

SAFETY DATA SHEET

1. Identification

Product identifier	Hydrofluorosilicic Acid - Fluorosilicic Acid - HFS Acid - Hydrofluosilicic Acid	
Other means of identification		
Synonyms	FLUROSILICIC ACID * FLUOSILICIC ACID * HFS acid	
Recommended use	This safety data sheet is written to provide health, safety and environmental information for individuals handling this material in the workplace. The hazards, disposal, prevention, response and storage recommendations described herein are based on best-available information regarding the composition and characteristics of material.	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	Thatcher Company, Inc.	
Address	1905 Fortune Road Salt Lake City, UT 84104 United States	
Telephone	General Assistance 8-5	(801) 972-4587
E-mail	Not available.	
Emergency phone number	Chemtec (CCN 22106)	(800) 424-9300

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	

Label elements



Signal word	Danger
Hazard statement	Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. Causes eye irritation. Harmful if inhaled.
Precautionary statement	
Prevention	Do not breathe dust/fume/gas/mist/vapors Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell. 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. If on clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Immediately call a poison center/doctor.
Storage	Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up. Store away from incompatible materials.
Disposal	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC)

Contact with water may generate toxic, irritating and corrosive gases.

Supplemental information

77% of the mixture consists of component(s) of unknown acute oral toxicity. Corrosive to the respiratory tract.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Hydrofluorosilicic Acid		16961-83-4	23
Other components below reportable levels			77

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation

Move to fresh air. Call a physician if symptoms develop or persist. Respiratory tract irritation may occur

Skin contact

Remove contaminated clothing immediately and wash skin with soap and water. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion

Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed

Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information

In case of shortness of breath, give oxygen. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media

Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire. In case of fire use standards ABC "Type" Extinguisher

Specific hazards arising from the chemical

The product itself does not burn.

Special protective equipment and precautions for firefighters

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Fire fighting equipment/instructions

In the event of fire, wear self-contained breathing apparatus. In case of fire: Stop leak if safe to do so. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

Specific methods

Cool containers exposed to flames with water until well after the fire is out.

General fire hazards

No unusual fire or explosion hazards noted. Non-flammable

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Immediately evacuate personnel to safe areas. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. Follow precautions for safe handling described in this safety data sheet. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

This product is miscible in water.

Large Spills: Stop leak if you can do so without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Attempt to reclaim the free product, if this is possible.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground. Contact local authorities in case of spillage to drain/aquatic environment. Use appropriate containment to avoid environmental contamination.

7. Handling and storage

Precautions for safe handling

Wash hands after handling and before eating. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Do not use in areas without adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in a closed container away from incompatible materials. Keep tightly closed in a dry, cool and well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material	Type	Value
Hydrofluorosilicic Acid - Fluorosilicic Acid - HFS Acid - Hydrofluosilicic Acid	PEL	2.5 mg/m3
Components	Type	Value

Hydrofluorosilicic Acid (CAS 16961-83-4)	PEL	2.5 mg/m3
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US. OSHA Table Z-2 (29 CFR 1910.1000)

Material	Type	Value	Form
Hydrofluorosilicic Acid - Fluorosilicic Acid - HFS Acid - Hydrofluosilicic Acid	TWA	2.5 mg/m3	Dust.
Components	Type	Value	Form
Hydrofluorosilicic Acid (CAS 16961-83-4)	TWA	2.5 mg/m3	Dust.

