

# MATERIAL SAFETY DATA SHEET

This Information  
is provided for  
your protection  
by:

**LCI LTD**  
THE FLUORIDE SPECIALISTS

1-904-241-1200



<b>HEALTH HAZARD</b> Deadly Extreme Danger Hazardous Slightly Hazardous Normal Material	<b>FLASH POINTS</b> Below Above 100°F Above 200°F With No Data
2	0
<b>COR</b>	
<b>SPECIAL NOTICE</b> OX = Oxidizer ACID = Acid ALK = Alkaline COR = Corrosive W = Use No Water = Radiation Hazard	<b>REACTIVITY</b> 4 = May Detonate 3 = Shock & Heat May Detonate 2 = Violent Chemical Change 1 = Unstable if Heated 0 = Stable

For 24 Hour  
Emergency  
Assistance  
Call:

**CHEMTREC**

1-800-424-9300

## FLUOROSILICIC ACID

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# MATERIAL SAFETY DATA SHEET

Supplier: LCI, Ltd.

24 Hour Emergency Assistance:  
Chemtrec 1-800-424-9300

Address: P.O. Box 49000  
Jacksonville Beach, FL 32240-9000  
Phone: (904) 241-1200

## SECTION I

### PRODUCT NAME AND DESCRIPTION

DOT Chemical Name: Fluorosilicic Acid  
Synonyms: Hydrofluosilicic Acid, Fluosilicic Acid, Hexafluosilicic Acid  
Chemical Family: Inorganic Acid Formula:  $H_2SiF_6$   
CAS Number: 16961-83-4 NIOSH Registry #: VV8225000

Note: N/A indicates Not Applicable where shown.

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## SECTION II

### PERSONAL PROTECTION INFORMATION

**Respiratory Protection:** A NIOSH approved cartridge respirator with full-face shield. Chemical cartridge should provide protection against acid fumes, (Hydrogen Fluoride). For concentrations greater than 20ppm, a NIOSH approved self-contained breathing apparatus with full-face shield should be used.

**Eye and Face Protection:** Use tight-fitting chemical splash goggles and a full face shield, 8 inch minimum. Contact lenses should not be worn.

**Hand, Arm and Body Protection:** Prevent contact with skin by use of acid-proof clothing, gloves and shoes. Use a NIOSH approved acid proof suit and boots where liquid or high vapor concentration is possible.

**Other Protective Clothing and Equipment:** Eye wash and emergency shower facilities should be available in handling area.

**Engineering Controls:** General or local exhaust systems sufficient to maintain vapors below  $2.5mg/m^3$  (as F).

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## SECTION III

### HEALTH INFORMATION

OSHA Permissible Exposure Limit (PEL):  $(2.5mg/m^3)(asF)$

ACGIH Threshold Limit Value (TLV):  $(2.5mg/m^3)(asF)$

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**Listed in the following-**

International Agency for Research on Cancer Monographs (IARC)	no
National Toxicology Program's Annual Report on Carcinogens (NTP)	no
OSHA Subpart Z:	no.
Massachusetts "right to know" laws:	no
New Jersey "right to know" laws:	yes
Toxic Substances Control Act Inventory of Toxic Substances (TSCA):	yes
Superfund Amendments and Reauthorization Act (SARA):	no
Comprehensive Env. Response, Compensation & Liability Act (CERCLA):	no
California's Proposition 65 for carcinogens and toxicants:	no
Resource Conservation and Recovery Act (RCRA):	no
Workplace Hazardous Materials Information System (WHMIS):	no

**OSHA Health Hazard Classification:** Corrosive**Primary Route(s) of Entry:** Eye and skin contact, inhalation.**Symptoms of Exposure:**

**Acute:** Liquid or vapors can cause severe irritation and burns which may not be apparent for hours. Can cause severe irritation to the lungs, nose and throat. If swallowed, can cause severe damage to throat and stomach.

**Chronic:** Prolonged exposure could result in bone changes, corrosive effect on mucous membranes including ulceration of nose, throat and bronchial tubes, cough, shock, pulmonary edema, Fluorosis, coma and death.

**Aggravated Medical Condition:** Any skin condition and/or pre-existing respiratory disease including asthma and emphysema.

**Toxic Data:** LD<sub>50</sub> 200 mg/kg (Oral-Gulnea Pig)

Maximum use level, potable water : 6.0 mg 1 liter

## SECTION IV

### EMERGENCY AND FIRST AID PROCEDURES

**Inhalation:** Remove exposed person to an uncontaminated area immediately. If breathing has stopped, start artificial respiration at once. Oxygen should be provided for an exposed person having difficulty breathing (but only by an authorized person) until exposed person is able to breathe easily by himself. Exposed person should be examined by a physician.

**Eye Contact:** Flush eyes for at least 15 minutes with large amounts of water. Eyelids should be held apart during the flushing to insure contact of water with all accessible tissue of the eyes and lids. Medical attention should be given as soon as possible.

**Skin Contact:** Exposed person should be removed to an uncontaminated area and subjected immediately to a drenching shower of water for a minimum of 15 to 20 minutes. Remove all contaminated clothing while under shower. Medical attention should be given as soon as possible for all burns, regardless of how minor they seem.

