



>>Entry Name: Gadolinium(III) perchlorate

Synonym(s): Gadolinium triperchlorate

CAS Registry Number: 14017-52-8

Related CAS Registry Numbers(s): 17374-77-5 64777-89-5

Gd(ClO₄)₃

Molecular Formula: Cl₃GdO₁₂

Molecular Weight: 455.601

Accurate Mass: 454.769635

Percentage Composition: Cl 23.34%; Gd 34.51%; O 42.14%

General Statement: Prob. has polymeric layered struct. related to UCl₃

Source/Synthesis: Synth. from hydrates at 200-250° in Ar

Physical Description: White solid

Solubility: Sol. H₂O, MeOH, DMSO

Other Data: Dec. above 350° largely to GdOCl. Several hydrates known

Hazard & Toxicity: Poss. explosive hazard, esp. with organic matter

Aldrich: 44386-7

>>Derivative: Hexahydrate

CAS Registry Number: 61565-05-7

Molecular Formula: Cl₃GdH₁₂O₁₈

Molecular Weight: 563.692

Accurate Mass: 562.833025

Percentage Composition: Cl 18.87%; Gd 27.90%; H 2.15%; O 51.09%

Physical Description: Hygroscopic white cryst.

Solubility: Sol. H₂O, EtOH

Other Data: Prob. contains [Gd(OH₂)₆]³⁽⁺⁾ ions

>>Derivative: Octahydrate

CAS Registry Number: 15201-56-6

Molecular Formula: Cl₃GdH₁₆O₂₀

Molecular Weight: 599.723

Accurate Mass: 598.854155

Percentage Composition: Cl 17.73%; Gd 26.22%; H 2.69%; O 53.36%

Physical Description: Colourless cryst.

Solubility: Sol. H₂O

Other Data: Loses H₂O above 90°

References:

Vincentini, G. *et al.*, *Chem. Ber.*, 1961, **94**, 1153, (*synth*)

Moeller, T. *et al.*, *J. Inorg. Nucl. Chem.*, 1965, **27**, 477, (*synth*)

Bel'kova, M.M. *et al.*, *Tr. Tomsk. Gos. Univ., Ser. Khim.*, 1965, **185**, 32; *CA*, **66**, 34343, (*synth, dec*)

Bel'kova, M.M. *et al.*, *Zh. Neorg. Khim.*, 1965, **10**, 1374; *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1965, **10**, 747, (*synth, dta*)

Krishnamurthy, V.N. *et al.*, *Z. Anorg. Allg. Chem.*, 1967, **349**, 220, (*synth, ir*)

Forsberg, J.H. *et al.*, *Inorg. Chem.*, 1969, **8**, 883, (*synth*)

Volk, F. *et al.*, *Explosivstoffe*, 1970, **18**, 73, (*haz, dec*)

Birnbaum, E.R., *Inorg. Chem.*, 1973, **12**, 379, (*synth*)

Gmelin Handbook Inorg. Chem., Syst. No. 39, 1977, **C5**, 83; 115, (*rev*)

Favier, F. *et al.*, *J.C.S. Dalton*, 1992, 1997, (*synth, struct, ir, Raman*)

Wickleder, M.S. *et al.*, *Z. Anorg. Allg. Chem.*, 1999, **625**, 309-312, (*synth, xrd, anhyd*)