



>>Entry Name: Phosphorus bromide (PBr₅), 8Cl

Synonym(s): Pentabromophosphorane, 9Cl. Phosphorus pentabromide. Pentabromophosphorus(V). Tetrabromophosphonium bromide

CAS Registry Number: 7789-69-7

[PBr₄⁽⁺⁾][Br⁽⁻⁾]

Molecular Formula: Br₅P

Molecular Weight: 430.494

Accurate Mass: 425.665442

Percentage Composition: Br 92.81%; P 7.19%

Source/Synthesis: Synth. by reaction of P or PBr₃ + Br₂

Use/Importance: Commercially available brominating agent

Physical Description: Reddish yellow rhombohedral cryst. (PhNO₂) at r.t. Dec. at b.p. with dissoc. of vapour into PBr₃ + Br₂

Boiling Point: Bp 106° dec.

Other Data: $\Delta H_f -46 \text{ kJ mol}^{-1}$

Hazard & Toxicity: Corrosive, poison

Aldrich: 22673-4

>>Derivative: Br₂ adduct (1:1)

References:

Gmelin Handbook Inorg. Chem., Syst. No. 16, 1965, 499, (rev, bibl)

Wieker, W. et al., Z. Naturforsch., B, 1966, **21**, 1103, (P-31 nmr)

Fieser and Fieser's Reagents for Organic Synthesis, Wiley, 1967, **1**, 865, (use)

Gabes, W. et al., Acta Cryst. B, 1970, **26**, 443, (cryst struct)

Dhamelincourt, P. et al., Bull. Soc. Chim. Fr., 1970, 2470, (Raman)

Mellor Compr. Treat. Inorg. Theor. Chem., 1971, **8/III**, 522; 1147, (rev)

Gabes, W. et al., Rec. Trav. Chim. (J. R. Neth. Chem. Soc.), 1971, **90**, 157, (Raman)

Kravchenko, E.A. et al., Zh. Neorg. Khim., 1975, **20**, 2556; Russ. J. Inorg. Chem. (Engl. Transl.), 1975, **20**, 1416, (nqr)

Finch, A. et al., Chem. Comm., 1981, 812, (Raman, struct)

Lewis, R.J., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, PHR250