=X)n-N-CN (X = O, S, Se; n = 0, 1)]

[containing the structure P(=X)n-N-S (X = O, S, Se; n = 0, 1)]

[containing the structure P(=X)n-N-C(=X) (X = O, S, Se; n = 0, 1)]

[containing the structure P(=X)n-N-N (X = O, S, Se; n = 0, 1)]

[containing the structure P(=X)n-N-P (X = O, S, Se; n = 0, 1)]

[containing P-halide groups]

with one or more P—C bonds

Phosphonic acids R,P(=O)(OH);

Thiophosphonic acids [, i.e. R,P(=X)(XH) (X = S, Se)]

[Acyclic saturated acids which can have further substituents on alkyl]

[Acyclic unsaturated acids]

[Cycloaliphatic acids]

[Aromatic acids (P-C aromatic linkage)]

[Poly(thio)phosphinic acids]

[Acylalkanephosphonic acids, e.g. Ar-(CH2)n-P(=X)(XH) (X = O, S, Se; n = 1)]

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

[Pyrophosphinic acids; Phosphinic acid anhydrides]

Esters thereof

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

[Esters of acyclic saturated acids which can have further substituents on alkyl]

[Esters of acyclic unsaturated acids]

[Esters of cycloaliphatic acids]

[Esters of aromatic acids (P-C aromatic linkage)]

[Esters of poly(thio)phosphinic acids]

[Esters of arylalkanephosphinic acids]

[Esters of acids containing the structure -C(=X)-P(=X)(XH) or NC-P(=X)(XH), (X = O, S, Se)]

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

[Esters with hydroxyalkyl compounds]

[Esters with unsaturated acyclic alcohols]

[Esters with cycloaliphatic alcohols]

[Esters with alcohols]

[Esters with hydroxyalkyl compounds]

[Compounds containing the structure R2P(=X)-X-C(=X) (X = O, S, Se; n = 0, 1)]

[Compounds containing the structure R2P(=X)-X-CN (X = O, S, Se; n = 0, 1)]

[not used, see subgroups]
9/3808 . . . . [Acyclic saturated acids which can have further substituents on alkyl]
9/3813 . . . . [N-Phosphonomethyl]glycine; 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 . . . . [Cy cloaliphatic 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 ary lalkanephosphonic acids (C07F 9/4025 takes precedence)]
9/4059 . . . . . . [Compounds containing the structure (RY)2P(=X)(CH3)n-C(=O)-(CH3)m-Ar, (X = Y = O, S, Se; m>=1, n>=0)]
9/4062 . . . . . . [Esters of acids containing the structure -C(=X)-P(=X)(XR)2 or NC-P(=X)(XR)2, (X = O, S, Se)]
9/4065 . . . . . . [Esters of acids containing the structure -C(=X)-P(=X)(XR)2 (X = O, S, Se)]
9/4068 . . . . . . [Esters of pyrophosphonic acids; Esters of phosphonic acid anhydrides]
9/4071 . . . . . . [ester 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 ary lkanols]
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) (X, 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 ary lalkanephosphonic acids]
9/443 . . . . . . . . . . . . . [Amides of acids containing the structure -C(=Y)-P(=X)(XR)-N or NC-P(=X)(XR)-N ]
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 arylalkanols]
9/4457 . . . . . . . . . . . . . [Compounds containing the structure C-P(=X)(X-acyl)-N, C-P(=X)(X-heteroatom)-N or C-P(=X)(X-CN)-N (X, 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 . . . . . . . . . . . . . [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)]
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) (X = O, S, Se)]
9/4496 . . . . . . . . . . . . . [Compounds containing the structure P(=X)(N-N-) (X = O, S, Se)]
9/46 . . . . . . . . . . . . . Phosphinous acids R2P=O—OH; Thiophosphinous acids; Aminophosphines R2P-NH2 [including R3P(O)OH; derivatives thereof]
9/48 . . . . . . . . . . . . . Phosphonous acids R=P—OH; Thiophosphonic acids [including RPH(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 hydroxy aryl compounds]
9/4883 . . . . . . . . . . . . . [Amides or esteramides thereof, e.g. RP(NR2)2 or RP(XR)(NR2)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=X with X = O, S, Se or -P-Hal2]
9/5095 . . . . . . . . . . . . . [Separation; Purification; Stabilisation]
9/52 . . . . . . . . . . . . . . . . Halophosphines
9/53 . . . . . . . . . . . . . . . . Organo-phosphate oxides; Organophosphate thioxides
9/5304 . . . . . . . . . . . . . [Acrylic saturated phosphate oxides or thioxides]
9/5308 . . . . . . . . . . . . . [substituted by B, Si, P or a metal]
9/5312 . . . . . . . . . . . . . [substituted by a phosphorus atom (C07F 9/5329 takes precedence)]
9/5316 . . . . . . . . . . . . . [Unsaturated acyclic phosphate oxides or thioxides]
9/532 . . . . . . . . . . . . . . . . Cycloaliphatic phosphate oxides or thioxides
9/5325 . . . . . . . . . . . . . [Aromatic phosphate oxides or thioxides (P-C aromatic linkage)]
9/5329 . . . . . . . . . . . . . [Polyphosphate oxides or thioxides]
9/5333 . . . . . . . . . . . . . [Arylalkane phosphate oxides or thioxides (C07F 9/5329 takes precedence)]
9/5337 . . . . . . . . . . . . . [Phosphine oxides or thioxides containing the structure -C(=X)-P(=X) or NC-P(=X) (X = O, S, Se)]
9/5341 . . . . . . . . . . . . . [Organo-phosphate 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 having one nitrogen atom as the only ring hetero atom (C) (9/65049 takes precedence)

