



chem-supply

Safety Data Sheet

infosafe
CS: 1.7.2

Page: 1 of 6

Infosafe No™	1CHAW	Issue Date : September 2011	RE-ISSUED by CHEMSUPP
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Product Name : **HYDROFLUORIC ACID SOLUTION**

Classified as hazardous

1. Identification

GHS Product Identifier	HYDROFLUORIC ACID SOLUTION	
Company Name	CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)	
Address	38 - 50 Bedford Street GILLMAN SA 5013 Australia	
Telephone/Fax Number	Tel: (08) 8440-2000 Fax: (08) 8440-2001	
Recommended use of the chemical and restrictions on use	Catalyst in alkylation, isomerization, condensation, dehydration, and polymerization reactions, fluorinating agent in organic and inorganic reactions, production of fluorine and aluminium fluoride, additive in liquid rocket propellants, refining of uranium and laboratory reagent.	
Other Names	<u>Name</u>	<u>Product Code</u>
	HYDROFLUORIC ACID 48%	HA216
	HYDROFLUORIC ACID 40%	HA217
	Fluohydric acid	
Other Information	EMERGENCY CONTACT NUMBER: +61 08 8440 2000 Business hours: 8:30am to 5:00pm, Monday to Friday.	

Chem-Supply Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Chem-Supply Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Chem-Supply Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

GHS classification of the substance/mixture	Acute Toxicity - Dermal: Category 1 Acute Toxicity - Inhalation: Category 1 Acute Toxicity - Oral: Category 2 Skin Corrosion/Irritation: Category 1A
Signal Word (s)	DANGER
Hazard Statement (s)	H300 Fatal if swallowed. H310 Fatal in contact with skin. H314 Causes severe skin burns and eye damage. H330 Fatal if inhaled.
Pictogram (s)	Corrosion, Skull and crossbones



Precautionary statement – Prevention	P260 Do not breathe dust/fume/gas/mist/vapours/spray. P280 Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary statement – Response	P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting. P302+P350 IF ON SKIN: Gently wash with plenty of soap and water. P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 Immediately call a POISON CENTER or doctor/physician. P320 Specific treatment is urgent (see on this label). P361 Remove/Take off immediately all contaminated clothing.



chem-supply

Safety Data Sheet

infosafe
CS: 1.7.2

Page: 2 of 6

Infosafe No™	1CHAW	Issue Date : September 2011	RE-ISSUED by CHEMSUPP
--------------	-------	-----------------------------	-----------------------

Product Name : **HYDROFLUORIC ACID SOLUTION**

Classified as hazardous

Precautionary statement – Storage P405 Store locked up.**Precautionary statement – Disposal** P501 Dispose of contents/container according to local, state and federal regulations.**3. Composition/information on ingredients****Chemical** Liquid**Characterization**

Ingredients	Name	CAS	Proportion	Hazard Symbol	Risk Phrase
	Hydrofluoric acid solution %	7664-39-3	39-51 %	T+, C	R26/27/28, R35

4. First-aid measures

Inhalation Seek immediate medical assistance. If patient is unconscious, give artificial respiration or use inhalator. Keep patient warm and resting, and send to hospital after first aid is complete.

Ingestion If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Remove the victim from the contaminated area and immediately place them under a safety shower or wash with a water hose (whichever is available). Remove all contaminated clothing. Handle all HF-contaminated material with gloves (i.e. PVC or neoprene). Keep washing with large amounts of water for at least 15 minutes. Have someone seek medical attention while area is continually being flushed with water.
If the following materials are available, limit the washing to five minutes and immerse the burned area in a solution of 0.2% iced aqueous Hyamine 1622 (Tetracaine benzethonium chloride) or 0.13% iced aqueous Zephiran Chloride (Benzalkonium Chloride). If immersion is not practical, towels should be soaked with one of the above solutions and used as compresses for the burn area. Ideally compresses should be changed every 2 minutes. Alternately, 2.5% calcium Gluconate gel should be massaged into affected area. Seek medical attention as soon as possible for all burns regardless of how minor they may appear initially.

