



>>Entry Name: Uranium(VI) fluoride (UF₆)

Synonym(s): Uranium hexafluoride

CAS Registry Number: 7783-81-5

Related CAS Registry Numbers(s): 23243-55-2

UF₆ (O_h)

Molecular Formula: F₆U

Molecular Weight: 352.019

Accurate Mass: 352.041202

Percentage Composition: F 32.38%; U 67.62%

Source/Synthesis: Synth. by reaction of UF₄ or UO₂ with F₂ at elevated temp., or UO₂ + KrF₂ (in anhyd. HF) at r.t.

Use/Importance: Used to separate ²³⁵U and ²³⁸U isotopes by gaseous diffusion. Good fluorinating agent. Global need 30,000 tonnes in 1985

Physical Description: Colourless cryst., rapidly hydrol. by H₂O forming UO₂F₂ + HF

Melting Point: Mp 64°

Boiling Point: Subl. 56.5°

Solubility: Dec. by H₂O, EtOH, Et₂O. Sol. CCl₄, CHCl₃

Other Data: V.p. 115 mm (25°); Ir ν_{U-F} 624; Raman ν_{U-F} 667 cm⁻¹

Hazard & Toxicity: Strong ox. agent

References:

Kimura, M. *et al.*, *J. Chem. Phys.*, 1968, **48**, 4007, (*ed*)

Claasen, H.H. *et al.*, *J. Chem. Phys.*, 1970, **53**, 341

Brauer, G., *Handbuch Prap. Anorg. Chem.*, 3rd edn., Ferdinand Enke Verlag, 1975, **2**, 1197, (*synth*)

Taylor, J.C. *et al.*, *J. Solid State Chem.*, 1975, **14**, 378, (*nd*)

Taylor, J.C. *et al.*, *Coord. Chem. Rev.*, 1976, **20**, 197, (*rev*)

Levy, J.H. *et al.*, *J.C.S. Dalton*, 1976, 219, (*nd*)

Bacher, W. *et al.*, *Chem.-Ztg.*, 1982, **106**, 117, (*rev*)

Zeet, E.P. *et al.*, *Chem. Phys. Lett.*, 1983, **100**, 24, (*nmr*)

Levy, J.C. *et al.*, *J. Fluorine Chem.*, 1983, **23**, 29, (*struct*)

Maartensson, N. *et al.*, *J. Chem. Phys.*, 1984, **80**, 5458

Aldridge, J.P. *et al.*, *J. Chem. Phys.*, 1985, **83**, 34

Asprey, L.B. *et al.*, *Inorg. Chem.*, 1986, **25**, 670-672, (*synth*)

Downs, A.J. *et al.*, *J.C.S. Dalton*, 1986, 1289, (*pe*)

Lewis, R.J., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, UOJ000; UOS000