>>**Entry Name: Barium metaphosphate,** 9CI, 8CI

CAS Registry Number: 13762-83-9
Extra CAS Registry Numbers(s): 13847-18-2
$[Ba(PO_3)_2]_x$

Molecular Formula: BaO_6P_2
Molecular Weight: 295.271
Accurate Mass: 295.822246
Percentage Composition: Ba 46.51%; O 32.51%; P 20.98%
General Statement: Known in amorphous, cryst. and vitreous forms
Source/Synthesis: Synth. from $BaCO_3$ + $(NH_4)_2HPO_4$ at 465-500°; by heating $Ba(H_2PO_4)_2$ at >500°. Both methods yield amorphous salt which cryst. at >=600°
Use/Importance: Component of optical glasses
Melting Point: Mp 875°

Aldrich: 43391-8
Fluka: 11789
Sigma: B2917

>>**Variant:** α-form

Molecular Formula: BaO_6P_2
Molecular Weight: 295.271
Accurate Mass: 295.822246
Percentage Composition: Ba 46.51%; O 32.51%; P 20.98%
General Statement: The existence of this phase has been questioned
Source/Synthesis: Stated to be formed from β-form at 785°, and from $BaCO_3$ + Na_2CO_3 + H_3PO_4 at 380°
Physical Description: Slender plates or lozenge-shaped cryst.

>>**Variant:** β-form

Molecular Formula: BaO_6P_2
Molecular Weight: 295.271
Accurate Mass: 295.822246
Percentage Composition: Ba 46.51%; O 32.51%; P 20.98%
General Statement: Orthorhombic. P-O 143-165 pm and OPO 95-122°
Source/Synthesis: Synth. from $BaCO_3$ + H_3PO_4 at 350°
Physical Description: Colourless prisms with pyramidal tetragonal ends
Other Data: At 785°, reversibly yields the α-form

>>**Variant:** γ-form

Molecular Formula: BaO_6P_2
Molecular Weight: 295.271
Accurate Mass: 295.822246
Percentage Composition: Ba 46.51%; O 32.51%; P 20.98%
General Statement: Monoclinic. Chains formed of 4 PO_4 tetrahedra sharing corners with P-O 147-163 pm, OPO 97-120°. $Ba^{2(+)}$ ions are octa coordinated by oxygens in an irregular dodecahedron with Ba-O 269-306 pm
Source/Synthesis: Synth. by the rapid dehydration of $Ba(H_2PO_4)_2$ at 500-600°

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