Eye contact Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Irrigate eyes for at least 30 minutes with copious quantities of water, keeping the eyelids apart and away from eyeballs during irrigation. Seek medical attention immediately, preferably and eye specialist. If a medical officer is not immediately available, apply one to two drops of ophthalmic anaesthetic (e.g. 0.5% Pontocaine Hydrochloride solution). Place ice pack on eyes until reaching emergency room.
NOTE: Do not use any of the skin treatment preparations, oil drops or ointment for burns to the eyes.

First Aid Facilities Maintain eyewash fountain and safety shower in work area.

Advice to Doctor Consult Poisons Information Centre.
GENERAL:
For burns of moderate areas (greater than 8 square inches), ingestion and significant inhalation exposure, severe systemic effects may occur and admission to a critical care unit should be considered. Monitor and correct for hypocalcemia (low calcium level in the blood), cardiac arrhythmias (abnormal heart beats), hypomagnesemia (low magnesium levels) and hyperkalemia (high levels of potassium in the blood). Urine fluoride levels of greater than 4 mg/L are considered unacceptable. Increases in bone density due to fluoride deposition can be detected by x-ray.
INHALATION: Treat as chemical pneumonia. Monitor for hypocalcemia, 2.5% calcium Gluconate in normal saline by nebulizer or by IPPB with 100% oxygen may decrease pulmonary damage. Bronchodilators may also be administered.
SKIN:
for deep skin burns or contact with concentrated HF (over 50%) solution, consider infiltration about the affected area with 5% calcium Gluconate [equal parts of 10% calcium Gluconate and sterile saline for injection]. Burns beneath the nail may require splitting the nail and applications of calcium Gluconate to the exposed nail bed. For certain burns, especially of the digits, use of intra-arterial calcium Gluconate may be indicated.
EYES:
Irrigation may be facilitated by use of Morgan lens or similar ocular irrigator, using 1% aqueous calcium Gluconate solution (50ml of calcium Gluconate 10% in 500 ml normal saline).
AN ALTERNATIVE FIRST AID PROCEDURE:
The effect of HF, i.e. onset of pain, particularly in dilute solutions, may not be felt for up to 24 hours. It is important, therefore, that persons using HF have immediate access to an effective antidote even when they are away from their work place in order that first aid treatment can be commenced immediately. We



chem-supply

Safety Data Sheet

infosafe
CS: 1.7.2

Page: 3 of 6

Infosafe No™	1CHAW	Issue Date : September 2011	RE-ISSUED by CHEMSUPP
--------------	-------	-----------------------------	-----------------------

Product Name : **HYDROFLUORIC ACID SOLUTION**

Classified as hazardous

Other Information recommend that any person in contact with HF should carry, or have access to a tube of HF Antidote Gel at all times; ideally with one tube at the work place, one on the person and one at home. It is imperative that any person who has been contaminated by HF should seek medical advice when the treatment by HF antidote Gel has been applied. For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor at once.

5. Fire-fighting measures

Specific Methods When material is not involved in fire, do not use water on material itself. Small fire: Use CO2 (except for barium oxide), dry chemical, dry sand or flooding quantities of water. If safe to do so, move undamaged containers from fire area. Large fire: Flood fire area with large quantities of water while knocking down vapours with water fog – If insufficient water supply, knock down vapours only. Cool containers with flooding quantities of water until well after fire is out. Avoid getting water inside containers. Fire involving tanks. Withdraw immediately in case of rising sound from venting safety devices or discolouration of tank. ALWAYS stay away from tank ends.

Specific hazards arising from the chemical Does not burn but may produce toxic and/or corrosive fumes upon heating. Heat of reaction may be enough to ignite combustible materials. Will react with water (some violently) releasing flammable, toxic, and/or corrosive gases and runoff. Contact with metals may evolve flammable hydrogen gas. Fire will produce irritating, toxic, and/or corrosive gases. Runoff may pollute waterways. May be transported in a molten form. Containers may explode when heated or contaminated with water.

Hazchem Code 2W

Precautions in connection with Fire Wear SCBA chemical splash suit. Structural firefighter's uniform is NOT effective for these materials.

