

NAVIN FLUORINE INTERNATIONAL LTD		web: http://www.nfil.in mailto: bulkfluoride@nfil.in
		2nd Floor, Sunteck Centre, 37/40, Subash Road, Vile Parle (East), Mumbai-400057. India.

PRODUCT SPECIFICATION	
Title: ANHYDROUS HYDROFLUORIC ACID (HF)	Document No. : NFIL/QC/SPEC/FP/052/00 Effective Date : 05/11/2008

Material Code : INP101101004, HF009001, HF061001, HF006001, AHF006006

Packing Material : Cylinders 30 kg, 600 kg Toner & ISO container

Storage Requirements : Storage at Room temperature.

Structural Formula : $H-F$

Molecular Formula : HF

Molecular Weight : 20.0

Synonyms : Fluorohydric acid; fluoric acid

Sr. No.	TEST	SPECIFICATION
Product Specification:		
1	Hydrogen fluoride (By difference)	99.70% Min.
2	Sulphur dioxide	200 ppm Max.
3	Moisture (by KF)	300 ppm Max.
4	Non volatile acid (as H ₂ SO ₄)	500 ppm Max.

- Customer should discuss with business unit at bulkfluoride@nfil.in for the other requirements than specified.
- Analytical Method No. **NFIL/QC/WI/FP/052**

Hydrofluoric Acid Anhydrous

1. CHEMICAL IDENTITY

Chemical Name	Hydrofluoric acid, Anhydrous
Synonym	-
Formula	HF

2. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients name: Hydrofluoric acid	C.A.S. No 7664-39-3
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3. PHYSICAL / CHEMICAL DATA

Boiling Point	19.4 deg C	Vapour Pressure at 21.1 deg C	776 mm Hg
Melting Point	-71 deg C	Solubility in water	100% by weight
Vapour Density (Air = 1)	2.21 at 21.1 deg C	Appearance	Clear Colourless fuming liquid
Specific Gravity (Water=1)	0.97 at 21.1 deg C	Odour	Sharp pungent
pH (5% Soln.)	Not applicable	Other	----
Physical state	liquid		

4. FIRE / EXPLOSION HAZARD DATA

Flammability : Non Flammable	LEL%	Not applicable	Flash Point : Not flammable
Auto Ignition Temp. Not applicable	UEL%	Not applicable	
Hazardous Combustion Product	Emits highly corrosive fumes of hydrogen fluoride		
Hazardous Polymerization	Will not occur.		
Combustible liquid	No	Oxidizer	No
Flammable material	No	Organic Peroxide	No
Pyrophoric material	No	Corrosive	Yes
Explosive material	No	Other	-


5. STABILITY & REACTIVITY DATA

Chemical stability	Stable at room temperature in closed containers under normal storage and handling conditions. Hydrogen fluoride tends to associate by means of hydrogen bonds to form polymers in both the liquid and gaseous states, but this polymerization is not hazardous.
Incompatibility	Metals, concrete, glass, ceramics and cast iron. Will attack natural rubber, leather, and many organic materials.
Conditions to avoid	Excess heat, confined space
Hazardous reaction/decomposition products	Toxic and irritating fumes of hydrogen fluorides are evolved on reaction with water or steam.

6. HEALTH HAZARD DATA

Effects of exposure/ Symptoms	Skin, Eyes, Inhalation ,Ingestion
	<p>Eye: Both liquid and vapour can cause irritation or corneal burns.</p> <p>Skin: Both liquid and vapour can cause severe burns, which may not be immediately painful or visible. HF will penetrate skin and attack underlying tissue. Large or multiple burns totaling over 25 square inches of body surface area may also cause hypocalcemia and other toxic effects which may be fatal.</p> <p>Ingestion: Can cause severe mouth, throat and stomach burns and may be fatal if swallowed. Even with small amounts of dilute solutions, profound and possibly fetal hypocalcemia and systemic toxicity is likely to occur unless medical treatment is promptly initiated.</p> <p>Inhalation: Mild exposure can irritate nose, throat and respiratory system. Onset of symptoms may be delayed for several hours. Severe exposure can cause nose and throat burns, lung inflammation and pulmonary edema. Also results in other toxic effect including hypocalcemia which if not properly treated can result in death</p>

