

SAFETY DATA SHEET



Revision date: 06-Jun-2023

Revision Number 7

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product identifier

Product Name HYDROFLUOROSILICIC ACID

Product Code(s) 000000015539

Other means of identification

UN number 1778

Synonyms Hydrofluorosilicic acid; Hydrofluosilicic acid; Hydrosilicofluoric acid; Silicate(2-), hexafluoro-, dihydrogen; Fluorosilicic acid; HFA.

Recommended use of the chemical and restrictions on use

Recommended use Fluoridation of water.

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier

Ixom Operations Pty Ltd (Incorporated in Australia)
NZBN: 9429041465226 Address: 166 Totara Street
Mt Maunganui South
New Zealand

Telephone Number: +64 9 368 2700

Facsimile: +64 9 368 2710

For further information, please contact

Contact Point Product Safety Department

Emergency telephone number

Emergency Telephone 0 800 734 607 (ALL HOURS)

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

Classified as a Dangerous Good according to NZS 5433 Transport of Dangerous Goods on Land; DANGEROUS GOODS.

Classified as hazardous according to criteria in the Hazardous Substances (Hazard Classification) Notice 2020.

GHS Classification

SIGNAL WORD

Danger

Water Treatment Chemicals (Corrosive) Group Standard 2020

Approval Number: HSR002681

Corrosive to metals	Category 1
Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 1 Sub-category C
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 1

Label elements**Hazard statements**

H290 - May be corrosive to metals
H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H332 - Harmful if inhaled
H370 - Causes damage to organs

Precautionary Statements - Prevention

Keep out of reach of children.
Do not breathe dusts or mists
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Wear protective gloves / protective clothing / eye protection / face protection

Precautionary Statements - Response

IF exposed: Call a POISON CENTER or doctor/physician
Specific treatment (see First aid on this SDS)
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/physician
IF ON SKIN: Wash with plenty of soap and water
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

Other hazards which do not result in classification**3. COMPOSITION/INFORMATION ON INGREDIENTS****Mixture**

Chemical name	CAS No.	Weight-%
Fluorosilicic acid	16961-83-4	21.0-23.0%

Hydrofluoric acid	7664-39-3	0.1-<1.0%
Water	7732-18-5	to 100%

4. FIRST AID MEASURES

Description of first aid measures

General advice	For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.
Emergency telephone number	Poisons Information Center, New Zealand: 0800 764 766 Poisons Information Center, Australia: 13 11 26
Inhalation	Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, (trained personnel should) give oxygen. If breathing is irregular or stopped, administer artificial respiration. Seek immediate medical attention/advice.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not rub affected area. Immediate medical attention is required.
Skin contact	Wash off immediately with plenty of water for at least 15 minutes. Then apply calcium gluconate gel. Take off contaminated clothing and wash before reuse. Get immediate medical advice/attention.
Ingestion	Rinse mouth immediately and drink plenty of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.

Most important symptoms and effects, both acute and delayed

Symptoms	Irritation/Corrosion. May cause redness and tearing of the eyes. Erythema (skin redness). Burning.
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Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically. Can cause corneal burns. Delayed pulmonary edema may occur. Delayed health effects.
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5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Suitable Extinguishing Media	Dry chemical, CO ₂ , water spray or regular foam.
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Unsuitable extinguishing media	No information available.
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Specific hazards arising from the chemical

Specific hazards arising from the chemical	Corrosive hazard. Wear protective gloves/clothing and eye/face protection. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
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Special protective actions for fire-fighters

Special protective equipment for	Firefighters should wear self-contained breathing apparatus and full firefighting turnout
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fire-fighters gear. Use personal protection equipment.

Hazchem code 2X

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Attention! Corrosive material. Avoid contact with skin and eyes. Do not breathe vapor or mist. Ensure adequate ventilation. Evacuate personnel to safe areas. Do not touch or walk through spilled material. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing and eye/face protection. Wash thoroughly after handling.

For emergency responders Clear area of all unprotected personnel. Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. Dike far ahead of spill to collect runoff water. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Keep out of drains, sewers, ditches and waterways.

Methods for cleaning up Soak up with inert absorbent material. Use personal protective equipment as required. Pick up and transfer to properly labelled containers.

Precautions to prevent secondary hazards

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Do not breathe vapor or mist. Avoid contact with skin, eyes, and clothing. Ensure adequate ventilation. Use personal protection equipment. Use according to package label instructions. Handle in accordance with good industrial hygiene and safety practice. Always add the acid to water, never the reverse. Keep out of reach of children. Not to be available except to authorised or licensed persons.

General hygiene considerations Take off contaminated clothing and wash it before reuse. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a cool, well-ventilated place. Store locked up. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Keep container closed when not in use.

