Hydrofluoric acid 48-51 % p.a., ACS

66156-2.5L

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SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Hydrofluoric acid 48-51 % p.a., ACS
SDS Number	:	000000020540
Product Use Description	:	Laboratory chemicals
Note	:	Synonyms: HF, Anhydrous HF, AHF, Hydrogen Fluoride, HF Acid For additional information, please visit http://www.HFacid.com (available 24 hours/day, 7days/week).
Manufacturer or supplier's details	:	CHEM-SUPPLY Pty Ltd 38-50 Bedford St. Gillman SA 5013, Australia
For more information call	:	+61 8 8440 2000 (Monday-Friday, 9:00am-5:00pm)
In case of emergency call	:	**Medical: 1-800-498-5701 or +1-303-389-1414**
	:	**Transportation (CHEMTREC): 1-800-424-9300 or +1-703-527-3887**
	:	**CHEMTREC in Australia: +(61)-290372994**
	:	(24 hours/day, 7 days/week)

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Classification of the substance or mixture : Corrosive to metals, Category 1
Acute toxicity, Category 2, Oral
Acute toxicity, Category 2, Inhalation
Acute toxicity, Category 1, Dermal
Skin corrosion, Category 1A
Serious eye damage, Category 1

GHS Label elements, including precautionary statements

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Symbol(s) :

Signal word : Danger

Hazard statements : May be corrosive to metals.
Fatal if swallowed, in contact with skin or if inhaled
Causes severe skin burns and eye damage.

Precautionary statements :

Prevention:
Keep only in original container.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Do not get in eyes, on skin, or on clothing.
Wash 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.
Wear respiratory protection.

Response:
IF SWALLOWED: Immediately call a POISON CENTER/doctor.
IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
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/doctor.
Remove/Take off immediately all contaminated clothing.
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.

Storage:
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not : Causes severe burns which may not be immediately painful or

result in classification	visible. May cause hypocalcemia (depletion of calcium in the body) which may be fatal. Specialized medical treatment is required for all exposures.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : HF

Chemical nature : Mixture

CAS-No. : 7664-39-3

Hazardous components

Chemical name	CAS-No.	Concentration
Hydrogen fluoride	7664-39-3	>= 30 - < 60%

4. FIRST AID MEASURES

Inhalation : Remove to fresh air.
Keep patient warm and at rest.
Get competent medical attention immediately. If breathing has stopped, start artificial respiration at once. An authorized person should administer oxygen to a victim who is having difficulty breathing, until the victim is able to breathe easily by himself. Calcium gluconate, 2.5% in normal saline may be given by nebulizer with oxygen. Do not give stimulants unless instructed to do so by a physician. Victim should be examined by a physician and held under observation for at least 24 hours.

Skin contact : Remove the victim from the contaminated area and immediately wash the burned area with plenty of water for a minimum of 15 minutes.
Limit washing to 5 minutes if treatment specific for HF exposure is available. Remove all contaminated clothing while washing continuously. After thorough washing for at least 5 minutes, the burned area should be immersed in a solution of 0.13% iced aqueous Benzalkonium Chloride until pain is relieved. As an alternate first aid treatment, 2.5% calcium gluconate gel may be continuously massaged into the burn

area until the pain is relieved. For burns not responsive to topical treatment (as measured by pain being present for longer than 30 minutes) a physician may inject 2.5% - 5% aqueous calcium gluconate beneath, around and in the burned area. Use of local anesthetics is not recommended, as reduction in pain is an indicator of effectiveness of treatment.

Eye contact : Immediately flush the eyes for at least 15 minutes with large amounts of gently flowing water. Hold the eyelids open and away from the eye during irrigation to allow thorough flushing of the eyes. Do not use the benzalkonium chloride (Zephiran) solutions described for skin treatment. If the person is wearing contact lenses, the lenses should be removed, if possible. However, flushing with water should not be interrupted, and the lenses should be removed by a person who is qualified to do so. If sterile 1% calcium gluconate solution is available, water washing may be limited to 5 minutes, after which the 1% calcium gluconate solution should be used to irrigate the eye using a syringe or a continuous irrigation device. Take the victim to a doctor, preferably an eye specialist, as soon as possible. Ice water compresses may be applied to the eyes while transporting the victim to the doctor. If a physician is not immediately available, apply one or two drops of 0.5% tetracaine hydrochloride, 0.5% proparacaine, or other aqueous, topical ophthalmic anesthetic and continue irrigation. Use no other medications unless instructed to do so by a physician. Rubbing of the eyes is to be avoided.

