



# SAFETY DATA SHEET

## 1. Identification

<b>Product identifier</b>	<b>Hydrofluosilicic acid</b>
<b>Other means of identification</b>	
<b>Synonyms</b>	Fluorosilicic acid, Hydrofluorosilicic acid
<b>Recommended use</b>	Hydrofluosilicic acid is an acid used in water treatment application.
<b>Recommended restrictions</b>	None known.
<b>Manufacturer/Importer/Supplier/Distributor information</b>	
<b>Company name</b>	Carus Corporation
<b>Address</b>	315 5th Street Peru, IL
<b>Telephone</b>	(815) 223-1500
<b>Toll Free</b>	(800) 435-6856
<b>Fax</b>	(815) 224-6816
<b>E-mail</b>	salesmkt@caruscorporation.com
<b>Website</b>	www.caruscorporation.com
<b>Company name</b>	Alexander Chemical Corporation, a Carus Group Inc. Company
<b>Address</b>	7593 S. First Road, Kingsbury Industrial Park, USA
<b>Website</b>	www.alexanderchemical.com
<b>Company name</b>	Sierra Chemical Co, a Carus Group Inc. Company
<b>Address</b>	2302 Larkin Circle Sparks, NV 89431
<b>Website</b>	www.sierrachemsales.com
<b>Contact person</b>	Dr. Chithambarathanu Pillai
<b>Telephone</b>	(800) 348-8827 - All other non-emergency inquiries about the product should be directed to the company
<b>Emergency telephone number</b>	For Hazardous Materials [or Dangerous Goods] Incidents ONLY  (spill, leak, fire, exposure or accident), call CHEMTREC at CHEMTREC®, USA: 001 (800) 424-9300 CHEMTREC®, Mexico (Toll-Free - must be dialed from within country): 001-800-13-203-9987 CHEMTREC®, Other countries: 001 (703) 527-388

## 2. Hazard(s) identification

<b>Physical hazards</b>	Not classified.	
<b>Health hazards</b>	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1B
	Serious eye damage/eye irritation	Category 1
<b>OSHA defined hazards</b>	Not classified.	
<b>Label elements</b>		



<b>Signal word</b>	Danger
<b>Hazard statement</b>	Harmful if swallowed. Causes severe skin burns and eye damage.
<b>Precautionary statement</b>	
<b>Prevention</b>	Do not breathe mist. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling.

<b>Response</b>	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor.
<b>Storage</b>	Store locked up.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Hazard(s) not otherwise classified (HNOC)</b>	None known.

### 3. Composition/information on ingredients

#### Substances

Chemical name	Common name and synonyms	CAS number	%
Hydrofluorosilicic acid		16961-83-4	24

**Composition comments** All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

### 4. First-aid measures

<b>Inhalation</b>	Move injured person into fresh air and keep person calm under observation. Get medical attention if symptoms occur.
<b>Skin contact</b>	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Chemical burns must be treated by a physician.
<b>Eye contact</b>	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Hold eyelids apart. Continue rinsing. Get medical attention immediately.
<b>Ingestion</b>	Rinse mouth thoroughly with water and give large amounts of milk or water to people not unconscious. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. Obtain medical attention and take along these instructions.
<b>Most important symptoms/effects, acute and delayed</b>	Corrosive. Prolonged contact causes serious eye and tissue damage. May cause burns in mucous membranes, throat, esophagus and stomach. May cause lung edema. Symptoms may be delayed.
<b>Indication of immediate medical attention and special treatment needed</b>	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
<b>General information</b>	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

### 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Use fire-extinguishing media appropriate for surrounding materials.
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>Specific hazards arising from the chemical</b>	Fire may produce irritating, corrosive and/or toxic gases.
<b>Special protective equipment and precautions for firefighters</b>	Firefighters should wear full protective clothing including self contained breathing apparatus. Structural firefighters protective clothing will only provide limited protection.
<b>Fire-fighting equipment/instructions</b>	Use standard firefighting procedures and consider the hazards of other involved materials. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

### 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Stay upwind. Keep out of low areas. Ensure adequate ventilation. Avoid contact with eyes, skin, and clothing. Avoid breathing mist or vapor. Use personal protection recommended in Section 8 of the SDS.
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**Methods and materials for containment and cleaning up**

Should not be released into the environment.

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Small Spills: Absorb spill with vermiculite or other inert material. Clean contaminated surface thoroughly. After removal flush contaminated area thoroughly with water.

Never return spills in original containers for re-use.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

**7. Handling and storage****Precautions for safe handling**

Handle and open container with care. Use only with adequate ventilation. Avoid contact with skin, eyes and clothing. Avoid breathing mist or vapor. Wash thoroughly after handling. Observe good industrial hygiene practices.