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

{Substituted by a phosphorus atom}

Acyclic unsaturated phosphonium compounds

Cycloaliphatic phosphonium compounds

Aromatic phosphonium compounds (P-C aromatic linkage)

Polyphosphonium compounds

Arylalkane phosphonium compounds

Compounds of the type “quasi-phosphonium”, e.g. (C)a-P-(Y)b wherein a+b=4, b>=1 and Y=heteroatom, generally N or O

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

[Having nitrogen and sulfur with or without oxygen atoms as the only ring hetero atom]

Having one nitrogen atom as the only ring hetero atom

{Seven-(or more) membered rings}

{Condensed with carboxyclic 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 carboxyclic rings or ring systems}

Five-membered rings

Six-membered rings

Pyridine rings

Hydrogenated pyridine rings

Quinoline or hydrogenated quinoline ring systems

Isoquinoline or hydrogenated isouquinoline ring systems

Acridine or hydrogenated acridine ring systems

Having two nitrogen atoms as the only ring hetero atoms

Five-membered rings

Having the nitrogen atoms in the positions 1 and 2

Condensed with carboxyclic rings or carboxyclic ring systems

Having the nitrogen atoms in positions 1 and 3

Condensed with carboxyclic rings or carboxyclic ring systems

Six-membered rings

Having the nitrogen atoms in the positions 1 and 4

Condensed with carboxyclic rings or carboxyclic ring systems

Having the nitrogen atoms in positions 1 and 3

Condensed with carboxyclic rings or carboxyclic ring systems

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

Having nitrogen and oxygen atoms as the only ring hetero atoms

Five-membered rings

Containing two nitrogen atoms

Having the two nitrogen atoms in positions 1 and 2

Having the two nitrogen atoms in positions 1 and 3

Condensed with carboxyclic rings or carboxyclic ring systems

Six-membered rings

Condensed with carboxyclic rings or carboxyclic ring systems

Having nitrogen and sulfur atoms with or without oxygen atoms, as the only ring hetero atoms

Five-membered rings

Containing two nitrogen atoms

Having the two nitrogen atoms in positions 1 and 2

Having the two nitrogen atoms in positions 1 and 3

Condensed with carboxyclic rings or carboxyclic ring systems

Six-membered rings

Condensed with carboxyclic rings or carboxyclic ring systems

Having oxygen atoms, with or without sulfur, selenium, or tellurium, as the only ring hetero atoms

The oxygen atom being part of a three-membered ring
9/65505 . . . . . [Phosphonic acids containing oxirane groups; esters thereof]
9/65507 . . . . . [condensed with carbocyclic rings or carbocyclic ring systems]
9/6551 . . . . . [the oxygen atom being part of a four-membered ring]
9/65512 . . . . . [condensed with carbocyclic rings or carbocyclic ring systems]
9/65515 . . . . . [the oxygen atom being part of a five-membered ring]
9/65517 . . . . . [condensed with carbocyclic rings or carbocyclic ring systems]
9/6552 . . . . . [the oxygen atom being part of a six-membered ring]
9/65522 . . . . . [condensed with carbocyclic rings or carbocyclic ring systems]
9/65525 . . . . . [the oxygen atom being part of a seven-(or more) membered ring]
9/65527 . . . . . [condensed with carbocyclic rings or carbocyclic ring systems]
9/6553 . . . . . 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 \[X \leftrightarrow Y\] 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 or ester thereof]
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-phosphoran]
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 exocyclic 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 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

Aromatic compounds 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