Ingestion : Have the victim drink several large glasses of water or milk to dilute the acid. Do not induce vomiting. Do not give emetics or baking soda. Never give anything by mouth to an unconscious person. Give several glasses of milk or several ounces of milk of magnesia, any calcium containing antacid or grind up and administer up to 30 antacid tablets with water. The calcium or magnesium in these compounds may act as an antidote; however this has not been supported in the literature. Get immediate medical attention. Ingestion of HF is a life-threatening emergency.

Notes to physician : For large skin area burns (totaling greater than 25 square inches), for ingestion and for significant inhalation exposure, severe systemic effects may occur. Monitor and correct for hypocalcemia, cardiac arrhythmias, hypomagnesemia and hyperkalemia. In some cases hemodialysis may be indicated. For certain burns, especially of the digits, use of intra-arterial calcium gluconate may be indicated. For inhalation exposures,

treat as chemical pneumonia. Monitor for hypocalcemia. 2.5% calcium gluconate in normal saline by nebulizer or by intermittent positive pressure breathing with 100% oxygen may decrease pulmonary damage. Bronchodilators may also be administered.
A booklet titled “Recommended Medical Treatment for Hydrofluoric Acid Exposure” is available from the Honeywell HF website: http://www.HFacid.com.

5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray Foam Carbon dioxide (CO2) Dry chemical On dilution or dissolving in water, considerable heating always occurs. Contact with a relatively small quantity of water creates violent reaction generating much heat and spattering of hot acid. If use of water is necessary use copious amounts
Specific hazards during firefighting	:	Fire or intense heat may cause violent rupture of packages. Use a water spray to cool fully closed containers. Reacts violently with water. Do not direct water spray at the point of leakage. Contact with metals liberates hydrogen gas. Hydrogen gas is flammable and may form an explosive atmosphere. Diking with silicon materials is to be avoided. May form Silicon tetrafluoride gas.
Special protective equipment for firefighters	:	Personal protection through wearing a tightly closed chemical protection suit and a self-contained breathing apparatus. No unprotected exposed skin areas.
Further information	:	HAZCHEM Code: 2X

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Immediately evacuate personnel to safe areas. Immediately contact emergency personnel. Ensure all affected individuals are in a safe environment. Wear personal protective equipment. Unprotected persons must be kept away. Keep people away from and upwind of spill/leak.

Personal protection through wearing a tightly closed chemical protection suit and a self-contained breathing apparatus.
Ensure all equipment (including Personal Protective Equipment (PPE)) is compatible with Hydrofluoric acid (HF).

Environmental precautions : Prevent further leakage or spillage if safe to do so.
Discharge into the environment must be avoided.
Do not flush into surface water or sanitary sewer system.
Do not allow run-off from fire fighting to enter drains or water courses.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up : Prevent spreading over a wide area (e.g. by containment or oil barriers).
Diking with silicon materials is to be avoided. May form Silicon tetrafluoride gas.
Suppress (knock down) gases/vapours/mists with a water spray (fog).
Do not direct water spray at the point of leakage.
Use water spray cautiously and in large quantities.
With acids neutralization takes place under development of heat.
Do not pick up with the help of saw-dust or other combustible substances.
Neutralize acidity with an appropriate alkaline material.
Neutralize with caustics, lime, soda ash, baking soda or other appropriate alkaline material. Pay attention to the incompatibility statements in Section 10 when effecting neutralization.

7. HANDLING AND STORAGE

Handling

Advice on safe handling : Wear personal protective equipment.
Exhaust ventilation at the object is necessary.
Ensure all equipment (including Personal Protective Equipment (PPE)) is compatible with Hydrofluoric acid (HF).
Perform filling operations only at stations with exhaust ventilation facilities.
Specialized medical treatment is required for all exposures.
Plan first aid action before beginning work with this product.
When diluting, add acids to water, never the other way around.
Do not swallow.
Do not breathe vapours or spray mist.

Do not get in eyes, on skin, or on clothing.

Advice on protection against fire and explosion : No special precautions required.

Storage

Requirements for storage areas and containers : Keep containers tightly closed in a dry, cool and well-ventilated place.
Keep locked up or in an area accessible only to qualified or authorised persons.
Prevent unauthorized access.
Protect from physical damage.
Store away from incompatible substances.