US. ACGIH Threshold Limit Values

Material	Type	Value
Hydrofluorosilicic Acid - Fluorosilicic Acid - HFS Acid - Hydrofluosilicic Acid	TWA	2.5 mg/m3
Components	Type	Value
Hydrofluorosilicic Acid (CAS 16961-83-4)	TWA	2.5 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value
Hydrofluorosilicic Acid - Fluorosilicic Acid - HFS Acid - Hydrofluosilicic Acid	TWA	2.5 mg/m3
Components	Type	Value
Hydrofluorosilicic Acid (CAS 16961-83-4)	TWA	2.5 mg/m3

Biological limit values

ACGIH Biological Exposure Indices

Material	Value	Determinant	Specimen	Sampling Time
Hydrofluorosilicic Acid - Fluorosilicic Acid - HFS Acid - Hydrofluosilicic Acid	3 mg/l	Fluoride	Urine	*
	2 mg/l	Fluoride	Urine	*
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

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure adequate ventilation, especially in confined areas. 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 eye/face protection. Wear safety glasses with side shields (or goggles) and a face shield. Face shield is recommended. Do not wear contact lenses. If splashes are likely to occur, wear goggles and/or face shield, giving complete protection to eyes.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other

Wear appropriate chemical resistant clothing.

Respiratory protection

Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Liquid.
Physical state	Liquid.
Form	Liquid.
Color	Light yellow
Odor	Pungent
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	< -0.4 °F (< -18 °C)
Initial boiling point and boiling range	Not available.
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.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	26931.04 hPa estimated

	26931.04 MPa at 25 °C
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	completely soluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	10.40 lb/gal
Dust explosion properties	
St class	None known.
Explosive properties	Not explosive. None known.
Molecular formula	H2F6Si
Molecular weight	144.11 g/mol
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid temperatures exceeding the decomposition temperature. Contact with incompatible materials.
Incompatible materials	Metals. Strong oxidizing agents. Glass.
Hazardous decomposition products	Hydrogen gas. Hydrogen fluoride.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes eye burns. Causes serious eye damage.
Ingestion	Causes digestive tract burns. Harmful if swallowed. Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity Causes burns. Harmful if swallowed.

Product	Species	Test Results
Hydrofluorosilicic Acid - Fluorosilicic Acid - HFS Acid - Hydrofluosilicic Acid		
Acute		
Oral		
LD50	Guinea pig	200 mg/kg
	Rat	430 mg/kg
Components	Species	Test Results
Hydrofluorosilicic Acid (CAS 16961-83-4)		
Acute		
Oral		
LD50	Guinea pig	200 mg/kg

Components	Species	Test Results
	Rat	430 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Corrosive to skin and eyes. Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes severe eye burns. Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	None.
Carcinogenicity	Not classified.
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	
	Not listed.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Respiratory organs. Liver. Eyes. Skin. Kidneys.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful. Chronic exposure may entail dental or skeletal fluorosis.
Further information	Symptoms may be delayed.

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 is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal. Dispose of product in accordance with all local, state and federal regulations

14. Transport information

DOT

UN number	UN1778
UN proper shipping name	Fluorosilicic acid, solution (Hydrofluorosilicic 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, solution (Hydrofluorosilicic 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 solution (Hydrofluorosilicic Acid)
Transport hazard class(es)
 Class 8
 Subsidiary risk -
Packing group II
Environmental hazards No.
ERG Code 8L
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Other information
 Passenger and cargo aircraft Allowed.
 Cargo aircraft only Allowed.

IMDG

UN number UN1778
UN proper shipping name FLUOROSILICIC ACID SOLUTION (Hydrofluorosilicic Acid)
Transport hazard class(es)
 Class 8
 Subsidiary risk -
Packing group II
Environmental 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 Not established.

DOT; DOT Bulk packaging type





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.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

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 - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

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) 4.0 mg/l
 4.0 mg/l

US state regulations

US - New Jersey RTK - Substances: Listed substance

Hydrofluorosilicic Acid (CAS 16961-83-4)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

Hydrofluorosilicic Acid (CAS 16961-83-4)

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

Not regulated.

US. Pennsylvania RTK - Hazardous Substances

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

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply 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 03-07-2023

Version # 01

NFPA ratings Health: 3
Flammability: 0
Instability: 0

NFPA ratings



Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision Information

Product and Company Identification: Alternate Trade Names