



**>>Entry Name: Hexafluoroantimonic(V) acid**

**Synonym(s):** Hydrogen hexafluoroantimonate(1-), 9Cl, 8Cl

**CAS Registry Number:** 16950-06-4

**Related CAS Registry Numbers(s):** 72121-43-8

HSbF<sub>6</sub>

**Molecular Formula:** F<sub>6</sub>HSb

**Molecular Weight:** 236.748

**Accurate Mass:** 235.902064

**Percentage Composition:** F 48.15%; H 0.43%; Sb 51.43%

**Source/Synthesis:** Synth. from SbF<sub>5</sub> + HF or HSO<sub>3</sub>F; or from SbF<sub>3</sub> + F<sub>2</sub> + HF

**Use/Importance:** A \*'Super' acid\*. Causes C migration in org. compds.

**Aldrich:** 17510-2

**>>Derivative:** Pentahydrate, hydrofluoride

**CAS Registry Number:** 77152-87-5

**Use/Importance:** Commercially available

**Other Data:** Formally referred to as a hexahydrate. Clathrate-like hydrate. Each SF<sub>6</sub><sup>(-)</sup> ion occupies a tetradecehedral cage in fully H-bonded lattice with H<sub>2</sub>O, H<sub>3</sub>O<sup>(+)</sup>, and HF randomly distributed. Cubic cell

**>>Derivative:** Hexahydrate

**CAS Registry Number:** 72121-43-8

**Use/Importance:** Commercially available

**Other Data:** Hexagonal cell. Polyhedral clathrate hydrate

**Aldrich:** 33917-2

**>>Derivative:** Py salt

**Molecular Formula:** C<sub>5</sub>H<sub>6</sub>F<sub>6</sub>NSb

**Molecular Weight:** 315.849

**Accurate Mass:** 314.944263

**Percentage Composition:** C 19.01%; H 1.91%; F 36.09%; N 4.43%; Sb 38.55%

**Physical Description:** Colourless cryst.

**Other Data:** Rhombohedral cell. F atoms octahedrally arranged about Sb, with Sb-F 187.1 pm, FSbF 86.2°

**>>Derivative:** Aniline salt

**CAS Registry Number:** 23653-46-5

**Molecular Formula:** C<sub>6</sub>H<sub>8</sub>F<sub>6</sub>NSb

**Molecular Weight:** 329.876

**Accurate Mass:** 328.959913

**Percentage Composition:** C 21.85%; H 2.44%; F 34.56%; N 4.25%; Sb 36.91%

**Use/Importance:** V. efficient cationic polym. initiator for alkenes

**Physical Description:** White cryst.

**Melting Point:** Mp 195-203°

**Solubility:** Insol. C<sub>6</sub>H<sub>6</sub>

**Other Data:** Non-hygroscopic and easily handled in air

**References:**

- Copeland, R.H. *et al.*, *J. Phys. Chem.*, 1966, **70**, 1288, (*deriv, cryst struct*)  
*Netherlands Pat.*, 1966, 6 509 095; *CA*, **66**, 96990, (*manuf*)  
Commeyras, A. *et al.*, *J.A.C.S.*, 1969, **91**, 2929, (*synth, F-19 nmr, Raman*)  
Harris, J.J. *et al.*, *J. Polym. Sci., Part A*, 1972, **10**, 1165, (*deriv, use*)  
Brouwer, D.M. *et al.*, *Rec. Trav. Chim. (J. R. Neth. Chem. Soc.)*, 1972, **91**, 895, (*synth, props*)  
Davidson, D.W. *et al.*, *Inorg. Chem.*, 1981, **20**, 2013, (*cryst struct*)  
*Fieser and Fieser's Reagents for Organic Synthesis*, Wiley, 1982, **10**, 195, (*use*)  
Wiebcke, M. *et al.*, *Z. Kristallogr.*, 1986, **177**, 291; 1988, **183**, 1, (*cryst struct*)