Materials to avoid : Glass and silicate-containing materials are attacked., HF contact with glass, concrete and other silicon bearing materials will yield silicon tetrafluoride gas. Pressure buildup from this process has been known to rupture glass containers. . HF contact with carbonates, sulfides and cyanides yield toxic gases such as carbon dioxide, hydrogen sulfide and hydrogen cyanide. Contact with alkalies and some oxides cause strong violent exothermic reactions. Contact with metals will yield hydrogen gas, a fire and explosive reactive hazard., On dilution or dissolving in water, considerable heating always occurs., When diluting, add acids to water, never the other way around.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
Hydrofluoric acid	7664-39-3	PEAK : Peak Limitation:	3 ppm 2.6 mg/m3	12 2011	AU NOEL: Australia. National Workplace OELs (Workplace Exposure Standards for Airborne Contaminants, Appendix A)
Further information	:	Expressed as : as F			
		PEAK : Peak Limitation:	3 ppm 2.6 mg/m3	08 2005	AU OEL: Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational

						Environment)
Further information	:	Expressed as : as F				

Engineering measures

Use with local exhaust ventilation.
Apply technical measures to comply with the occupational exposure limits.

Personal protective equipment

Respiratory protection : In case of insufficient ventilation wear suitable respiratory equipment.
Use NIOSH approved respiratory protection.
Have available emergency self-contained breathing apparatus or full-face airline respirator when using this chemical.

Hand protection : Protective gloves
Gloves must be inspected prior to use.
Replace when worn.

Eye protection : Wear as appropriate:
Goggles or face shield, giving complete protection to eyes

Skin and body protection : Wear suitable protective equipment.
complete suit protecting against chemicals

Hygiene measures : When using, do not eat, drink or smoke.
Provide adequate ventilation.
Keep working clothes separately.
Contaminated work clothing should not be allowed out of the workplace.
Do not swallow.
Do not breathe vapours or spray mist.
Do not get in eyes, on skin, or on clothing.
This material has an established AIHA ERPG exposure limit.
The current list of ERPG exposure limits can be found at http://www.aiha.org/insideaiha/GuidelineDevelopment/ERPG/Documents/2011erpgweelhandbook_table-only.pdf.

Protective measures : Ensure that eyewash stations and safety showers are close to the workstation location.
Plan first aid action before beginning work with this product.
Ensure all equipment (including Personal Protective Equipment (PPE)) is compatible with Hydrofluoric acid (HF).

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	:	liquid
Colour	:	colourless
Odour	:	stinging
pH	:	Note: acidic
Melting point/range	:	ca. -35 °C
Boiling point/boiling range	:	ca. 105 °C at 1,013 hPa
Flash point	:	Note: Not applicable
Lower explosion limit	:	Note: Not applicable
Upper explosion limit	:	Note: Not applicable
Vapour pressure	:	101 hPa at 50 °C(122 °F)
Density	:	ca. 1.170 g/cm3 at 20 °C
Water solubility	:	Note: completely miscible
Partition coefficient: n-octanol/water	:	Note: no data available
Ignition temperature	:	Note: Not applicable
Auto-ignition temperature	:	Note: not auto-flammable

Decomposition temperature	:	Note: No decomposition if used as directed., Fire or intense heat may cause violent rupture of packages.
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Molecular weight	:	20.01 g/mol
Bulk density	:	Note: Not applicable
Corrosivity	:	Note: Corrosive to metals

10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Hazardous polymerisation does not occur.
Conditions to avoid	:	Protect from heat/overheating.
Incompatible materials to avoid	:	Glass and silicate-containing materials are attacked. HF contact with glass, concrete and other silicon bearing materials will yield silicon tetrafluoride gas. Pressure buildup from this process has been known to rupture glass containers. . HF contact with carbonates, sulfides and cyanides yield toxic gases such as carbon dioxide, hydrogen sulfide and hydrogen cyanide. Contact with alkalies and some oxides cause strong violent exothermic reactions. Contact with metals will yield hydrogen gas, a fire and explosive reactive hazard. On dilution or dissolving in water, considerable heating always occurs. When diluting, add acids to water, never the other way around.
Hazardous decomposition products	:	No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	Note: no data available