7. TOXICOLOGICAL INFORMATION			
	LD 50 / LC50	Inhalation LC50(rat): 5100ppm/5 min LC50(rat): 1300ppm/60 min LC50(mouse): 6247ppm/5 min Skin: 2% solution of HF is corrosive to rabbit skin with 1 hour exposure, but not with 1 minute exposure Delayed (sub chronic and chronic effect): prolonged exposure can cause bone and joint changes in humans	
	Permissible Exposure Limit	3 ppm OSHA-TWA, OSHA STEL 6 ppm (15 min.)	
	NFPA hazard signal	Health-4, Flammability-0, Reactivity-0	
8. ECOLOGICAL INFORMATION			
	Aquatic toxicity: 60 ppm/*fish/lethal/fresh water (*time period not specified)		
9. PREVENTIVE MEASURES/EXPOSURE CONTROL/PERSONAL PROTECTION			
	Engineering Controls	Sufficient to reduce vapour and acid mists below permissible TLV levels. Packing and unloading areas and open processing equipment may require mechanical exhaust systems.	
	Personal Protective Equipments	Protective gloves, protective goggles, lab coat, respirators.	
10. HANDLING & STORAGE			
	Normal Handling	Always ware recommended PPE. Do not breathe vapor or mist. Avoid contact with eyes, on skin, or on clothing. Use only in a chemical fume hood.	
	Storage Recommendation	Store in approved containers only. Store in cool, well-ventilated area. Flammable hydrogen gas can be generated in metal storage containers. Diking of storage tank is recommended.	
11. EMERGENCY / FIRST AID MEASURE			
	Fire	Fire extinguishing medium	Not flammable.
	Exposure/first aid measures	Inhalation	Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
		Skin / Eyes	Eye: Flush eyes with running water for at least 15 minutes, while keeping the eyelids wide open and away from the eye ball. Get medical aid immediately. Skin: Remove contaminated shoes, socks and clothing; wash the affected skin with plenty of water for 15 minutes. Limit washing to 5 minutes if treatment specific to HF exposure is available. After washing, 2.5% calcium gluconate shall be continuously massaged into the burn area until the pain is relieved.
		Ingestion	Drink large amount water to dilute. Do not induce vomiting. Give several glasses of milk or milk of magnesia. Get medical aid immediately. Wash mouth out with water.
		Antidote/Dosage	Calcium gluconate- 2.5% gel, 10 % (10ml) solution.
	Special procedure	Use NIOSH approved self contained positive pressure breathing apparatus with full face piece and protective clothing.	
12. ACCIDENTAL RELEASE MEASURES			
	General Information	Always use proper personal protective equipment as indicated in section 9	
	Spills / Release	Shut off leaks if without risk. Contain the leaking liquid on sand or earth and avoid drainage to water course. Rapid dilution of HF spill with water below 50% will reduce the amount of fumes given off. Carefully neutralize the dilute liquid with lime slurry, soda ash, lime stone, caustic soda. Dilution and neutralization to be done putting on all required PPE mentioned in section 9 and from sufficient distance.	
13. DISPOSAL CONSIDERAIONS			
	Seal all waste in vapour tight plastic bags. Dispose of in a manner consistent with federal, state, and local regulations.		

14. TRANSPORT INFORMATION	
	US (DOT) / Canada (TDG)
Shipping Name	HYDROFLUORIC ACID
Hazard Class	8
UN Number	1052
Packing Group	I
Hazard Class label	
15. REGULATORY INFORMATION	
	Federal, state & International Regulations.
16. NAME OF FIRM - NAVIN FLUORINE INTERNATIONAL LIMITED	
Mailing address	Post Office - Bhestan, Surat, PIN 395 023, Gujarat, India
Telephone	+91-261-2890325 to 2890329
Fax	+91-261-2890288
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