



>>Entry Name: Molybdophosphate ($\text{PMo}_{12}\text{O}_{40}^{3(-)}$), 9Cl

Synonym(s): Tetracosa- μ -oxododecaoxo[μ_{12} -phosphato(3-)]dodecamolybdate(3-), 11Cl. 12-Molybdophosphate(3-)

CAS Registry Number: 12379-13-4

$[\text{PMo}_{12}\text{O}_{40}]^{3(-)}$

Molecular Formula: $\text{Mo}_{12}\text{O}_{40}\text{P}^{3(-)}$

Molecular Weight: 1822.23

Accurate Mass: 1845.635234

Percentage Composition: Mo 63.18%; O 35.12%; P 1.70%

⁴⁽⁻⁾) [JRK39-X](#) for a description)

Use/Importance: A wide range of salts with metal cations is claimed in the patent literature for various catalyst compositions

>>Variant: α -form

Molecular Formula: $\text{Mo}_{12}\text{O}_{40}\text{P}$

Molecular Weight: 1822.23

Accurate Mass: 1845.635234

Percentage Composition: Mo 63.18%; O 35.12%; P 1.70%

>>Derivative: Tri-Na salt

CAS Registry Number: 1313-30-0

Molecular Formula: $\text{Mo}_{12}\text{Na}_3\text{O}_{40}\text{P}$

Molecular Weight: 1891.199

Percentage Composition: Mo 60.88%; Na 3.65%; O 33.84%; P 1.64%

Use/Importance: Claimed as catalyst for CH_4 oxidation; polarographic detn. of Ti; humidity sensor

Physical Description: Deliquescent solid + *ca.* $6\text{H}_2\text{O}$

Fluka: 79558

>>Derivative: Di-Na, H compd.

CAS Registry Number: 55624-58-3

Molecular Formula: $\text{HMo}_{12}\text{Na}_2\text{O}_{40}\text{P}$

Molecular Weight: 1869.217

Percentage Composition: H 0.05%; Mo 61.59%; Na 2.46%; O 34.24%; P 1.66%

Physical Description: Greenish microcryst. + $14\text{H}_2\text{O}$ (Et_2O aq.)

>>Derivative: Tri- NH_4 salt

CAS Registry Number: 12026-66-3

Molecular Formula: $\text{H}_{12}\text{Mo}_{12}\text{N}_3\text{O}_{40}\text{P}$

Molecular Weight: 1876.345

Percentage Composition: H 0.64%; Mo 61.36%; N 2.24%; O 34.11%; P 1.65%

Source/Synthesis: Synth. from $\text{NH}_4[\text{VO}_3] + \text{Na}_2\text{MoO}_4 + \text{H}_3\text{PO}_4$ at pH 4

Physical Description: Dark green cryst.

Solubility: Sol. alkali; sl. sol. H_2O

Other Data: Dec. on heating

>>Derivative: Tris-tetrabutylammonium salt

CAS Registry Number: 51542-98-4

Molecular Formula: $\text{C}_{48}\text{H}_{108}\text{Mo}_{12}\text{N}_3\text{O}_{40}\text{P}$

Molecular Weight: 2549.631

Percentage Composition: C 22.61%; H 4.27%; Mo 45.15%; N 1.65%; O 25.10%; P 1.21%

Source/Synthesis: Synth. by ion exchange from acid

Physical Description: Yellow cryst. (Me_2CO)

Solubility: Sol. MeCN

Other Data: With PPh_3 gives Mo^{V} dimeric or tetrameric complexes

References:

Sanchez, C. *et al.*, *J.A.C.S.*, 1982, **104**, 3194, (*synth, ir, electrochem*)

Pope, M.T., *Heteropoly and Isopoly Oxometalates*, Springer-Verlag, 1983, 72, (*rev, bibl*)

Rocchiccioli-Deltcheff, C. *et al.*, *Inorg. Chem.*, 1983, **22**, 207, (*synth, α -form, β -form, ir, Raman, electrochem, thermal anal*)

Piepgress, H. *et al.*, *Chem. Comm.*, 1989, 10, (*O-17 nmr*)

Kawafune, I. *et al.*, *Inorg. Chim. Acta*, 1991, **188**, 33-39, (*reactions*)

Xu, Y. *et al.*, *Acta Cryst. C*, 1998, **54**, 9-11, (*synth, cryst struct*)