

Section 01 Identification

Product Identifier	Hydrofluorosilicic Acid Hydrofluorosilicic Acid, NSF® - 60
Other Means of Identification	Hexafluorosilicic acid; Dihydrogen hexafluorosilicate; Fluorosilicic acid; Fluosilicic acid; HFSA
Product Use and Restrictions on Use	Water fluoridation and wood preservation. This product is certified to NSF / ANSI / CAN standard 60 for use in drinking water, see section 15 and the NSF website for further information.
Initial Supplier Identifier	ClearTech Industries Inc. 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7 Phone: 800.387.7503 Fax: 888.281.8109 www.cleartech.ca
Prepared By	ClearTech Industries Inc. technical writer
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Section 02 Hazard Identification

Physical Hazards

Corrosive to metals Category 1

Health Hazards

Skin corrosion / irritation Category 1B

Serious eye damage / eye irritation Category 1

Signal Word

Danger

Hazard Statements

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

Pictograms



Precautionary Statements

Prevention

- P234 Keep only in original packaging.
P260 Do not breathe vapours, fumes, or mists.
P264 Wash affected body parts thoroughly after handling.
P280 Wear protective gloves, protective clothing, eye protection, face protection.

Response

- P301 P330 P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 P361 P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse.
P304 P340 P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
P305 P351 P338 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 or doctor.
P390 Absorb spillage to prevent material damage.

Storage

- P405 Store locked up.

Disposal

- P501 Dispose of contents / container in accordance with all federal, provincial and / or local regulations including the Canadian Environmental Protection Act.

Hazards Not Otherwise Classified

Not available

Supplemental Information

Not available

Section 03 Composition / Information on Ingredients

Hazardous Ingredients:

Chemical name	Common name(s)	CAS number	Concentration (w/w%)
Silicate(2-), hexafluoro-, dihydrogen	Hydrofluorosilicic acid (HFSA)	16961-83-4	≥22%
Hydrogen flouride	HF	7664-39-3	0.1-1.0%

Section 04 First-Aid Measures

Description of necessary first-aid measures

- Inhalation** Remove source of exposure or move person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor. If breathing has stopped, trained personnel should begin rescue breathing or if the heart has stopped, immediately start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED). Avoid mouth to mouth contact by using a barrier device.
- Ingestion** Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor. If vomiting occurs naturally, lie on your side, in the recovery position.
- Skin contact** Avoid direct contact. Wear chemical protective clothing, if necessary. Take off immediately contaminated clothing, shoes and leather goods. Rinse skin with lukewarm, gently flowing water / shower for 30 minutes. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before re-use, or discard.

Eye contact Avoid direct contact. Wear chemical protective gloves, if necessary. Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for 30 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a POISON CENTER or doctor.

Most important symptoms and effects, both acute and delayed

Inhalation Causes severe burns to the mouth and throat (mist).
Ingestion Causes burns to the mouth and throat.
Skin contact Causes severe skin burns.
Eye contact Causes serious eye damage.
Further information For further information see Section 11 Toxicological Information.

Section 05 Fire Fighting Measures

Suitable extinguishing media Extinguish fire using extinguishing agents suitable for the surrounding fire.
Unsuitable extinguishing media Water jets are not recommended in fires involving chemicals.
Specific hazards arising from the chemical Reacts with many metals to liberate hydrogen gas that can form explosive mixtures. Thermal decomposition occurs at 105 °C. In the event of a fire toxic and corrosive fumes of hydrogen fluoride and silicon tetrafluoride may be released.
Special protective equipment for fire-fighters Wear NIOSH-approved self-contained breathing apparatus and chemical-protective clothing.

Section 06 Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures Wear appropriate personal protective equipment (See Section 08 Exposure Controls and Personal Protection). Stay upwind, ventilate area. Do not breathe vapours, fumes, or mists. Do not use material handling equipment with exposed metal surfaces.
Environmental Precautions Prevent material from entering waterways, sewers or confined spaces. Notify local health and wildlife officials. Notify operators of nearby water intakes.
Methods and Materials for Containment and Cleaning Up SMALL SPILLS: Stop or reduce leak if safe to do so. Clean up spill with non-reactive absorbent and place in suitable, covered, labeled containers. Flush area with water. Contaminated absorbent material may pose the same hazards as the spilled product. Use vented containers to avoid pressure buildup.
LARGE SPILLS: Contact fire and emergency services and supplier for advice.

Section 07 Handling and Storage

Precautions for Safe Handling Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure. Prevent the release of vapours, fumes, or mists into the workplace air.
Inspect containers for damage or leaks before handling. If the original label is damaged or missing replace with a workplace label. Have suitable emergency equipment for fires, spills and leaks readily available.
Never return contaminated material to its original container.