6. Accidental release measures

Spills & Disposal Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Vapour-suppressing foam may be used to control vapours – Water spray may be used to knock down or divert vapour clouds. DO NOT GET WATER INSIDE CONTAINERS. Small spill: Cover with DRY earth, and or other non-combustible material followed by plastic sheet to minimise spreading or contact with rain. Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

Personal Protection Wear protective clothing specified for normal operations (see Section 8)

7. Handling and storage

Precautions for Safe Handling Handling of HF material requires special materials and technology for containers, pipes, valves etc. Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid); observe all warnings and precautions listed for the product.

Conditions for safe storage, including any incompatibilities Keep in tightly closed polyethylene containers. Store in a cool, dry place with adequate ventilation separated from other chemicals. Protect from physical damage. Storage facilities should be constructed for containment and neutralization of spills.

Corrosiveness Can dissolve metals containing silica. Wax, lead and platinum are not corroded. Most other metals are corroded to some degree.

Storage Regulations Refer Australian Standard AS 3780 - 1994 'The storage and handling of corrosive substances'.

Other Information Do not store in metal containers.

8. Exposure controls/personal protection

Occupational exposure limit values	Name	STEL		TWA		Footnote
		mg/m3	ppm	mg/m3	ppm	
	Hydrofluoric acid solution %			2.6	3	peak limitation

Other Exposure Information PEAK LIMITATION: PEAK LIMITATION. For some rapidly acting substances and irritants, the averaging of the airborne concentration over an eight-hour period is inappropriate. These substances may induce acute effects after relatively brief exposure to high concentrations and so the exposure standard for these substances represents a maximum or peak concentration to which workers may be exposed. Although it is recognised that there are analytical limitations to the measurement of some substances,



chem-supply

Safety Data Sheet

infosafe
CS: 1.7.2

Page: 4 of 6

Infosafe No™	1CHAW	Issue Date : September 2011	RE-ISSUED by CHEMSUPP
--------------	-------	-----------------------------	-----------------------

Product Name : **HYDROFLUORIC ACID SOLUTION**

Classified as hazardous

Appropriate engineering controls	compliance with these 'peak limitation' exposure standards should be determined over the shortest analytically practicable period of time, but under no circumstances should a single determination exceed 15 minutes. TWA: 2.6 mg/m ³ (3 ppm) - peak limitation - Hydrogen fluoride (as F) - Worksafe Aust. In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.
Respiratory Protection	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels. NOTE: The Immediately Dangerous to Life or Health (IDLH) concentration for hydrogen fluoride is 30 ppm.
Eye Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Neoprene or PVC gloves
Body Protection	Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form	Liquid
Appearance	Colourless, fuming, mobile liquid.
Odour	Acrid odour. Do not breathe fumes.
Melting Point	< -36 °C (< -33 °F)
Boiling Point	108 °C (226 °F)
Solubility in Water	Very soluble in water.
Specific Gravity	1.15-1.18
pH	pH 1.0 (0.1M solution)
Vapour Pressure	25 mm Hg @ 20 °C (68 °F)
Vapour Density (Air=1)	1.97 (air=1)
Volatile Component	100 % (as water and acid)
Specific Properties or Risk	Will attack glass and any silicon-containing material.
Flammability	Non flammable.
Molecular Weight	20.01

10. Stability and reactivity

Chemical Stability	Stable under normal use conditons.
Conditions to Avoid	Moisture. Incompatibles.
Incompatible Materials	Arsenic trioxide, phosphorus pentoxide, ammonia, calcium oxide, sodium hydroxide, sulfuric acid, vinyl acetate, ethylenediamine, acetic anhydride, alkalis, organic materials, most common metals, rubber, leather, water, strong bases, carbonates, sulfides, cyanides, oxides of silicon, especially glasses, concrete, silica and fluorine. Will also react with steam or water to produce toxic fumes.
Hazardous Decomposition Products	On contact with metals, liberates hydrogen gas. On heating to decomposition, could yield toxic fumes of fluorides. Attacks glass and other silicon containing compounds. REacts with silica to produce silicon tetrafluoride, a hazardous colourless gas.
Possibility of hazardous reactions	Fluorine gas reacts vigorously with a 50% hydrofluoric acid solution and may burst into flame. Reacts violently in contact with bases. Reaction with arsenic trioxide can be extremely hot. Contact with metal produces flammable hydrogen gas. The acid will dissolve glass, ceramics, metals containing silica,



chem-supply

Safety Data Sheet

infosafe
CS: 1.7.2

Page: 5 of 6

Infosafe No™	1CHAW	Issue Date : September 2011	RE-ISSUED by CHEMSUPP
--------------	-------	-----------------------------	-----------------------

