



# Super Conductor Materials, Inc.

391 Spook Rock Industrial Park, Suffern, NY 10901 · 845.368.0240 · www.scm-inc.com

Chemtrec: (800) 424-9300

Poison Center: (800) 562-8236

Revision Date: January 8<sup>th</sup>, 2019

## **SAFETY DATA SHEET**

Identity: Ytterbium Flouride

Formula: YbF<sub>3</sub>

### SECTION I - GENERAL INFORMATION

Manufacturer: Super Conductor Materials, Inc.

The information below is believed to be accurate and represents the best information available to Super Conductor Materials, Inc. However, SCM makes no warranty, expressed or implied with respect to such information and assumes no liability resulting from its use.

### SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Molecular weight: 230.04

CAS #	OSHA PEL	ACGIH TLV	%
13760-80-0	2.5 mg(F)/m <sup>3</sup>	2.5 mg(F)/m <sup>3</sup>	100.0%

### SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point:

Vapor Pressure (vs. air or mmHg): N/A

Melting Point: 1157°C

Specific Gravity (Water=1): 8.2

Evaporation Rate: N/A

Flash Point: N/A

Solubility in water: Insoluble

*Appearance and odor:* Gray to white powder and pieces, no odor

### SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

*Method Used:* Unknown

*Explosive Limits:* LEL: N/A

UEL: N/A

*Extinguishing Media:* Use suitable extinguishing agent for surrounding material and type of fire

*Special Fire Fighting Procedures:* Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

*Unusual Fire and Explosion Hazards:* When heated to decomposition or comes in contact with acids/acid fumes, Ytterbium fluoride may emit toxic fumes of fluorine, hydrogen fluoride vapors and fluorine gas. Ytterbium fluoride is hygroscopic.

### SECTION V - REACTIVITY DATA

*Stability:* Stable

*Conditions to Avoid (instability):* None



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*Incompatibility (Materials to avoid):* Acids

*Hazardous Decomposition or Byproducts:* Fumes of fluorine, hydrogen fluoride, fluorine gas and oxides of Ytterbium.

*Hazardous Polymerization:* Will not occur

*Conditions to avoid (hazardous polymerization):* None

### SECTION VI - HEALTH HAZARD DATA

*Routes of entry:* Inhalation? Yes   Ingestion? Yes   Eyes? Yes   Skin? Yes   Other? No

To the best of our knowledge the chemical, physical and toxicological properties of ytterbium fluoride have not been thoroughly investigated and recorded.

Ytterbium is considered a rare earth metal. These metals are moderately to highly toxic. The symptoms of toxicity of the rare earth elements include writhing, ataxia, labored respiration, walking on the toes with arched back and sedation. The rare earth elements exhibit low toxicity by ingestion exposure. However, the intraperitoneal route is highly toxic while the subcutaneous route is poison to moderately toxic. The production of skin and lung granulomas after exposure to them requires extensive protection to prevent such exposure.

Inorganic fluorides are generally highly irritating and toxic. Chronic fluorine poisoning, or "fluorosis," occurs among miners of cryolite, and consists of sclerosis of the bones, caused by fixation of the calcium by fluorine. There may also be some calcification of the ligaments. The teeth are mottled, and there is osteosclerosis and ostemalacia. Large doses can cause very severe nausea, vomiting, diarrhea, aggravate attacks of asthma and severe bone changes, making normal movements painful. Some signs of pulmonary fibrosis are noted. Some enzyme system effects are reported. Irritants to the eyes, skin and mucous membranes. Loss of weight, anorexia, anemia, wasting and cachexia and dental defects are among the common findings in chronic fluorine poisoning. There may be an eosinophilia and impairment of growth in young workers. Symptoms of intoxication include gastric, intestinal, circulatory, respiratory and nervous complaints and rashes. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

#### *Signs and Symptoms of Overexposure:*

*Inhalation:* Fibrosis may cause: sclerosis of the bones, calcification of ligaments, mottled teeth, osteosclerosis, ostemalacia, loss of weight, anorexia, anemia, wasting, cachia and dental defects.

*Ingestion:* May cause nausea, vomiting, diarrhea, abdominal burning and cramp-like pain.

*Skin:* May cause redness, itching and burning.

*Eye:* May cause redness, itching, burning and watering.

#### *Health Hazards (Acute and Chronic):*

##### *Inhalation:*

*Acute:* May cause irritation to the respiratory tract and mucous membrane. Dusts may cause asthma attacks and lung damage such as lung granulomas and pulmonary edema. Large doses may cause immediate defecation, writhing, loss of muscle coordination, labored respiration, sedation, hypotension, dyspnea, hyperemia, liver edema and necrosis, portal congestion, pleural effusion and granulatous peritonitis with serous and hemorrhagic ascites, respiratory and cardiac failure.

*Chronic:* May cause fluorosis, pulmonary fibrosis, severe bone changes, hyperemia, cellular eosinophilia and vascular granulomata, acute chemical pneumonitis, subacute bronchitis and focal hypertopic emphysema.



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## *Ingestion:*

Acute: May cause gastrointestinal irritation.

Chronic: May affect renal and hepatic functions, the coagulation rate of the blood, circulatory, enzyme and nervous system.

## *Skin:*

Acute: May cause irritation, rashes and skin granulomas.

Chronic: May cause dermatitis, sensitivity to heat, itching and skin lesions.

## *Eye:*

Acute: May cause irritation.

Chronic: No chronic health effects recorded.

*Target Organs:* May affect the skeleton, kidneys, central nervous system, liver, respiratory system, skin.

*Carcinogenicity:* NTP? No IARC Monographs? No OSHA Regulated? No

*Medical Conditions Aggravated by Exposure:* Pre-existing respiratory disorder

## *Emergency and First Aid Procedures:*

*Inhalation:* Remove victim to fresh air, keep warm and quiet, and give oxygen if breathing is difficult; seek medical attention

*Ingestion:* Give 1-2 glasses of milk or water and induce vomiting, seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person

*Skin:* Remove contaminated clothing, brush material off skin, wash affected area with mild soap and water, and seek medical attention if symptoms persist

*Eye:* Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes and seek medical attention

## SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

### *Steps to be taken in case material is released or spilled:*

Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

### *Waste disposal method:*

Dispose of in accordance with state, local, and federal regulations.

### *Hazard Label Information:*

Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

*Precautions:* Ytterbium fluoride is hygroscopic. Handle and store in an inert gas such as argon.

## SECTION VIII - CONTROL MEASURES

### *Protective Equipment Summary (Hazard Label Information):*

NIOSH approved respirator, impervious gloves, safety glasses, clothes to prevent contact.



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*Ventilation:*

Local Exhaust: To maintain concentration at or below PEL, TLV

Special: Handle in an inert atmosphere.

Mechanical (General): Not recommended

*Work/Hygienic/Maintenance Practices:*

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Please be advised that N/A can either mean Not Applicable or No Data Has Been Established