Conditions for Safe Storage	Store in a cool, dry, well-ventilated area, away from heat sources and incompatible materials. Always store in original labeled container. Keep containers tightly closed when not in use and when empty. Empty containers may contain hazardous residues. Protect label and keep it visible. Do not transfer to metal containers. Do not transfer to glass, concrete or stoneware containers.
Incompatibilities	<p>Bases, such as potassium hydroxide, sodium hydroxide, calcium hydroxide (slaked lime), ammonia, carbonates.</p> <p>Metals, such as aluminum, steel, and brass.</p> <p>Silicates, such as glass, sand, and fiberglass.</p> <p>Strong, concentrated acids, such as sulphuric, hydrochloric or nitric.</p>

Section 08 Exposure Controls and Personal Protection

Exposure limits

Component	Regulation	Type of listing	Value
Hydrogen fluoride	NIOSH	REL-TWA	3 ppm (2.5 mg/m ³)
	NIOSH	STEL/Ceiling	6 ppm (5 mg/m ³)
	NIOSH	IDLH	30 ppm (25 mg/m ³)
	OSHA	PEL	3 ppm (2.5 mg/m ³)
Fluorides (as F)	ACGIH	TWA	2.5 mg/m ³

Engineering controls

Ventilation Requirements	Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided in accordance with all fire codes and regulatory requirements. Supply sufficient replacement air to make up for air removed by exhaust systems.
Other	An emergency shower and eyewash station should be available, tested, and be in close proximity to the product being handled in accordance with provincial regulations.

Protective equipment

The following are recommendations only. It is the responsibility of the employer / user to conduct a hazard assessment of the process in which this product being used and determine the proper engineering controls and PPE for their process. Additional regulatory and safety information should be sought from local authorities and, if needed, a professional industrial hygienist.

Eye and face protection	Where there is potential eye or face exposure, tightly fitting safety goggles and a face shield or a full face respirator or similar protective equipment which protects the wearer's face and eyes are recommended. Contact lenses are not recommended; they may contribute to severe eye injury.
Hand and body protection	Disposable latex or nitrile gloves are recommended to prevent incidental contact. Butyl rubber, neoprene, or PVC skin protection is recommended for extended contact. Leather gloves are not recommended for chemical protection. Refer to manufacturer's specifications for breakthrough times and permeability information; note that breakthrough times and permeability vary with temperature, application and age of material. Continued use of contaminated safety gear or clothing is not recommended; wash before reuse or discard.
Respiratory protection	In case of insufficient ventilation wear suitable respiratory equipment.

NIOSH respirator recommendations for: Hydrogen Fluoride

Up to: 30 ppm (25 mg/m³)

(APF = 10) Any chemical cartridge respirator with cartridge(s) providing protection against Hydrogen Flouride
 (APF = 10) Any supplied-air respirator
 (APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against Hydrogen Flouride
 (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against Hydrogen Flouride
 (APF = 50) Any self-contained breathing apparatus with a full facepiece.

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
 (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:

Any appropriate escape-type, self-contained breathing apparatus

Thermal hazards

Not available

Section 09 Physical and Chemical Properties

Appearance

Physical state Liquid
 Colour Colourless to pale yellow
 Odour Sour, pungent
 Odour threshold Not available

Property

pH ~1.0
 Melting point / freezing point -15 °C
 Initial boiling point and boiling range 105 °C
 Flash point Not available
 Evaporation rate Not available
 Flammability Not applicable
 Upper flammable limit Not available
 Lower flammable limit Not available
 Vapour pressure ~3 kPa or 20 mmHg
 Vapour density Not available
 Relative density Not applicable
 Solubility Soluble in water
 Partition coefficient: n-octanol/water Not available
 Auto-ignition temperature Not available
 Decomposition temperature 105 °C
 Viscosity Not available

Specific gravity	~1.197
Particle characteristics	Not applicable

Section 10 Stability and Reactivity

Reactivity	May be corrosive to metals. Reacts with many metals to liberate hydrogen gas that can form explosive mixtures. Reacts violently with bases.
Stability	This product is stable if stored according to the recommendations in Section 07.
Possibility of hazardous reactions	Hazardous polymerization is not known to occur.
Conditions to avoid	Avoid contact with incompatible materials. Do not heat.
Incompatible materials	Bases, such as potassium hydroxide, sodium hydroxide, calcium hydroxide (slaked lime), ammonia, carbonates. Metals, such as aluminum, steel, and brass. Silicates, such as glass, sand, and fiberglass. Strong, concentrated acids, such as sulphuric, hydrochloric or nitric.
Hazardous decomposition products	Thermal decomposition may produce toxic and corrosive fumes of hydrogen fluoride and silicon tetrafluoride.

Section 11 Toxicological Information

Acute Toxicity (LD50 / LC50 values)

There is no available toxicity data for this product.