**Conditions for safe storage, including any incompatibilities**

Keep in a well-ventilated place. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep this material away from food, drink and animal feed. Use care in handling/storage. Transfer and storage systems should be compatible and corrosion resistant.

**8. Exposure controls/personal protection****Occupational exposure limits****US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Components	Type	Value
Hydrofluorosilicic acid (CAS 16961-83-4)	PEL	2.5 mg/m3

**US. OSHA Table Z-2 (29 CFR 1910.1000)**

Components	Type	Value	Form
Hydrofluorosilicic acid (CAS 16961-83-4)	TWA	2.5 mg/m3	Dust.

**US. ACGIH Threshold Limit Values**

Components	Type	Value
Hydrofluorosilicic acid (CAS 16961-83-4)	TWA	2.5 mg/m3

**US. NIOSH: Pocket Guide to Chemical Hazards**

Components	Type	Value
Hydrofluorosilicic acid (CAS 16961-83-4)	TWA	2.5 mg/m3

**Biological limit values****ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
Hydrofluorosilicic acid (CAS 16961-83-4)	3 mg/l	Fluoride	Urine	*
	2 mg/l	Fluoride	Urine	*

\* - For sampling details, please see the source document.

**Appropriate engineering controls**

Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors. Eye wash facilities and emergency shower must be available when handling this product.

**Individual protection measures, such as personal protective equipment****Eye/face protection**

Wear approved safety glasses or goggles.

**Skin protection****Hand protection**

Wear protective gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.

**Other**

Wear appropriate chemical resistant clothing. Protective shoes or boots. Structural firefighters protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations. Wear chemical protective equipment that is specifically recommended by the Personal Protective Equipment manufacturer.

**Respiratory protection** If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In case of inadequate ventilation or risk of inhalation of mist, use suitable respiratory equipment with particle filter. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134 and ANSI Z88.2.

**Thermal hazards** Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations** When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Remove and isolate contaminated clothing and shoes. Handle in accordance with good industrial hygiene and safety practice. Launder contaminated clothing before reuse.

## 9. Physical and chemical properties

**Appearance** White to straw yellow solution.

**Physical state** Liquid.

**Form** Liquid.

**Color** White to straw yellow.

**Odor** Pungent, sour penetrating odor.

**Odor threshold** Not available.

**pH** 1.2

**Melting point/freezing point** -4 °F (-20 °C)

**Initial boiling point and boiling range** 225 °F (107.22 °C)

**Flash point** Not available.

**Evaporation rate** Not available.

**Flammability (solid, gas)** Not applicable.

**Upper/lower flammability or explosive limits**

**Flammability limit - lower (%)** Not available.

**Flammability limit - upper (%)** Not available.

**Vapor pressure** 218 mm Hg (100 °F / 38 °C)

**Vapor density** Not available.

**Relative density** 1.22 ± 0.03

**Relative density temperature** 77 °F (25 °C)

**Solubility(ies)**

**Solubility (water)** Completely soluble in water.

**Partition coefficient (n-octanol/water)** No data available.

**Auto-ignition temperature** Not available.

**Decomposition temperature** Not available.

**Viscosity** Not available.

**Other information**

**VOC (Weight %)** Not available

## 10. Stability and reactivity

**Reactivity** The product is non-reactive under normal conditions of use, storage and transport.

**Chemical stability** Stable at normal conditions.

**Possibility of hazardous reactions** Contact with metals may evolve flammable hydrogen gas.

**Conditions to avoid** Keep away from water, steam or other incompatible materials.

**Incompatible materials** Glass. Stoneware. Metals. Bases.

**Hazardous decomposition products** Hydrogen fluoride. Silicon tetrafluoride. Hydrogen gas.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Ingestion</b>	Harmful if swallowed. Causes digestive tract burns.
<b>Inhalation</b>	Causes respiratory tract burns. May cause lung edema.
<b>Skin contact</b>	Causes severe skin burns.
<b>Eye contact</b>	Causes severe eye burns.

**Symptoms related to the physical, chemical and toxicological characteristics** Corrosive. Prolonged contact causes serious eye and tissue damage. May cause burns in mucous membranes, throat, esophagus and stomach. May cause lung edema. Symptoms may be delayed.

### Information on toxicological effects

**Acute toxicity** Harmful if swallowed.

Components	Species	Test Results
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Hydrofluorosilicic acid (CAS 16961-83-4)

#### Acute

*Oral*

LD50	Rat	430 mg/kg
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**Skin corrosion/irritation** Causes severe skin burns.