Product Name : **HYDROFLUORIC ACID SOLUTION**

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Hazardous Polymerization	natural gum rubber and leather. Reacts with steam or water to produce toxic fumes. Will not occur.
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11. Toxicological Information

Acute Toxicity - Inhalation	LC50 (rat): 1276 ppm/1h
Ingestion	Very toxic if swallowed. May cause necrosis of esophagus and stomach with nausea, vomiting diarrhea, circulatory collapse and death.
Inhalation	Very toxic by inhalation. May cause extreme irritation of the respiratory tract, pulmonary inflammation and congestion. Fluid accumulation in the lungs may occur and can lead to death.
Skin	Causes deep and excruciatingly painful skin burns. Very toxic in contact with skin. May cause death.
Eye	Causes severe burns. May cause prolonged or permanent visual defects or total destruction of the eyes.
Carcinogenicity	Not listed in the IARC Monographs.
Chronic Effects	May cause fluorosis. Symptoms may include weight loss, malaise, anemia, leukopenia, discolouration of teeth and osteosclerosis. There may also be heart, nerve, and intestinal problems.
Mutagenicity	No evidence of mutagenic effects.

12. Ecological information

Ecotoxicity	This material is expected to be slightly toxic to aquatic life.
Environmental Fate	If the pH > 6.5, the soil can bind fluorides tightly. High calcium content will immobilize fluorides, which can be damaging to plants when present in acid soils.
Acute Toxicity - Fish	Fish (fresh water): 60 ppm (time period not specified), lethal
Acute Toxicity - Other Organisms	LC50 (Shrimp, Aerated salt water): >300 ppm/48hr

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.
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14. Transport information

Transport Information	Dangerous goods of Class 8 (Corrosive) are incompatible in a placard load with any of the following: Class 1, Class 4.3, Class 5, Class 6, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids, Class 7; and are incompatible with food and food packaging in any quantity.
U.N. Number	1790
UN proper shipping name	HYDROFLUORIC ACID
Transport hazard class(es)	8
Sub.Risk	6.1
Hazchem Code	2W
Packaging Method	3.8.8RT5,RT8
Packing Group	II
EPG Number	8C2
IERG Number	40

15. Regulatory information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS).
Poisons Schedule	S7
Hazard Category	Very Toxic, Corrosive

16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons No. 3', Commonwealth of Australia, June 2012. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons,
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chem-supply

Safety Data Sheet

infosafe
CS: 1.7.2

Page: 6 of 6

Infosafe No™	1CHAW	Issue Date : September 2011	RE-ISSUED by CHEMSUPP
--------------	-------	-----------------------------	-----------------------

Product Name : **HYDROFLUORIC ACID SOLUTION**

Classified as hazardous

**Contact
Person/Point**

Inc., NY, 1997.
 National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007.
 'Labelling of Hazardous Workplace Chemicals, Code of Practice' Safe Work Australia.
 Standards Australia 'AS 1940-2004 The Storage and Handling of Flammable and Combustible Liquids.
 Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide',
 Standards Australia/Standards New Zealand, 2010.
 Worksafe Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004)]'.
 Worksafe Australia, 'Hazardous Substances Information System, 2005'.
 Worksafe Australia, 'National Code of Practice for the Labelling of Workplace Hazardous Substances (2011)'.
 Worksafe Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)]'.
 Paul McCarthy Ph. (08) 8440 2000 **DISCLAIMER STATEMENT:**
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**Empirical Formula & HF
Structural Formula
User Codes**

<u>User Field Title</u>	<u>User Code</u>
CAS No.	7664-39-3
First Aid Phrases	A,G3,E2,S5
Safety Phrases	7/9-26-36/37/39-45

Other Information

R26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.
 R35 Causes severe burns.
 S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
 S45 In case of accident or if you feel unwell seek medical advice immediately.
 S7/9 Keep container tightly closed in a well ventilated place.
 ...End Of MSDS...

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