

SRF LIMITED

Issue: 02 Rev: 01 Revision Date: 01.09.2020

SAFETY DATA SHEET

ANHYDROUS HYDROFLUORIC ACID

SECTION 1: IDENTIFICATION OF SUBSTANCE OR MIXTURE AND COMPANY

1.1 Product Name : ANHYDROUS HYDROFLUORIC ACID

Trade Names / Synonyms : Hydrofluoric acid; Fluoric Acid, Hydrogen

Fluoride, Anhydrous, HFA, Hydrogen Fluoride,

HF Acid

CAS Number : 7664-39-3

1.2 Manufacturer/supplier : SRF Limited, D-2/1 GIDC Phase-II, PCPIR,

Dahej, Tal. Vagra, Dist. Bharuch 392 130,

Gujarat (India)

Further information obtainable

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1.3 Emergency Call

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Ashish

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Kumar

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Kumar

Relevant Identified Uses Of The Substance Or Mixture And Uses Advised Against

Identified Uses: : Industrial Use, Manufacture of substances

Uses advised against: : Do not use product for anything outside of the

above specified uses

SECTION 2: HAZARDS IDENTIFICATION

2.1 This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Classification of the substance or mixture

GASES UNDER PRESSURE - Liquefied gas ACUTE TOXICITY (inhalation) - Category 3

SKIN CORROSION - Category 1

SERIOUS EYE DAMAGE - Category 1

SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE)

- Category 1

GHS leble element Hazard Pictogram:











Single word: 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.

Precautinary Statement(s):

P260 Do not breathe gas, vapours

P262 Do not get in eyes, on skin, or on clothing

P280 Wear protective gloves/protective clothing/eye protection/face

protection

P281 Use personal protective equipment as required

P304+P340+P315 IF INHALED: Remove victim to fresh air and keep at rest in a position

comfortable for breathing. Get immediate medical advice/attention

P305+P351+P338+ IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get

immediate medical advice/attention.

P303+P361+P353+ IF ON SKIN (or hair): Remove / Take off immediately all contaminated

P315 clothes. Rinse skin with water/shower. Get immediate medical

advice/attention.

SECTION 3: COMPOSITION & INFORMATION ON INGREDIENTS

Chemical name	Common name and synonyms	Formula	CAS No.	Concentration % (w/w)
Hydrofluoric acid	Hydrofluoric acid; Fluoric Acid, Hydrogen Fluoride,	HF	7664-39-3	>= 99.9 - <= 100

SECTION 3: FIRST AID MEASURES

4.1 Description of first aid measures

General advice : Remove victim to uncontaminated area wearing

self-contained breathing apparatus. Keep victim warm and rested.Call a doctor. Apply artificial

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respiration if breathing stopped.

Inhalation : Remove victim to uncontaminated area wearing

self-contained breathing apparatus. Keep victim warm and rested.Call a doctor. Apply artificial

respiration if breathing stopped.

Skin contact : Get medical attention immediately. Call a poison

center or physician. Flush

contaminated skin with plenty of water. Remove

contaminated clothing and shoes.

Wash contaminated clothing thoroughly with

water before removing it, or wear gloves.

Continue to rinse for at least 10 minutes.

Chemical burns must be treated promptly by a

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physician. Wash clothing before reuse. Clean

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shoes thoroughly before reuse.

Eye contact : Get medical attention immediately. Call a poison

center or physician. Immediately flush

eyes with plenty of water, occasionally lifting the

upper and lower eyelids. Check for and

remove any contact lenses. Continue to rinse for

at least 10 minutes. Chemical burns must be treated promptly by a physician.

Ingestion : As this product is a gas, refer to the inhalation

section

4.2 Most Important Symptoms and Effects, Both Acute and Delayed: Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Toxic if inhaled.

Ingestion : As this product is a gas, refer to the

inhalation section

Skin contact : Causes severe burns.

Frostbite Try to warm up the frozen tissues and seek

medical attention.

Over-exposure signs/symptoms

Eye contact	Adverse symptoms may include the following:,	
	pain or irritation, watering, redness	
Inhalation	No specific data	
Skin contact	Adverse symptoms may include the following:,	
	pain or irritation, redness, blistering may occur	
Ingestion	Adverse symptoms may include the following:,	
	stomach pains	

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: Treat symptomatically. Contact poison treatmen specialist immediately if large quantities have	
	been ingested or inhaled	
Specific treatments	: No specific treatment.	
Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves	

SECTION 5. FIRE FIGHTING MEASURE

General Fire Hazards : Heat may cause the containers to explode.

