



>>Entry Name: **Hafnium chloride (HfCl₄)**

Synonym(s): Hafnium tetrachloride

CAS Registry Number: 13499-05-3

Related CAS Registry Numbers(s): 37230-84-5

HfCl₄

Molecular Formula: Cl₄Hf

Molecular Weight: 320.301

Accurate Mass: 319.821953

Percentage Composition: Cl 44.27%; Hf 55.73%

General Statement: Solid state struct. is not known; in the gas phase the molecule is tetrahedral

Source/Synthesis: Manuf. by reaction of HfO₂ and C pellets with Cl₂ at 900°. Synth. from Hf and molten PbCl₂

Physical Description: Colourless, mod. volatile solid (v.p. =400 mm Hg at 300°)

Melting Point: Mp 432-434°

Other Data: Numerous processes (mostly distillation) are known for separating HfCl₄ from ZrCl₄. $\Delta H_f^\circ -900 \text{ kJ mol}^{-1}$

Aldrich: 25820-2

Fluka: 51302

>>**Derivative:** Urea complex

see Tetrachloro(urea-O)hafnium(IV), [HVW13-Z](#)

>>**Derivative:** Bis-THF complex

see Tetrachlorobis(tetrahydrofuran)hafnium(IV), [HVW08-B](#)

>>**Derivative:** Bis-thiourea complex

see Tetrachlorobis(thiourea-S)hafnium(IV), [HVW09-C](#)

>>**Derivative:** Phosphoryl chloride complex

see Tetrachloro(phosphoryl chloride-O)hafnium(IV), [HVW10-W](#)

References:

U.S. Pat., 1966, 3 293 005; *CA*, **66**, 39439n, (*manuf*)

Brauer, G., *Handbuch Prap. Anorg. Chem.*, 3rd edn., Ferdinand Enke Verlag, 1975, **2**, 1357, (*synth*)

Thomas, W. *et al.*, *J. Inorg. Nucl. Chem.*, 1976, **38**, 2227, (*synth*)

Girichev, G.V. *et al.*, *Zh. Strukt. Khim.*, 1981, **22**, 65; *CA*, **96**, 110572, (*ed, gas phase*)

Vasil'ev, V.P. *et al.*, *Zh. Neorg. Khim.*, 1998, **43**, 458-461; *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1998, **43**, 394-397, (*thermodyn*)

Lewis, R.J., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, HAC800, (*tox*)