**Ingestion:** If conscious, give the exposed person large quantities of water immediately to dilute the acid. Do **NOT** induce vomiting. Milk may be given for its soothing effect. A physician should be contacted immediately.

**Note to Physician:** Beware of late onset of pulmonary edema for up to 48 hours. Treat severe burns similar to hydrofluoric acid exposure.

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## SECTION V

### INGREDIENTS

Composition	Percentage
H <sub>2</sub> SiF <sub>6</sub>	25.0 ± 2%
H <sub>2</sub> O	75.0 ± 2%

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## SECTION VI

### PHYSICAL DATA

**Boiling Point:** 222° F or 105° C

**Specific Gravity (H<sub>2</sub>O = 1):** 1.234 @ 25%

**Percent Volatile by Volume:** N/A

**Solubility in Water:** Complete

**Physical State:** Fuming liquid

**Bulk Density:** 10.29 lbs/gal @ 25%

**Appearance and Odor:** Water white to straw yellow fuming liquid with pungent odor.

**Melting Point:** -4° F

**Vapor Pressure (mm Hg):** 24 @ 77° F

**Vapor Density (Air = 1):** N/A

**Evaporation Rate:** N/A

**Molecular Weight:** 144.06

**pH (1% solution):** 1.2

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## SECTION VII

### REACTIVITY

**Stability:** Stable

**Hazardous Polymerization:** Will Not Occur

**Conditions and Materials to Avoid:** Metal, glass, stoneware, alkali and strong concentrated acids.

**Hazardous Decomposition Products:** When heated to decomposition (227° F), it emits highly toxic and corrosive fumes of Hydrogen Fluoride, Silica Tetrafluoride and Hydrogen Gas.

## SECTION VIII

### FIRE AND EXPLOSION HAZARDS

**Flash Point and Method Used:** N/A

**Flammable Limits - % Volume in Air:** Lower: N/A Upper: N/A

**Extinguishing Media:** Use agent which is appropriate for surrounding fire.

**Special Fire Fighting Procedures and Precautions:** Wear NIOSH approved self-contained acid suits.

**Autolgnition Temperature:** N/A

**Unusual Fire and Exploslon Hazards:** Reacts with many metals to produce flammable and explosive hydrogen gas. Keep container cool with water, using fog nozzles, as decomposition will occur above 227° F and produce toxic and corrosive fumes of fluorides.

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## SECTION IX

### STORAGE AND SPECIAL PRECAUTIONS

**Handling and Storing Precautions:** Store in containers in cool, dry, well ventilated area away from sources of heat or ignition. Do not store in glass or stoneware. Use non-sparking tools. Keep separate from alkali metals, oxidizing agents, combustible solids and organic peroxides.

**Ventilation:** Provide adequate general and/or local exhaust to maintain vapors below 2.5mg/m<sup>3</sup> (as F).

**Other Precautions:** Do not inhale fumes and prevent skin contact. If pungent, irritating odor can be detected, workers are being over-exposed. Eye wash and safety shower should be available in all acid handling areas.

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## SECTION X

### TRANSPORTATION REQUIREMENTS

**DOT Proper Shipping Name:** Fluorosilicic Acid

**DOT Primary Hazard Class:** 8 (Corrosive)

**Identification Number:** UN 1778

**EPA Hazardous Substance:** No

**RCRA Status of Unused Material if Discarded:** Not listed

**Packing Group:** II

**Subsidiary Hazard Class:** N/A

**Placarding Requirement:** Corrosive

**Reportable Quantity:** N/A

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**Hazardous Waste Number:** Not listed

**Waste Disposal Method:** Disposer must comply with federal, state, and local disposal or discharge laws.

**Additional Comments:** For international transportation, Fluorosilicic Acid is regulated by the International Maritime Organization (IMO) and the International Air Transport Association (IATA) for vessel and air movement as a Class 8. Packaging, marking, labeling and shipping paper descriptions must precisely reflect the regulation for export movement.

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## SECTION XI

### EMERGENCY ACTION-(SPILL OR LEAK)

**Emergency Action:** Keep unnecessary people away. Stay upwind; keep out of low areas. Isolate hazard area and deny entry. We recommend that the user establish a spill prevention, control and countermeasure plan. This plan should include procedures for proper storage as well as containment and clean-up of spills and leaks. The procedures should conform to safe practices and provide for proper recovery and disposal in accordance with federal, state and local regulation.

**Small Spills:** Any personnel in area should wear a NIOSH approved air supplied acid suit. Dike area to contain material. Do not allow solution to enter sewers or surface water. Take up with sand or non-combustible absorbent material and place in containers for later disposal. Provide ventilation and be wary of Hydrogen generation upon reaction with some metals. Contact Chemtrec at 800-424-9300 for 24-hour emergency assistance.

**Large Spills:** Contact Chemtrec at 800-424-9300 for 24-hour emergency assistance. Any personnel in area should wear a NIOSH approved air supplied acid suit. Dike area ahead of spill to contain material. Do not allow solution to enter sewers or surface water. Provide ventilation and be wary of Hydrogen generation upon reaction with some metals. Notify the National Response Center, if required.

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#### DISCLAIMER

The information presented herein is based on data considered to be accurate and that reflects the requirements of the OSHA Hazard Communication Standards in effect as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

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By J. Michael Coates, Regulatory Compliance Officer