5.1 **Extinguishing media Suitable** : Use an extinguishing agent suitable for the

extinguishing media: surrounding fire.

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5.2 Special hazards arising from the : Contains gas under pressure. In a fire or if

substance or mixture heated, a pressure increase will occur and the

container may burst or explode.

Hazardous Combustion Products: Decomposition products may include the

following materials: halogenated compounds

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Advice for firefighters Special fire Fire-fighters should wear appropriate protective

equipment and self-contained breathing fighting procedures:

apparatus (SCBA) with a full face-piece

operated in positive pressure mode

Promptly isolate the scene by removing all Special protective equipment for firefighters:

persons from the vicinity of the incident if

there is a fire. No action shall be taken involving

any personal risk or without suitable

training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective Evacuate area. Use self-contained breathing

equipment and emergency apparatus and chemically protective clothing. procedures Ensure adequate air ventilation. Monitor

> concentration of released product. Prevent from entering sewers, basements and work pits, or any place where its accumulation can be

dangerous.

6.2 **Environmental Precautions** Ensure emergency procedures to deal with

> accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil

or air)

6.3 Methods and material for Ventilate area. Hose down area with water.

Wash contaminated equipment or sites of leaks containment and cleaning up

with copious quantities of water.

Refer to sections 8 and 13. 6.4 Reference to other sections

SECTION 7: HANDLING & STORAGE

7.1 Precautions for safe handling: Put on appropriate personal protective equipment (see Section 8). Contains gas

under pressure. Do not get in eyes or on skin clothing. Use only with adequate

ventilation.

Wear appropriate respirator when ventilation

is inadequate. Do not puncture or

incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or

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drop. Use a suitable hand truck for cylinder

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movement.

Empty containers retain product residue and can be hazardous. Do not breathe gas

7.2 Conditions for safe storage, : Store in accordance with local regulations. Store

including any incompatibilities: in a segregated and approved area.

Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Cylinders should be

stored upright, with valve

protection cap in place, and firmly secured to

prevent falling or being knocked over.

Cylinder temperatures should not exceed 52 °C (125 °F). Store locked up. Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before

handling or use

7.3 Storage temperature : Cylinder temperatures should not exceed 52 °C

7.4 Storage period : No data available

SECTION 8 : EXPOSURE CONTROL / PERSONAL PROTECTION CONTROL PARAMETERS

8.1 Control parameters, e.g., occupational exposure limit values or biological limit values

Occupational Exposure Limits:

Component	Expossure Limit
Hydrogen Fluoride	ACGIH TLV (United States, 3/2017).
	Absorbed through skin. Notes: as F , C: 2 ppm, (as F)
	TWA: 0.5 ppm, (as F) 8 hours.
	NIOSH REL (United States, 10/2016). Notes: as F
	CEIL: 5 mg/m³, (as F) 15 minutes.
	CEIL: 6 ppm, (as F) 15 minutes.
	TWA: 2.5 mg/m³, (as F) 10 hours.
	TWA: 3 ppm, (as F) 10 hours.
	OSHA PEL (United States, 6/2016). Notes: as F
	TWA: 2.5 mg/m³, (as F) 8 hours.
	OSHA PEL 1989 (United States, 3/1989). Notes: as F
	STEL: 6 ppm, (as F) 15 minutes.
	TWA: 3 ppm, (as F) 8 hours.
	OSHA PEL Z2 (United States, 2/2013).
	TWA: 3 ppm 8 hours

8.2 **Exposure controls**

Engineering controls :

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Product to be handled in a closed system and under strictly controlled conditions. Keep concentrations well below occupational exposure limits. Consider work permit system e.g. for maintenance activities. Preferably use

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permanent leak-tight connections (eg. welded pipes). Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. Gas detectors should be used when toxic quantities may be released.

Keep self-contained breathing apparatus readily available for emergency use., Use SCBA in the event of high concentrations, The selection of the Respiratory Protective Device (RPD) must

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Personal protective equipment

Hand protection

Body protection

Respiratory protection

exposure levels, the hazards of the product and the safe working limits of the selected RPD., When allowed by a risk assessment Respiratory Protective Equipment (RPE) may be used. Guideline: EN 136 Respiratory protective

Guideline: EN 136 Respiratory protective devices. Full face masks. Requirements, testing, marking Material: Filter E Guideline: EN 14387:

Respiratory protective

devices. Gas filter(s) and combined filter(s).