Incompatible materials Alkalis. Organic compounds. Metals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits No value assigned for this specific material by the New Zealand Workplace Health & Safety Authority. However, Workplace Exposure Standard(s) for constituent(s):

Chemical name	New Zealand	ACGIH
Hydrofluoric acid 7664-39-3	2 mg/L urine prior to shift Fluoride 3 mg/L urine end of shift Fluoride	

Fluorides, as F: WES-TWA 2.5 mg/m³, bio
Hydrogen fluoride, as F: Ceiling 3 ppm, 2.6 mg/m³

As published by the New Zealand Workplace Health & Safety Authority.

WES - TWA (Workplace Exposure Standard - Time Weighted Average) - The eight-hour, time-weighted average exposure standard is designed to protect the worker from the effects of long-term exposure.

The Biological Exposure Indices (bio) are not applicable to non-metal fluorides and organic fluoride-containing compounds.

WES - Ceiling (Workplace Exposure Standard - Ceiling). A concentration that should not be exceeded during any part of the working day.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls

Engineering controls Apply technical measures to comply with the occupational exposure limits.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as personal protective equipment

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, CHEMICAL GOGGLES, FACE SHIELD, GLOVES (Long), APRON, RUBBER BOOTS.



Eye/face protection Tight sealing safety goggles. If splashes are likely to occur: Face protection shield.

Hand protection Elbow-length impervious gloves.

Skin and body protection	Overalls. Boots. Splash apron or equivalent chemical impervious outer garment.
Respiratory protection	If determined by a risk assessment an inhalation risk exists, wear a suitable mist respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.
Environmental exposure controls	No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	No information available
Color	Pale Yellow
Odor	Characteristic , Pungent , Acidic
Odor threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	No data available	None known
Melting point / freezing point	-15°C to -21°C	None known
Boiling point / boiling range	>100°C	None known
Flash point	Not applicable	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	Not applicable	
Lower flammability or explosive limits	Not applicable	
Vapor pressure	18 mm Hg @20°C	None known
Vapor density	No data available	None known
Relative density	1.16-1.22 @20°C	None known
Water solubility	Miscible in water	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	Not applicable	None known
Decomposition temperature	105°C	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known

Other information

10. STABILITY AND REACTIVITY

Reactivity

Reactivity	Corrosive to metals. Reacts with alkalis.
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Chemical stability

Stability	Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
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Explosion data

Sensitivity to mechanical impact	None.
Sensitivity to static discharge	None.

Possibility of hazardous reactions

Possibility of hazardous reactions Contact with metals may evolve flammable hydrogen gas. Hydrogen fluoride will react with all silicon containing materials such as glass, concrete, and chemical spill sorbents such as vermiculite. This reaction will cause the generation of the highly toxic gas, silicon tetrafluoride.

Conditions to avoid

Conditions to avoid Contact with foodstuffs.

Incompatible materials

Incompatible materials Alkalis. Organic compounds. Metals.

Hazardous decomposition products

Hazardous decomposition products Hydrogen fluoride. Oxides of silicon. Fluorides.

11. TOXICOLOGICAL INFORMATION**Acute toxicity****Information on likely routes of exposure**

Product Information No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:

Inhalation May cause irritation. Delayed (up to 48hours) fluid build up in the lungs may occur.

Eye contact Corrosive to the eyes and may cause severe damage including blindness.

Skin contact Contact causes severe skin irritation and possible burns.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Can burn mouth, throat, and stomach.

Symptoms Irritation/Corrosion. May cause redness and tearing of the eyes. Erythema (skin redness). Burning.

Acute toxicity**Numerical measures of toxicity**

Refer to component information below.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Fluorosilicic acid	= 430 mg/kg (Rat)	-	= 1.11 mg/L (Rat) 1 h
Hydrofluoric acid	-	-	= 0.79 mg/L (Rat) 1 h

See section 16 for terms and abbreviations

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Causes burns. Classification is based on mixture calculation methods based on component data.

Serious eye damage/eye irritation	Causes serious eye damage. Classification is based on mixture calculation methods based on component data.
Respiratory or skin sensitization	No information available.
Germ cell mutagenicity	No information available.
Carcinogenicity	Fluoride ion has been classified by the International Agency for Research on Cancer (IARC) as a Group 3 agent. Group 3 - The agent is not classifiable as to its carcinogenicity to humans. Data available is insufficient for an assessment to be made.
Reproductive toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	Causes damage to organs. Classification is based on mixture calculation methods based on component data.
Aspiration hazard	No information available.
Chronic effects:	<p>Repeated or prolonged exposure may result in bone changes (fluorosis). Fluorosis in humans can result with the repeated ingestion of >6mg of fluorine per day. The fluoride accumulates in bone and can lead to the development of osteosclerosis and other bone changes. Teeth may also be affected.</p> <p>Symptoms of fluorosis may include weight loss, brittle bones, anaemia, weakness and stiffness of joints.</p>

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity	Keep out of waterways. Avoid contaminating waterways.
Terrestrial ecotoxicity	There is no data for this product.