Toxic Health Effect Summary

Chemical characteristics	When hydrofluorosilicic acid is neutralized it releases highly reactive hydrogen fluoride.
Skin	Causes severe skin burns.
Ingestion	Causes burns to the mouth and throat.
Inhalation	Causes severe burns to the mouth and throat (mist).
Eye contact	Causes serious eye damage.
Sensitization	This product and its components at their listed concentration have no known sensitizing effects.
Mutagenicity	This product and its components at their listed concentration have no known mutagenic effects.
Carcinogenicity	ACGIH has classified hydrofluorosilicic acid as category A4 - Not classifiable as a human carcinogen.
Reproductive toxicity	This product and its components at their listed concentration have no known reproductive effects.
Specific organ toxicity	This product and its components at their listed concentration have no known effects on specific organs.
Aspiration hazard	Not available
Synergistic materials	Product has a strong affinity for calcium and magnesium: increasing calcification of bones and reducing calcium and magnesium levels in the blood.

Section 12 Ecological Information

Ecotoxicity

Percentage of product with unknown environmental toxicity: 22%

Safety Data Sheet

Hydrofluorosilicic Acid
ClearTech Industries Inc

Component	Type	Species	Value	Exposure Time
Hydrofluorosilicic acid	LC50	Freshwater fish	50 mg/L	96 hours
Fluoride	EC50	Aquatic invertebrates	26-48 mg/L	48 hours
Sodium fluoride	EC50	Freshwater algae	43-122 mg/L	72 hours

Biodegradability	The domestic substance list categorizes all of the components of this product as persistent.
Bioaccumulation	The domestic substance list categorizes all of the components of this product as non-bioaccumulative.
Mobility	This product is water soluble, but is expected to adsorb to soil and is not expected to contaminate ground water.
Other adverse effects	Not available

Section 13 Disposal Considerations

Waste From Residues / Unused Products	Dispose in accordance with all federal, provincial, and local regulations including the Canadian Environmental Protection Act.
Contaminated Packaging	Do not remove label, follow label warnings even after the container is empty. Empty containers should be recycled or disposed of at an approved waste handling facility.

Section 14 Transport Information

UN number	UN1778	
UN proper shipping name and description	FLUOROSILICIC ACID	
Transport hazard class(es)	8	
Packing group	II	
Excepted quantities	1 L	
Environmental hazards	Not listed as a marine pollutant under Canadian TDG Regulations, schedule III.	
Special precautions	No special precautions	
Transport in bulk	ERAP index: not available	
	MARPOL 73/78 and IBC Code:	
	Product name: Fluorosilicic acid (20-30%) in water solution	
	Pollution category: Y	
	Hazards: the product is included in the Code because of both its safety and pollution hazards.	
	Ship type: ship type 3	
	Tank type: independent gravity tank	
	Tank vents: controlled venting	
	Tank environmental control: no special requirements under this Code	
	Temperature classes	no requirements
	Electrical equipment: Apparatus group	no requirements
	Flash point	non-flammable product
	Gauging: restricted gauging	
	Vapour detection: toxic vapours	

Fire protection: no special requirements under this Code
Emergency equipment see 14.3.1
Specific and operational requirements 15.11, 15.19.6

Additional information Secure containers (full or empty) during shipment and ensure all caps, valves, or closures are secured in the closed position.

TDG PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 16 of this SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and published test data regarding the classification of this product are listed in the references at section 16 of this SDS.

Section 15 Regulatory Information.

NOTE: THE PRODUCT LISTED ON THIS SAFETY DATA SHEET HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN HAZARDOUS PRODUCTS REGULATIONS. THIS SAFETY DATA SHEET CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

All components of this product appear on the domestic substance list.

NSF Certification: Hydrofluorosilicic Acid, NSF® - 60 is certified to NSF / ANSI / CAN Standard 60 for fluoridation at a maximum dosage of: 5 mg/L. NSF product use restrictions based on requirements obtained from the NSF website; consult NSF website for current requirements.

Section 16 Other Information

Date of latest revision: February 19, 2025

Note: The responsibility to provide a safe workplace remains with the buyer / user. The buyer / user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the buyer / user to comply with all applicable laws and regulations regarding handling, using, reselling and shipping this product.

Attention: Receiver of the chemical goods / SDS coordinator

As part of our commitment to the RDC Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service center.

References:

- 1) *NIOSH Pocket Guide to Chemical Hazards*; U.S. Department of Health and Human Services, <https://www.cdc.gov/niosh/npg/default.html>
- 2) *WorkSafe BC E-Limit*; Workers' Compensation Board of British Columbia, <https://elimit.online.worksafebc.com/>
- 3) *ECHA - Registered Substance Dossier*; European Chemicals Agency, <https://echa.europa.eu/registration-dossier/-/registered-dossier/15071>
- 4) *Transportation of Dangerous Goods Regulations*; Transport Canada, <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2001-286/index.html>
- 5) Globally Harmonized System of Classification and Labeling of Chemicals (GHS) *Seventh revised edition*
- 6) International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) 2007 Edition
- 7) The ACS Style Guide