Requirements, testing, marking

be based on known or anticipated

Advice: Wear working gloves and safety shoes while handling containers., Chemically resistant gloves complying with EN 374 should be worn at all times when handling chemical products if a

all times when handling chemical products if a risk assessment indicates this is necessary. Material: Fluor elastomer (FKM) Min. Breakthrough time: 480 min Glove thickness: 0,7 mm Guideline: EN 374-1/2/3 Protective gloves against chemicals and micro-organisms.

Protect eyes, face and skin from contact with product. Keep suitable chemically resistant protective clothing readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Guideline: EN 943: Protective clothing against

liquid and gaseous chemicals, including liquid aerosols and solid particles. Wear

working gloves and safety shoes while handling containers. EN ISO 20345 Personal protective

equipment - Safety footwear.

Eye/Faceprotection: Protect eyes, face and skin from liquid splashes.

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wear a face-shield when trans filling and breaking transfer connections. Safety eyewear, goggles or face-shield to EN166 should be used to avoid exposure to liquid splashes. Wear eye protection to EN 166 when gases. Full-face using mask recommended Guideline: EN 136 Respiratory devices. face protective Full masks.

Requirements, testing, marking

Protective Hygiene measures : Wash hands, forearms and face thoroughly after

handling chemical products, before eating, smoking and using the lavatory and at the end of

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the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

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Environmental exposure controls: : Specific risk management measures are not

required beyond good industrial hygiene and safety procedures. Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas

treatment.

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance : Colourless gas. Gives off white fumes in moist

air

Physical state : Liquid.

Colour : Colourless

Odor : Pungent

Molecular Weight : 20, 01 g/mol

pH (15 aqueous solution) : Specific data not available

Melting point/freezing point : -83 °C

Initial boiling point and boiling range : 19.5 °C

Evaporation Rate : Not available.

Flash point : Product does not sustain combustion.

Flammability (solid, gas) : Not applicable

Viscocity : Not applicable

Partition coefficient; n-octanol/water : No data available

Vapour pressure : 0.5 (psig)

Vapour density : 0.7 (Air = 1)

Reletive density, gas (Air=1): 2.6

Relative density, liquid (Water=1) : 0.97

Specific Volume (ft 3 /lb) : 19.3424

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Flammability Range : Not determined

Auto-ignition temperature : Not determined

Critical temperature : 188 °C

Water : completely

solubility

Partition coefficient n- : Not applicable.

octanol/water(ies)

SECTION 10: STABILITY & REACTIVITY

10.1 Reactivity : None known, based on information available

10.1 **Reactivity** Unreactive under normal conditions.

10.2 Chemical stability : Stable under ordinary conditions of use and

storage.

10.3 **Possibility of hazardous reactions** : Under normal conditions of storage and use,

hazardous reactions will not occur.

10.4 **Conditions to avoid** : Avoid moisture in installation systems

10.5 **Incompatible materials** : Reacts with most metals in the presence of

moisture, liberating hydrogen, an extremely flammable gas. With water causes rapid corrosion of some metals. Moisture. Reacts with water to form corrosive acids. May react violently with alkalis. For material compatibility, see latest

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version of ISO-11114.

10.6 Hazardous decomposition : Under normal conditions of storage and use,

products hazardous decomposition products should not

be produced.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Actuate Toxixity

Product/ingredient	Result	Species	Dose	Exposure
name				
Hydrogen fluoride	LC50 Inhalation Gas.	Rat	1276 ppm	1 hours

Irritation/Corrosion

Product/ingr	Result	Specie	Scor	Exposure	Observation
edient name		S	е		

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Hydrogen fluoride	Eyes - Severe irritant	Huma n	-	50 milligrams	-
	Skin - Severe irritant	Rat	-	3 minutes 50 %	-

Sensitization	This substance is not classified as a sensitizer.
Mutagenicity	No information available.
Reproductive toxicity	No information available
Teratogenicity	No information available.
Specific target organ toxicity (single exposure)	Category 1
Specific target organ toxicity (repeated exposure)	Value type: LOAEL Value: 50 ppm Species: Mouse Organ: Skeletal system. Read across Value type: NOAEL Value: 880 µg/kg Species: Rat Organ: Skeletal system Read across.
Aspiration hazard	Not available
Carcinogenicity	Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation

Inhalation : Toxic if inhaled.
Skin contact : Causes severe burns

Ingestion : As this product is a gas, refer to the inhalation

section

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:,

pain, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:,

pain or irritation, redness, blistering may occur

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Ingestion : Adverse symptoms may include the following:,

stomach pains

Potential chronic health effects

Not available

General : Significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards. Fertility effects : No known significant effects or critical hazards.

