



>>Entry Name: Gallium(III) oxide (Ga₂O₃)

Synonym(s): Digallium trioxide. Gallium sesquioxide

CAS Registry Number: 12024-21-4

Extra CAS Registry Numbers(s): 12653-62-2

Ga₂O₃

Molecular Formula: Ga₂O₃

Molecular Weight: 187.444

Accurate Mass: 185.835905

Percentage Composition: Ga 74.39%; O 25.61%

General Statement: α, β, γ, δ and ε modifications descr. α-form isostructural with corundum

Use/Importance: Commercially available. Selective catalyst for hydrogen exchange

Physical Description: White solid

Aldrich: 34297-1

Fluka: 48540

Sigma: G4260

>>Variant: α-form

Molecular Formula: Ga₂O₃

Molecular Weight: 187.444

Accurate Mass: 185.835905

Percentage Composition: Ga 74.39%; O 25.61%

Source/Synthesis: Formed at >6.5 x10⁴ atm.

Physical Description: White cryst. insulator

Other Data: Forms solid soln. with Fe₂O₃ >2.3 x10⁴ atm. at 1200°. Forms glasses with La₂O₃. Band gap, *E_g* 4.8 eV

>>Variant: β-form

Molecular Formula: Ga₂O₃

Molecular Weight: 187.444

Accurate Mass: 185.835905

Percentage Composition: Ga 74.39%; O 25.61%

General Statement: Ga at octahedral sites may be replaced by transition metals

Physical Description: White cryst.

References:

Foster, L.M. *et al.*, *J.A.C.S.*, 1951, **73**, 1590, (*synth*)

Roy, R. *et al.*, *J.A.C.S.*, 1952, **74**, 719, (*synth*)

Kauer, E. *et al.*, *Z. Naturforsch., A*, 1958, **13**, 531, (*optical props*)

Geller, S. *et al.*, *J. Chem. Phys.*, 1960, **33**, 676, (*cryst struct, β-form*)

Tippins, H.H., *Phys. Rev.*, 1965, **140**, 316, (*optical props*)

Burns, R.P. *et al.*, *J. Chem. Phys.*, 1966, **44**, 3307, (*ms*)

Marezio, M. *et al.*, *J. Chem. Phys.*, 1967, **46**, 1862, (*cryst struct, α-form*)

Prewitt, C.T. *et al.*, *Inorg. Chem.*, 1969, **8**, 1985, (*cryst struct, α-form*)

Gromakov, S.D. *et al.*, *Russ. J. Phys. Chem. (Engl. Transl.)*, 1972, **46**, 91, (*props*)

McGuire, G.E. *et al.*, *Inorg. Chem.*, 1973, **12**, 2450, (*pe*)

Fieser and Fieser's Reagents for Organic Synthesis, Wiley, 1974, **4**, 241, (*use*)

Brauer, G., *Handbuch Prap. Anorg. Chem.*, 3rd edn., Ferdinand Enke Verlag, 1975, **2**, 856, (*synth, α- and β-forms*)

Loireau-Lozac'h, A.M. *et al.*, *Mater. Res. Bull.*, 1976, **11**, 1489; 1977, **12**, 881, (*phase diagram, glasses*)