

HYDROFLUORIC ACID

HFA

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION								
Common Synonyms	Watery liquid	Colorless to green	Irritating odor	<p>4.1 Flash Point: Not flammable</p> <p>4.2 Flammable Limits in Air: Not flammable</p> <p>4.3 Fire Extinguishing Agents: Not pertinent</p> <p>4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent</p> <p>4.5 Special Hazards of Combustion Products: Toxic and irritating vapors are generated when heated.</p> <p>4.6 Behavior in Fire: Not pertinent</p> <p>4.7 Auto Ignition Temperature: Not flammable</p> <p>4.8 Electrical Hazards: Not pertinent</p> <p>4.9 Burning Rate: Not flammable</p> <p>4.10 Adiabatic Flame Temperature: Currently not available</p> <p>4.11 Stoichiometric Air to Fuel Ratio: Not pertinent</p> <p>4.12 Flame Temperature: Currently not available</p> <p>4.13 Combustion Molar Ratio (Reactant to Product): Not pertinent</p> <p>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed</p>	<p>7.1 Grades of Purity: Reagent: 48-51%; technical: 52-55%; 70% grade</p> <p>7.2 Storage Temperature: Ambient</p> <p>7.3 Inert Atmosphere: No requirement</p> <p>7.4 Venting: Pressure-vacuum</p> <p>7.5 IMO Pollution Category: B</p> <p>7.6 Ship Type: Data not available</p> <p>7.7 Barge Hull Type: Currently not available</p>								
Evacuate. Keep people away. AVOID CONTACT WITH LIQUID AND VAPOR. Wear chemical protective suit with self-contained breathing apparatus. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies. Protect water intakes.				8. HAZARD CLASSIFICATIONS									
Fire Not flammable. Flammable gas may be produced on contact with metals. Wear chemical protective suit with self-contained breathing apparatus.				<p>8.1 49 CFR Category: Corrosive material</p> <p>8.2 49 CFR Class: 8</p> <p>8.3 49 CFR Package Group: I</p> <p>8.4 Marine Pollutant: No</p> <p>8.5 NFPA Hazard Classification:</p> <table style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Category</th> <th style="text-align: left;">Classification</th> </tr> </thead> <tbody> <tr> <td>Health Hazard (Blue)</td> <td>4</td> </tr> <tr> <td>Flammability (Red)</td> <td>0</td> </tr> <tr> <td>Instability (Yellow)</td> <td>0</td> </tr> </tbody> </table> <p>8.6 EPA Reportable Quantity: 100 pounds</p> <p>8.7 EPA Pollution Category: B</p> <p>8.8 RCRA Waste Number: U134</p> <p>8.9 EPA FWPCA List: Yes</p>		Category	Classification	Health Hazard (Blue)	4	Flammability (Red)	0	Instability (Yellow)	0
Category	Classification												
Health Hazard (Blue)	4												
Flammability (Red)	0												
Instability (Yellow)	0												
Exposure CALL FOR MEDICAL AID. VAPOR Will burn eyes, nose and throat. Harmful if inhaled. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. IF IN EYES, hold eyelids open and flush with plenty of water. LIQUID Will burn skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. DO NOT INDUCE VOMITING.				9. PHYSICAL & CHEMICAL PROPERTIES									