SECTION 12: ECOLOGICAL INFORMATION

12.1- Toxicity

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Product /ingredient name	Result	Species	Exposure
Hydrogen fluoride	10.5 mg/l	Fresh water Species	72 hours
	EC50 - 97 mg/l	Daphnia magna (Water flea)	48 hours
	LC50- 43 mg/l	Algae (Salt water)	96 hours
	LC50 =3.7mg/L	Rainbow trout (Oncorhynchus my kiss	21 DAYS

12.2-Persistance and degradability

Abiotic:	Air - neutralisation by natural alkalinity. Water/soil - ionization/neutralisation of inorganic and organic materials. Water/soil - complexation/precipitation of inorganic materials. Degradation products: aluminium/iron/calcium/phosphate complexes and/or precipitates as a function of pH (Fluorides).
Biodegradation	Methods for determining the biological degradability are not applicable for inorganic substances

12.3-Bioaccumulative potential

Fluoride accumulates in aquatic organisms predominantly in the exoskeleton of crustacean and in the skeleton of fish; no accumulation was reported for edible tissue

12.4-Mobility in Soil

Adsorption on mineral soil constituents.

Transport between environmental compartments

Medium: Air	Mobility in aerosol form.
Medium: Water	Considerable mobility, Considerable solubility

12.5- Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6-Other adverse effect

No known significant effects or critical hazards.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 **Waste Treatment Methods**

Product The generation of waste should be avoided or

> minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the

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requirements of environmental protection and waste disposal legislation and any

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Contaminated packaging :

regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty SRF-owned pressure vessels should be returned to SRF Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

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SECTION 14: TRANSPORT INFORMATION

ITEM	DOT	IMDG	IATA
UN number	1052	1052	1052
Proper	HYDROGEN FLUORIDE,	HYDROGEN FLUORIDE,	HYDROGEN FLUORIDE,
shipping name	ANHYDROUS	ANHYDROUS	ANHYDROUS
Transport			
hazard	POISON	POISON	POISON
class(es)/	6	CORROSIVE	COMMONIE
Labelling	0 (0.4)		•
Number	8 (6.1)	8 (6.1)	8 (6.1)
Packaging	L,	I	1
Group			
Environmental	No	YES	No
hazards		Marine pollutant	

Additional information

Other information Special transport precautions : No supplementary information available

: Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

15. REGULATORY INFORMATION

15.1 US Federal regulations

US Federal regulations	TSCA 8(a) CDR Exempt/Partial exemption: Not determined
	Commerce control list precursor: Hydrofluoric acid
	Clean Water Act (CWA) 311: Hydrofluoric acid
Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)	Listed
Clean Air Act Section 602 Class I Substances	Not listed
Clean Air Act Section 602 Class II Substances	Not listed
DEA List I Chemicals (Precursor Chemicals)	Not listed
DEA List II Chemicals (Essential Chemicals)	Not listed

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SARA 302/304

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(Lbs)	(gallons)	(lbs)	(gallons)
Hydrogen fluoride	100	Yes	100	100	100	-

SARA 302/304 RQ	100 lbs / 45.4 kg
5, 11 21 5 5 27 5 5 1 1 1 5	1

SARA 311/312		
Classification	:	Acute Health Hazard Chronic Health Hazard Reactivity Hazard
		Reactivity Hazaru

SARA 313

Component	CAS-No	Weight %	
Hydrogen fluoride	7664-39-3	100%	Form R – Reporting requirements
Hydrogen fluoride 7664-39-3 100% Supplier notification			
SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall			

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State Regulations

Massachusetts	This material is listed.
New York	This material is listed
New Jersey	This material is listed
Pennsylvania	This material is listed

CERCLA	100 lbs (Reportable Quantity)
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California Proposition 65	This product does not contain any chemicals known to
	State of California to cause cancer, birth defects, or any
	other reproductive harm.

15.2 International regulations

National Inventory	Status
Australia - AICS	This material is listed or exempted
TSCA	This material is listed
Canada - DSL	This material is listed or exempted
Europe - EINEC / ELINCS	This material is listed or exempted
Japan - ENCS	This material is listed or exempted.
Japan - ISHL	Not determined.
China	Not determined
Taiwan	This material is listed or exempted
Korea - KECI	This material is listed or exempted
New Zealand - NZIoC	This material is listed or exempted
Philippines	This material is listed or exempted

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Thailand	Not determined.

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SECTION 16: OTHER INFORMATION

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. SRF Limited-Chemical business shall not be held liable for any damage resulting from handling or from contact with the above product

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