



>>Entry Name: Barium perchlorate (Ba(ClO₄)₂)

Synonym(s): Barium chlorate(VII). Perchloric acid, barium salt, 8Cl. Chloric(VII) acid, barium salt

CAS Registry Number: 13465-95-7

Ba(ClO₄)₂

Molecular Formula: BaCl₂O₈

Molecular Weight: 336.228

Accurate Mass: 335.802256

Percentage Composition: Ba 40.84%; Cl 21.09%; O 38.07%

Source/Synthesis: Prepd. by solid state reaction of Ba(NO₃)₂ with (NO)ClO₄. Neutralisation of BaCO₃ with aq. HClO₄ leads to the trihydrate

Use/Importance: Commercially available. Effective desiccant. Used in pyrotechnic compositions as both oxidiser and colourant

Physical Description: Colourless hexagonal cryst. Undergoes polymorphic transitions at 284° and 350°. Dec. on heating forming BaCl₂ + O₂

Melting Point: Mp 505°

Solubility: V. sol. H₂O (198.5 g per 100 cm³ at 25°; 562.3 g per 100 cm³ at 100°); v. sol. EtOH

Other Data: ΔH_f° -800 kJ mol⁻¹; ΔG_f° -535 kJ mol⁻¹; S° 249 J K⁻¹ mol⁻¹

Hazard & Toxicity: Oxidiser. Potentially explosive when mixed with organic or organometallic compds. Highly toxic

Aldrich: 46366-3

Fluka: 11795

Sigma: B5260

>>Derivative: Monohydrate

CAS Registry Number: 78914-14-4

Molecular Formula: BaCl₂H₂O₉

Molecular Weight: 354.243

Percentage Composition: Ba 38.77%; Cl 20.02%; H 0.57%; O 40.65%

Source/Synthesis: Formed during thermal dehydration of trihydrate

>>Derivative: Trihydrate

CAS Registry Number: 10294-39-0

Molecular Formula: BaCl₂H₆O₁₁

Molecular Weight: 390.273

Accurate Mass: 389.833951

Percentage Composition: Ba 35.19%; Cl 18.17%; H 1.55%; O 45.09%

Use/Importance: Commercially available

Physical Description: Colourless hexagonal cryst., dec. on heating with H₂O loss

Solubility: V. sol. H₂O (198 g per 100cm³ at 33°), EtOH (124 g per 100 cm³ at 62°)

Aldrich: 34239-4

Fluka: 11800

References:

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Jacobs, P.W.M. *et al.*, *Combust. Flame*, 1971, **17**, 125; *CA*, 1972, **76**, 88022, (*thermal dec*)

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