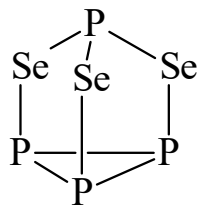
>>**Entry Name: Phosphorus selenide (P_4Se_3)**
Synonym(s): Tetraphosphorus triselenide. 3,5,7-Triselena-1,2,4,6-tetraphosphatricyclo[2.2.1.$0^{2,6}$]heptane



CAS Registry Number: 1314-86-9

Molecular Formula: P_4Se_3
Molecular Weight: 360.775
Accurate Mass: 363.644608
Percentage Composition: P 34.34%; Se 65.66%

`red' form Mp 300° described in 1902 (J. Meyer). Interatomic dimensions. P_{ap}-Se 224.9, P_{base}-Se 223.3, P_b-P_b 222.8 pm, PPP 60°, SeP_{ap}Se 99.2°, SePP 105.6°, P_{ap}SeP_b 100.4°
Source/Synthesis: Synth. from P + Se or from red P + P_4Se_{10}
Physical Description: Yellow to red-orange (orange-brown) needles (C_6H_6). Slowly liberates H_2Se in air
Melting Point: Mp 246° (242°)
Boiling Point: Bp 360-400°
Solubility: Sol. CS_2, warm $CHCl_3$, CCl_4, Me_2CO, C_6H_6
Other Data: Aq. alkali → alkali polyselenides + PH_3

References:

Keulen, E. *et al.*, *Acta Cryst.*, 1959, **12**, 323, *(synth, cryst struct)*
Gmelin Handbook Inorg. Chem., *Syst. No*. 16, 1965, 606, *(rev, bibl)*
Dwek, R.A. *et al.*, *J.C.S.(A)*, 1969, 935, *(P-31 nmr)*
Sheldrick, G.M. *et al.*, *J.C.S.(A)*, 1971, 243, *(ms)*
Mellor Compr. Treat. Inorg. Theor. Chem., 1971, **8/III**, 246; 373, *(rev)*
Monteil, Y. *et al.*, *Can. J. Chem.*, 1974, **52**, 2190, *(synth)*
Brauer, G.*, Handbuch Prap. Anorg. Chem.*, 3rd edn., Ferdinand Enke Verlag, 1975, **1**, 553, *(synth)*
Kim, E.I. *et al.*, *Izv. Akad. Nauk SSSR, Neorg. Mater.*, 1976, **12**, 1021; *Inorg. Mater. (Engl. Transl.)*, 1976, **12**, 856, *(synth)*
Blachnik, R. *et al.*, *Z. Anorg. Allg. Chem.*, 1979, **457**, 91; 1985, **525**, 150; 1986, **532**, 90, *(P-31 nmr, props)*
Bues, W. *et al.*, *Z. Naturforsch., B*, 1980, **35**, 1063, *(ir, Raman)*
Di Vaira, M. *et al.*, *J. Organomet. Chem.*, 1983, **258**, 373, *(cryst struct, complex)*
Burns, G.R. *et al.*, *J. Phys. Chem. Solids*, 1986, **47**, 1049, *(Raman)*
Tattershall, B.W. *et al.*, *J.C.S. Dalton*, 1988, 2055, *(P-31 nmr, Se-77 nmr)*
Lathrop, D. *et al.*, *J. Non-Cryst. Solids*, 1988, **106**, 417, *(P-31 nmr)*
Burns, G.R. *et al.*, *J. Raman Spectrosc.*, 1988, **19**, 345, *(Raman)*
Lewis, R.J.*, Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold*, 1992, TEC000
Bretherick, L.*, Handbook of Reactive Chemical Hazards, 4th edn., Butterworths*, 1990, 1441