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## MATERIAL SAFETY DATA SHEET

### SECTION I. MATERIAL IDENTIFICATION

**Material Name:** Vapox III : **SILOX VAPOX III**  
**Other Designations:** Ammonia Bifluoride Solution  
Buffered Oxide Etchant

**Chemical Family:** Inorganic acid mixture

**Trade Name:** Vapox III; **SILOX VAPOX III**

### SECTION II. INGREDIENTS AND HAZARDS

	<u>CAS. NUMBER</u>	<u>%</u>	<u>HAZARD DATA</u> <u>Toxicity (mg/M<sup>3</sup>)</u>
Hydrofluoric acid, (HF)	7664-39-3	1-5	3 ppm OSHA
Ammonium Fluoride (NH <sub>4</sub> F)	12125-01-9	30-35	2.5 mg/M <sup>3</sup>
Distilled water		>50	
Acetic Acid	64-19-7	5-10	10 PPM

### SECTION III. PHYSICAL DATA

Boiling point @ latm:	218°F	Specific gravity, 20/4C:	1.12
Vapor pressure @ 15 ° C, mmHg:	400	Evap. Rate (BuAc=1):	< 0.5
Vapor density (Air=1):	1.3	Volatiles, %:	55-60
Water solubility @ 20° C:	Complete	Molecular weight:	N/A

### SECTION IV. FIRE AND EXPLOSION DATA

		<b>LOWER</b>	<b>UPPER</b>
<b>Flash point and method</b>	<b>Autoignition temp. deg. C</b>	<b>(Flammability limits in air)</b>	
Non-flammable	NA	NA	NA

**Extinguishing media:** Use water or carbon dioxide on fires in which HF is involved. In cases of fire, the sealed container can be kept cool by spraying with water. Do not apply water to leaking containers.

**Special fire fighting procedures:** Wear chemically retardant gear and NIOSH approved self-contained breathing apparatus. Keep up wind of fire and avoid getting water in containers, as the acid reacts violently with water causing generation of heat and spattering.

### SECTION V. REACTIVITY DATA

**Stability:** Stable

**Conditions to avoid:** Contact with metals liberates hydrogen gas. It attacks glass and reacts with silica to produce silicon tetrafluoride, a hazardous and colorless gas

**Incompatible with:** High temperature, glass, silicon compounds,  $As_2O_3$ ,  $P_2O_5$ ,  $NH_3$ ,  $CaO$ ,  $NaOH$ ,  $H_2SO_4$ , ethylene diamine and reacts with bases to liberate  $H_2$  on contact with metals and hydrogen gas ( $H_2$ ). On heating could yield toxic fumes of fluorides.

**Hazardous decomposition products:** Emits toxic fumes of HF. Reacts with acids to liberate HF and bases to liberate  $NH_3$ .

**Hazardous polymerization:** Will not occur.

**Conditions to avoid:** Excess heat.

## **Section VI. Health and Hazard Information**

**Effects of exposure:** Repeated ingestion may cause mottling of teeth and bone damage. Chronic over exposure could lead to fluorosis. Persons with pre-existing skin disorders, eye problems or impaired renal or respiratory functions may be susceptible to the effects of the substance. Hypocalcemia and hypomagnesia can occur from absorption of the  $F^-$  ion into the blood stream.

### **FIRST AID:**

**Eye Contact:** Irritant to naked eye. In case of contact flush eyes well for 15 minutes. Obtain medical attention immediately. After washing affected area, if no physician is available, instill one or two drops of .5% pontocaine solution or an equally effective aqueous topical anesthetic, followed by a second irrigation for 15 minutes. Use no oily eye drops or ointment.

**Skin Contact:** Irritant to exposed skin. Flush skin well with water for 15 minutes. Obtain medical attention immediately. Immerse burned area in iced aqueous Hyamine 1622 or .13% iced aqueous Zephiran. If immersion is not practical soak towels in the solution and use as a compress on burns (change compress every few minutes.) Apply special calcium gluconate (2.5%) paste. Remove affected clothing while flushing skin with water and get medical attention.

**Inhalation:** If inhaled. Remove to fresh air. If not breathing give artificial respiration. Seek medical attention immediately. Keep patient warm, but not hot, and resting flat. Never give an unconscious patient anything by mouth. To discourage coughing a conscious person may be given cough syrup.

**Ingestion:** Do not induce vomiting and contact physician immediately. Encourage patient to drink large quantities of water without delay. Then give milk of two ounces of milk or magnesia.

## **SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES**

**Spills & Leaks:** Ventilate area of spill or leak. Remove ignition sources since hydrogen may be generated by reaction with metals. Do not flush to sewers or waterways. Spray atmosphere with 6M- $NH_4OH$ . Cover the contaminated surface with a 50-50 mixture of soda ash and slaked lime. Mix and add water to form a slurry if necessary. Scoop up slurry and dispose of properly.

**Disposal:** Dispose of in accordance with all federal, state and local regulations. The neutralized slurry can be scraped up for disposal in a RCRA approved waste facility. Porous material will absorb HF (concrete, wood, plastic, etc.) and become a hazard for an indefinite period of time.

## **SECTION VIII. SPECIAL PROTECTION INFORMATION**

**Respiratory protection:** NIOSH approved organic vapor respirators where adequate ventilation is not present. Wear self-contained breathing apparatus.

**Ventilation:** -Where adequate ventilation is not available use NIOSH approved vapor respirator with dust, fume, and mist filters. Local ventilation through fume hoods or laminar flow stations is also preferred.

**Protective gloves:** Skin contact should be avoided through use of gloves (Neoprene or PVC).

**Other protective equipment:** Steel tipped shoes! Eye wash station! Chemical safety shower! Chemical retardant clothing

## **SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS**

**Storage and handling information:** Store in cool dry place with adequate ventilation separated from other chemicals. Do not store near incompatible products or open flame. Store away from direct sunlight and combustibles. Storage facility should be constructed for containment and neutralization of spills. Store in tightly closed polyethylene bottles. This is a corrosive material, take care in handling leaking containers.

DOT CLASS: CORROSIVE LIQUIDS, TOXIC, N.O.S.

UN2922

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# Material Safety Data Sheet

## Addendum to Material Safety Data Sheet

### REGULATORY STATUS

This addendum must not be detached from the MSDS  
Identifies SARA 313 substance(s) Any copying or redistribution of the MSDS  
must include a copy of this addendum.

Hazard Categories for SARA  
 Section 311/312 Reporting  
 Acute Chronic Fire Pressure Reactive

Product or Components of Product:

	Sara EHS Sect.302		SARA Section 313 Chemicals		Cercla Sec.103	RCRA
	RQ (lbs.)	TPQ(lbs.)	Name List	Chemical Category	RQ(lbs.)	SEC. 261.33
Hydrogen Fluoride (7664-39-3)	100	100	Yes	No	100	U134

SARA Section 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CER 355.

SARA Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk (\*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity - 10,000 LBS. SARA Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLAL Sec. 103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RO) must be reported to the National Response Center, (800-4244802); Listed at 40 CER 302.4 RCRA: Resource Conservation and Reclamation Act.

Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

RCRA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33