Water Pollution HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.				<p>9.1 Physical State at 15° C and 1 atm: Liquid</p> <p>9.2 Molecular Weight: Not pertinent</p> <p>9.3 Boiling Point at 1 atm: 152°F = 67°C = 340°K</p> <p>9.4 Freezing Point: Not pertinent</p> <p>9.5 Critical Temperature: Not pertinent</p> <p>9.6 Critical Pressure: Not pertinent</p> <p>9.7 Specific Gravity: 1.258 at 25°C (liquid)</p> <p>9.8 Liquid Surface Tension: Not pertinent</p> <p>9.9 Liquid Water Interfacial Tension: Not pertinent</p> <p>9.10 Vapor (Gas) Specific Gravity: Not pertinent</p> <p>9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent</p> <p>9.12 Latent Heat of Vaporization: 649 Btu/lb = 361 cal/g = 15.1 X 10⁵ J/kg</p> <p>9.13 Heat of Combustion: Not pertinent</p> <p>9.14 Heat of Decomposition: Not pertinent</p> <p>9.15 Heat of Solution: -66.6 Btu/lb = -37.0 cal/g = -1.55 X 10⁵ J/kg</p> <p>9.16 Heat of Polymerization: Not pertinent</p> <p>9.17 Heat of Fusion: 54.7 cal/g</p> <p>9.18 Limiting Value: Currently not available</p> <p>9.19 Reid Vapor Pressure: Varies *Physical properties apply to 70% of solution.</p>									
1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge Chemical and Physical Treatment: Neutralize				6. WATER POLLUTION									
2. CHEMICAL DESIGNATIONS <p>2.1 CG Compatibility Group: 1; Non-oxidizing mineral acid</p> <p>2.2 Formula: HF-H₂O</p> <p>2.3 IMO/UN Designation: 8.0/1790</p> <p>2.4 DOT ID No.: 1790</p> <p>2.5 CAS Registry No.: 7664-39-3</p> <p>2.6 NAERG Guide No.: 157</p> <p>2.7 Standard Industrial Trade Classification: 52236</p>				7. NOTES									
3. HEALTH HAZARDS <p>3.1 Personal Protective Equipment: Proper protective clothing must be worn that encapsulates the body including the face. All persons handling this product must be familiar with and must observe all the precautions contained in the Manufacturing Chemists' Association Chemical Safety Data Sheet SD-25. A shower and an eye wash must be available.</p> <p>3.2 Symptoms Following Exposure: Serious and painful burns of eyes and skin.</p> <p>3.3 Treatment of Exposure: INGESTION: have victim drink water or milk; do NOT induce vomiting. SKIN: if victim has come in contact with liquid or vapor, put him in a shower and call a physician. EYES: flush with water for at least 15 min. and consult physician.</p> <p>3.4 TLV-TWA: Not listed.</p> <p>3.5 TLV-STEL: Not listed.</p> <p>3.6 TLV-Ceiling: 3 ppm as F</p> <p>3.7 Toxicity by Ingestion: Currently not available</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: Currently not available</p> <p>3.10 Vapor (Gas) Irritant Characteristics: Vapors cause severe irritation of eye and throat and can cause eye and lung injury. They cannot be tolerated even at low concentrations.</p> <p>3.11 Liquid or Solid Characteristics: Severe skin irritant. Causes second and third-degree burns on short contact; very injurious to the eyes.</p> <p>3.12 Odor Threshold: Currently not available</p> <p>3.13 LD₅₀ Value: 30 ppm as F</p> <p>3.14 OSHA PEL-TWA: 3 ppm as F</p> <p>3.15 OSHA PEL-STEL: Not listed.</p> <p>3.16 OSHA PEL-Ceiling: Not listed.</p> <p>3.17 EPA AEGL: Not listed</p>													

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
15	80.429	34	0.702		N O T	32	0.850
20	80.280	36	0.704				
25	80.120	38	0.707				
30	79.959	40	0.709				
35	79.809	42	0.711				
40	79.650	44	0.713				
45	79.490	46	0.715				
50	79.339	48	0.718				
55	79.179	50	0.720				
60	79.030	52	0.722				
65	78.870	54	0.724				
70	78.709	56	0.727				
75	78.559	58	0.729				
80	78.400	60	0.731				
85	78.250	62	0.733				
		64	0.735				
		66	0.738				
		68	0.740				
		70	0.742				
		72	0.744				
		74	0.747				
		76	0.749				
		78	0.751				
		80	0.753				
		82	0.755				
		84	0.758				

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	M I S C I B L E		C U R R E N T L Y		C U R R E N T L Y		N O T P E R T I N E N T
			NOT A V A I L A B L E		NOT A V A I L A B L E		