**Serious eye damage/eye irritation** Causes severe eye damage.

### Respiratory or skin sensitization

**Respiratory sensitization** No data available.

**Skin sensitization** No data available.

**Germ cell mutagenicity** No data available.

**Carcinogenicity** No data available.

### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

**Reproductive toxicity** No data available.

**Specific target organ toxicity - single exposure** No data available.

**Specific target organ toxicity - repeated exposure** No data available.

**Aspiration hazard** No data available.

**Chronic effects** Prolonged overexposure to fluorides may increase fluoride content of bones and teeth, and may result in fluorosis, with mottling of teeth (in children) and brittleness of bones. Absorbed fluoride can cause metabolic imbalances with irregular heartbeat, nausea, dizziness, vomiting and seizures. Risk of hypocalcemia with nervous problems (tetany) and cardiac arrhythmia.

## 12. Ecological information

**Ecotoxicity** The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**Persistence and degradability** No data available.

**Bioaccumulative potential** No data available.

**Mobility in soil** The product is water soluble and may spread in water systems.

**Other adverse effects** The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

## 13. Disposal considerations

**Disposal instructions** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Dispose of contents/container in accordance with local/regional/national/international regulations. Dispose in accordance with all applicable regulations.

**Hazardous waste code** D002: Waste Corrosive material [pH <=2 or >=12.5, or corrosive to steel]  
Waste codes should be assigned by the user based on the application for which the product was used.

**Waste from residues / unused products** Dispose of in accordance with local regulations.

**Contaminated packaging** Dispose of in accordance with local regulations. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

## 14. Transport information

**DOT**

**UN number** UN1778  
**UN proper shipping name** Fluorosilicic acid  
**Transport hazard class(es)**  
**Class** 8  
**Subsidiary risk** -  
**Label(s)** 8  
**Packing group** II  
**Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.  
**Special provisions** A6, A7, B2, B15, IB2, N3, N34, T8, TP2, TP12  
**Packaging exceptions** None  
**Packaging non bulk** 202  
**Packaging bulk** 242

**DOT BULK**

**BULK**

**UN number** UN1778  
**UN proper shipping name** Fluorosilicic acid  
**Transport hazard class(es)**  
**Class** 8  
**Label(s)** 8  
**Packing group** II  
**Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.  
**Special provisions** A6, A7, B2, B15, IB2, N3, N34, T8, TP2, TP12  
**Packaging exceptions** None  
**Packaging non bulk** 202  
**Packaging bulk** 242

**IATA**

**UN number** UN1778  
**UN proper shipping name** Fluorosilicic acid  
**Transport hazard class(es)**  
**Class** 8  
**Subsidiary risk** -  
**Label(s) Packing** 8  
**group Environmental** II  
**hazards ERG Code** No.  
8L  
**Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.

**IMDG**

**UN number** UN1778  
**UN proper shipping name** FLUOROSILICIC ACID  
**Transport hazard class(es)**  
**Class** 8  
**Subsidiary risk** -  
**Label(s) Packing** 8  
**group Environmental** II  
**hazards**  
**Marine pollutant** No.  
**EmS** F-A, S-B  
**Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** This product is a liquid and when transported in bulk is covered under MARPOL 73/78 Annex II. This product is listed in the IBC Code.  
Ship type: 3  
Pollution category: Y

## 15. Regulatory information

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not listed.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

Not listed.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories** Immediate Hazard - Yes  
Delayed Hazard - No  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - Yes

**SARA 302 Extremely hazardous substance**

Not listed.

**SARA 311/312 Hazardous chemical** Yes

**SARA 313 (TRI reporting)**

Not regulated.

**Other federal regulations**

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Not regulated.

**Safe Drinking Water Act (SDWA)** Not regulated.

**US state regulations** This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**US. Massachusetts RTK - Substance List**

Hydrofluorosilicic acid (CAS 16961-83-4)

**US. New Jersey Worker and Community Right-to-Know Act**

Hydrofluorosilicic acid (CAS 16961-83-4)

**US. Pennsylvania Worker and Community Right-to-Know Law**

Hydrofluorosilicic acid (CAS 16961-83-4)

**US. Rhode Island RTK**

Not regulated.

**US. California Proposition 65**

**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Not listed.

**International Inventories**

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

## 16. Other information, including date of preparation or last revision

**Issue date** 25-July-2014

**Revision date** -

**Version #** 01

**NFPA ratings****References**

Registry of Toxic Effects of Chemical Substances (RTECS)  
GESTIS Substance Database  
US. IARC Monographs on Occupational Exposures to Chemical Agents

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