



>>Entry Name: Hafnium(IV) fluoride (HfF₄), 11Cl

Synonym(s): Hafnium tetrafluoride

CAS Registry Number: 13709-52-9

Related CAS Registry Numbers(s): 60816-55-9

HfF₄

Molecular Formula: F₄Hf

Molecular Weight: 254.484

Accurate Mass: 255.940157

Percentage Composition: F 29.86%; Hf 70.14%

General Statement: The usual material is monoclinic but a tetragonal form may be isolated from the melt

Source/Synthesis: Synth. from Hf and F₂ or by dec. of (NH₄)₂HfF₆ above 500°

Use/Importance: Used in a wide variety of glasses

Physical Description: White, readily hydrol. solid (by subl.)

Melting Point: Mp 1025°

Other Data: ΔH_f° -1930 kJ mol⁻¹. Ir ν 668, 190 cm⁻¹

Hazard & Toxicity: Forms Hf on hydrol.

Aldrich: 39986-8

Fluka: 51305

>>Derivative: Trihydrate

Synonym(s): Diaquatetrafluorohafnium monohydrate

CAS Registry Number: 14929-53-4

Source/Synthesis: Obt. by dissolving HfO₂ in 40% HF followed by evapn. and cryst. from aq. HF

Use/Importance: Component of glasses

Physical Description: White solid (aq. HF)

Solubility: Sol. aq. HF

Other Data: 8-Coord. at Hf (distorted sq. antiprism or dodecahedron); pairs of F are shared to form a chain. 2H₂O are adjacent, the third is not coord. A monohydrate has also been reported

References:

von Hevesey, G. *et al.*, *Z. Anorg. Allg. Chem.*, 1934, **221**, 161, (*synth*)

Zachariasen, W.H., *Acta Cryst.*, 1949, **2**, 388, (*cryst struct*)

Greenberg, E. *et al.*, *J. Phys. Chem.*, 1962, **66**, 1345, (*synth*)

Hall, D. *et al.*, *J. Inorg. Nucl. Chem.*, 1971, **33**, 2395, (*synth, cryst struct, trihydrate*)

Korenev, Yu.M. *et al.*, *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1972, **17**, 623, (*polymorphs*)