

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.
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Section 02 Hazard Identification

Physical Hazards

Corrosive to metals Category 1

Health Hazards

Acute toxicity - oral Category 4

Skin corrosion / irritation Category 1

Signal Word

Danger

Hazard Statements

H290 May be corrosive to metals.

H302 Harmful if swallowed.

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.
- P270 Do not eat, drink or smoke when using this product.
- P280 Wear protective gloves, protective clothing, eye protection, face protection.

Response

- P301 P312 P330 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call a POISON CENTER or doctor if you feel unwell.
- 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.
- 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%)
Hexafluorosilicic acid	Fluorosilicic acid	16961-83-4	15-40%
Hydrogen fluoride	Hydrofluoric acid	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. Call a POISON CENTER or doctor if you feel unwell. Rinse mouth.

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. Harmful if swallowed.
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	Not available
Specific hazards arising from the chemical	In the event of a fire toxic and corrosive fumes of hydrogen fluoride and silicon tetrafluoride may be released. Thermal decomposition occurs at 105 °C.
Special protective equipment for fire-fighters	Wear NIOSH-approved self-contained breathing apparatus and 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. Only enter area with PPE.
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	Stop or reduce leak if safe to do so. SMALL SPILLS: Approach from upwind, ventilate area. 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. LARGE SPILLS: Knock down fumes / vapors with fog spray. 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. Avoid generating vapours, fumes, or mists. 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. Never return contaminated material to its original container. Have suitable emergency equipment for fires, spills and leaks readily available.

Conditions for Safe Storage

Store in a cool, dry, well-ventilated area, out of direct sunlight, 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

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.

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 Where handling this product it is recommended that chemically resistant gloves are worn. Resistance of specific materials can vary from product to product. Breakthrough times are obtained under conditions of continuous contact, generally at room temperature. Evaluate resistance under conditions of use and maintain protective clothing. Where there is potential for contact with clothing or skin, rubber boots and sufficient body protection, such as: a chemical body suit or an apron and coveralls of chemical resistant material, are recommended. 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 Flouride

Up to: 30 ppm (25 mg/m³)
 (APF = 10) Any chemical cartridge respirator with cartridge(s) providing protection against the compound of concern
 (APF = 10) Any supplied-air respirator
 (APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern
 (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern
 (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 @ 15.6 °C
Formula	H ₂ SiF ₆
Molecular weight	144.11 g/mol

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 will not 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 values)

Component	Route	Species	Value	Exposure time
ATE of product	Oral	Rat	1700 mg/kg	

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. Harmful if swallowed.
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

there is no available toxicity data for this product.

Percentage of product with unknown environmental toxicity: 22%

Biodegradability	This product is not expected to degrade in the environment within 28 days.
Bioaccumulation	This product is not expected to bioaccumulate.
Mobility	This product is water soluble, but will 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	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 provisions
Transport in bulk	Not available
Additional information	Secure containers (full or empty) with suitable hold down devices 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.

Section 16 Other Information

Date of latest revision: May 07, 2019

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) CHEMINFO
- 2) TOXNET
- 3) eChemPortal
- 4) ECHA
- 5) Transportation of Dangerous Goods Canada
- 6) HSDB
- 7) PAN