



>>Entry Name: Barium phosphate (Ba₃(PO₄)₂)

Synonym(s): Barium phosphate (3:2), 9Cl, 8Cl. Barium orthophosphate

CAS Registry Number: 13517-08-3

Extra CAS Registry Numbers(s): 13847-18-2

Ba₃(PO₄)₂

Molecular Formula: Ba₃O₈P₂

Molecular Weight: 601.924

Accurate Mass: 603.62254

Percentage Composition: Ba 68.44%; O 21.26%; P 10.29%

General Statement: Exists in low- and high-temp. stable forms. Also known in vitreous form

Source/Synthesis: Synth. from BaCO₃ + MH₂PO₄ at 1100°; Ba(OH)₂ + H₃PO₄ at 100°; BaCl₂ + KH₂PO₄ aq. When prepared at pH 9-11, product is apatitic in struct.

Melting Point: Mp 1620°

Other Data: With HCl(g) at 700°, gives Barium chloroapatite. Said to be hydrolysable at alk. pH → Barium hydroxyapatite. A phase transition occurs at 715°. β-form stable at >1390°: it can be supercooled considerably but cannot be obt. at r.t. by quenching. ΔH_f^o (per Ba₃(PO₄)₂) −4088 kJ mol^{−1}

>>Derivative: Monohydrate

CAS Registry Number: 87896-20-6

Other Data: Dehydrates at ca. 360°

References:

Eanes, E.D. *et al.*, *Calcif. Tissue Res.*, 1968, **2**, 38, (*synth, props*)

Mooney, R.W. *et al.*, *J. Inorg. Nucl. Chem.*, 1968, **30**, 1669, (*synth, ir*)

Hoekstra, A.H. *et al.*, *J. Inorg. Nucl. Chem.*, 1970, **32**, 2445, (*synth*)

Kreidler, E.R., *J. Electrochem. Soc.*, 1971, **118**, 923, (*props*)

Tarte, P. *et al.*, *Spectrochim. Acta A*, 1972, **28**, 5, (*ir, Raman*)

Lazarev, A.N. *et al.*, *Izv. Akad. Nauk SSSR, Neorg. Mater.*, 1976, **12**, 1240; *Inorg. Mater. (Engl. Transl.)*, 1976, **12**, 1032, (*ir, Raman*)

Sarawadekar, R.G. *et al.*, *Thermochim. Acta*, 1983, **67**, 333, (*ir, props*)

Lopatin, S.I. *et al.*, *Dokl. Akad. Nauk SSSR, Ser. Khim.*, 1986, **287**, 380; *Dokl. Chem. (Engl. Transl.)*, 1986, **287**, 249, (*ms*)