Acute inhalation toxicity	:	LC50: 2240 ppm Exposure time: 1 h Species: Rat Note: anhydrous substance
Acute dermal toxicity	:	Note: no data available
Skin irritation	:	Species: Rabbit Classification: Corrosive Method: OECD
Eye irritation	:	Note: no data available
Sensitisation	:	Note: no data available
Repeated dose toxicity	:	Note: Not classified due to data which are conclusive although insufficient for classification.
Genotoxicity in vitro	:	Test Method: Ames test Metabolic activation: with and without metabolic activation Result: negative Method: OECD Test Guideline 471
Genotoxicity in vivo	:	Test Method: Chromosome aberration test Species: Mouse Test substance: REACH dossier “read-across” Result: negative
Further information	:	Note: Causes severe burns which may not be immediately painful or visible.The potential delay in clinical signs or symptoms for dilute solutions is given below. HF Concentration (Delay in Symptoms) >50% (Immediately Apparent) 20%-50% (1-8 hours) 0%-20% (Up to 24 hours)Symptoms might include pain, redness of the skin and possible tissue destruction.Hydrofluoric Acid will penetrate skin and attack underlying tissues.May cause hypocalcemia (depletion of calcium in the body) which may be fatal.Chronic exposure to fluoride has been reported to result in tooth mottling in

children, bone fluorosis, and sometimes osteosclerosis in adults and children.

12. Ecological information

Toxicity

Toxicity to fish	:	LC50: 925 mg/l Exposure time: 96 h Species: Gambusia affinis (Mosquito fish)
	:	60 mg/l Species: Freshwater fish Note: Lethal
Toxicity to daphnia and other aquatic invertebrates	:	Note: no data available
Toxicity to algae	:	Note: no data available

Persistence and degradability

Biodegradability	:	Note: Not applicable

Other adverse effects

Additional ecological information	:	Do not flush into surface water or sanitary sewer system.

13. DISPOSAL CONSIDERATIONS

Product	:	In accordance with local and national regulations.

14. TRANSPORT INFORMATION

ADR

UN/ID No.	:	UN 1790
Description of the goods	:	HYDROFLUORIC ACID
Class	:	8
Packing group	:	II
Classification Code	:	CT1
Hazard Identification Number	:	86
Labels	:	8 (6.1)

IATA

UN/ID No.	:	UN 1790
Description of the goods	:	Hydrofluoric acid
Class	:	8
Packing group	:	II
Labels	:	8 (6.1)
Packing instruction (cargo aircraft)	:	855
Packing instruction (passenger aircraft)	:	851
Packing instruction (passenger aircraft)	:	Y840

IMDG

UN/ID No.	:	UN 1790
Description of the goods	:	HYDROFLUORIC ACID
Class	:	8
Packing group	:	II
Labels	:	8 (6.1)
EmS Number 1	:	F-A
EmS Number 2	:	S-B
Marine pollutant	:	no

HAZCHEM Code: 2X

15. REGULATORY INFORMATION

National regulatory information

Standard for the Uniform Scheduling of Medicines and Poisons	:	Schedule 7

Other international regulations

Notification status

US. Toxic Substances Control Act	:	On TSCA Inventory
Australia. Industrial Chemical (Notification and Assessment) Act	:	On the inventory, or in compliance with the inventory
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	:	All components of this product are on the Canadian DSL
Japan. Kashin-Hou Law List	:	On the inventory, or in compliance with the inventory
Korea. Toxic Chemical Control Law (TCCL) List	:	On the inventory, or in compliance with the inventory
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	:	On the inventory, or in compliance with the inventory
China. Inventory of Existing Chemical Substances	:	On the inventory, or in compliance with the inventory
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	:	On the inventory, or in compliance with the inventory

16. OTHER INFORMATION

Sources of key data used to compile the Safety Data Sheet:

1. National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC:2011(2003)]
2. Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)]
3. List of Designated Hazardous Substances [NOHSC:10005(1999)]
4. Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)]
5. Australian Dangerous Goods Code, No. 6 [National Road Transport Commission]
6. Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP), No. 19 [NDPSC: 2004]
7. National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]

Further information

Hydrofluoric acid 48-51 % p.a., ACS

66156-2.5L

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.

Final determination of suitability of any material is the sole responsibility of the user.

This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

Prepared by:
Honeywell Performance Materials and Technologies Product Stewardship Group

End of Safety Data Sheet