Chemical name	Algae/aquatic plants	Fish	Crustacea
Fluorosilicic acid	-	LC50: =65mg/L (96h, <i>Poecilia reticulata</i>) LC50: =28.7mg/L (96h, <i>Pimephales promelas</i>)	-
Hydrofluoric acid	-	LC50: =660mg/L (48h, <i>Leuciscus idus</i>)	EC50: =270mg/L (48h, <i>Daphnia</i> species)

Persistence and degradability

Persistence and degradability	No information available.
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Bioaccumulative potential

Bioaccumulation	No information available.
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Mobility

Mobility in soil	No information available.
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Chemical name	Partition coefficient
Hydrofluoric acid	-1.4

Other adverse effects

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONSWaste treatment methods**Waste from residues/unused products**

Dispose of product in packaging/container in a way that is consistent with the Hazardous Substances (Disposal) Notice 2017 and the Act, and Hazardous Substances (Amendments and Revocations) Notice 2020. Treat the chemical using a method that changes the characteristics or composition of the chemical so that the chemical is no longer a hazardous chemical; or export the chemical from New Zealand as waste. Class 6 and 8 chemicals – may be discharged into the environment if a tolerable exposure limit has been set for the substance (or a component of that chemical); and the discharge does not, after reasonable mixing, result in the concentration of the substance in an environmental medium exceeding the tolerable exposure limit. If there is not tolerable exposure limit for the substance, then it may only be discharged into the environment if the substance is very rapidly converted to substances that are not hazardous substances.

Contaminated packaging

For packages that have been in direct contact with hazardous chemicals, the person must ensure that the package is rendered incapable of containing any chemical. It must be disposed of in a manner that is consistent with the requirements for disposal of the chemical that it contained, taking into account the material the package is manufactured from. Packages may only be reused or recycled if the package has been treated to remove any residual contents of the hazardous chemical (class 1, 2, 3, 4, or 5); or the contents of the residue in the package are below the threshold for the chemical to be classified as hazardous (class 6, 8, or 9 chemical).

14. TRANSPORT INFORMATIONROAD AND RAIL TRANSPORT

Classified as a Dangerous Good according to NZS 5433 Transport of Dangerous Goods on Land; DANGEROUS GOODS.

UN number 1778
 Proper shipping name FLUOROSILICIC ACID
 Hazard class 8
 Packing group II
 Hazchem code 2X

IATA

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

UN number 1778
 UN proper shipping name FLUOROSILICIC ACID
 Transport hazard class(es) 8
 Packing group II

IMDG

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

UN number 1778
 UN proper shipping name FLUOROSILICIC ACID
 Transport hazard class(es) 8
 Packing group II
 IMDG EMS Fire F-A
 IMDG EMS Spill S-B
 Marine pollutant No

15. REGULATORY INFORMATION**Safety, health and environmental regulations/legislation specific for the substance or mixture****New Zealand****National regulations** See section 8 for national exposure control parameters**International Inventories**

NZIoC All the constituents of this material are listed on the New Zealand Inventory of Chemicals.
TSCA Contact supplier for inventory compliance status.
DSL/NDSL Contact supplier for inventory compliance status.
EINECS/ELINCS Contact supplier for inventory compliance status.
ENCS Contact supplier for inventory compliance status.
IECSC Contact supplier for inventory compliance status.
KECL Contact supplier for inventory compliance status.
PICCS Contact supplier for inventory compliance status.
AIIC All the constituents of this material are listed on the Australian Inventory of Industrial Chemicals.

Legend:**NZIoC - New Zealand Inventory of Chemicals****TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances**ENCS** - Japan Existing and New Chemical Substances**IECSC** - China Inventory of Existing Chemical Substances**KECL** - Korean Existing and Evaluated Chemical Substances**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**AIIC- Australian Inventory of Industrial Chemicals****International Regulations****The Montreal Protocol on Substances that Deplete the Ozone Layer** Not applicable**The Stockholm Convention on Persistent Organic Pollutants** Not applicable**The Rotterdam Convention** Not applicable**16. OTHER INFORMATION****Prepared By** This Safety Data Sheet has been prepared by Ixom Operations Pty Ltd (Toxicology and SDS Services).**Issuing Date:** 06-Jun-2023**Reason(s) For Issue:** Change in Physical Properties**Revision Note:**

The symbol (*) in the margin of this SDS indicates that this line has been revised.

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian Industrial Chemicals Introduction Scheme (AICIS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Disclaimer

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

End of Safety Data Sheet