Anachemia

255 Norman.
Lachine (Montreal), Que
H8R 1A3

Material Safety Data Sheet

EMERGENCY NUMBERS:

(USA) CHEMTREC : 1(800) 424-9300 (24hrs)
(CAN) CANUTEC : 1(613) 996-6666 (24hrs)
(USA) Anachemia : 1(518) 297-4444
(CAN) Anachemia : 1(514) 489-5711

WHMIS	Protective Clothing	TDG Road/Rail
WHMIS CLASS: E D-1A D-2A		TDG CLASS: 8 6.1 PIN: UN1790 PG: II
		

Section I. Product Identification and Uses

Product name	**HYDROFLUORIC ACID, 48%**
Chemical formula	HF
Synonyms	AC-4975, EG-4975, EP-4975, 46590, 46572, 46564
Supplier	Anachemia Canada. 255 Norman. Lachine (Montreal), Que H8R 1A3
Material uses	For laboratory use only.

CI#	Not available.
CAS#	7664-39-3
Code	AC-4975
Formula weight	20.01
Supersedes	

Section II. Ingredients

Name	CAS #	%	TLV
1) HYDROGEN FLUORIDE	7664-39-3	47-53	Exposure limits: ACGIH TWA 0.5 ppm (as F) (skin); Ceiling limit 2 ppm (as F) (skin).
2) WATER	7732-18-5	Balance	Not established by ACGIH

Toxicity values of the hazardous ingredients

HYDROFLUORIC ACID:
DERMAL (LD50): Acute: 500 mg/kg (Mouse).
VAPOR (LC50): Acute: 342 ppm (Mouse) (1 hour(s)). 1276 ppm (Rat) (1 hour(s)).
VAPOR (LCLo): Acute: 50 ppm (Human) (30M).

Section III. Physical Data

Physical state and appearance / Odor	Clear, colourless slightly fuming liquid. Strong pungent odor.
pH (1% soln/water)	Strongly acidic.
Odor threshold	0.04 to 0.13 ppm
Percent volatile	100% (V/V)
Freezing point	Not available.
Boiling point	108.3°C
Specific gravity	1.176 (Water = 1)
Vapor density	1.76 to 2.21 (Air = 1)
Vapor pressure	(Partial pressure)
Water/oil dist. coeff.	Not available.
Evaporation rate	<1 (n-Butyl acetate = 1).
Solubility	Miscible in water.

Section IV. Fire and Explosion Data

Flash point	Not applicable.
Flammable limits	Not applicable.
Auto-ignition temperature	Not applicable.
Fire degradation products	Hydrogen fluoride.
Fire extinguishing procedures	Not a fire hazard. However, water or suitable agent can be used for fires adjacent to non-leaking tanks or containers of HF. Self contained breathing apparatus with a full facepiece operated in a pressure demand or other positive pressure mode. Wear adequate personal protection to prevent contact with material or its combustion products. Cool containing vessels with flooding quantities of water until well after fire is out. Acid reacts violently with water and can splatter acid onto personnel. Do not use solid water streams near ruptured tanks or spills of HF.
Fire and Explosion Hazards	The sensitivity to impact is not applicable. The sensitivity to static discharge is not applicable. High pressure will build in closed containers at elevated temperatures. Considerable heat is evolved when contacted with many substances. Flammable/explosive hydrogen gas may be formed upon contact of this product with metals. Reacts violently with water. Emits toxic and corrosive fumes under fire conditions.

Section V. Toxicological Properties

Routes of entry	Inhalation and ingestion. Skin contact. Eye contact. Skin absorption.
Effects of Acute Exposure	May be fatal by ingestion, inhalation or skin absorption. Extremely corrosive. Acute effects may be delayed. Target organs: Liver, kidneys, eyes, skin, bones, respiratory system, lungs. 30 ppm (as FLUORINE) is immediately dangerous to life or health.
Eye	Vapors, liquids and mists are extremely corrosive to the eyes. Brief contact of the vapors will be severely irritating. Brief contact of the liquid or mist will severely damage the eyes and prolonged contact may cause permanent eye injury which may be followed by blindness. Solutions as dilute as 2% or lower may cause burns.
Skin	Both liquid and vapor can cause severe burns which may not be immediately painful or visible. HF will penetrate skin and attack underlying tissues and bone. May cause hypocalcemia and death. Solutions as dilute as 2% or lower may cause burns. Liquid can be absorbed in toxic amounts through intact skin.
Inhalation	Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Can cause nose and throat burns, lung inflammation, chemical pneumonitis, bronchitis and pulmonary edema. Also depletes calcium levels in the body if not promptly treated, resulting in death due to hypocalcemia. May cause ulcers of the upper respiratory tract, liver damage, kidney damage, osteosclerosis, fluorosis, central nervous system depression, diarrhea, headache, dizziness, nausea, and vomiting. Can lung damage.
Ingestion	This product causes severe burning and pain in the mouth, throat and abdomen. Vomiting, diarrhea, and perforation of the esophagus and stomach lining may occur. Can affect kidney function and be fatal if swallowed. Profound and possibly fatal hypocalcemia is likely to occur unless medical treatment is promptly initiated. See inhalation.

Section V. Toxicological Properties

Effects of Chronic Overexposure	Acute exposure above 5 ppm may irritate eyes and respiratory tract. Also causes severe eye and skin burns; effects are sometimes delayed for hours. Chronic exposure may cause excess accumulation of fluoride (fluorosis) in the teeth, joints and bones. After prolonged high intake in adults, bony changes occur characterized by hardening or adnormal density of bone (osteosclerosis), benign bony growths projecting outward from the surface of the bone (exostoses) and excessive calcification of the bones, ligaments, muscles attachments to bone, and tendons. Ingestion and skin contact may cause an abnormal reduction of blood calcium (hypocalcemia). Hydrofluoric acid causes severe skin burns which will be slow in healing. The subcutaneous tissue may be affected, becoming blanched (whitened) and bloodless. Gangrene of the affected areas may follow. Chronic exposure may cause permanent respiratory damage. Reported to be embryotoxic in the rat at an exposure level of 0.47 to 4.98 mg/M3/4H daily during the period of gastation. Repeated or prolonged exposure to the substance can produce target organs damage. Carcinogenic effects: Not available. Mutagenic effects: Not available. Teratogenic effects: Not available. Toxicity of the product to the reproductive system: Not available. To the best of our knowledge, the chemical, physical, and toxicity of this substance has not been fully investigated.

Section VI. First Aid Measures

Eye contact	Immediately flush eyes with large amounts of water for at least 20 minutes, holding lids apart to ensure flushing of the entire surface. If irritation persists, repeat flushing. Get competent medical attention immediately. Continue flushing with water during transport.
Skin contact	Immediately flush skin with running water for a minimum of 20 minutes, while removing contaminated clothing and shoes. If irritation persists, repeat flushing. Seek immediate medical attention. The time rinsing with water may be limited to 5 minutes if: a) a gel of calcium gluconate at 2.5% or b) a solution of benzalkonium chloride is then applied to the skin, as shown below. If these products are not available, continue flushing with water until medical help is available.
Inhalation	Remove patient to fresh air. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Symptoms of pulmonary edema can occur after a delay of several hours and are aggravated by physical effort. Seek immediate medical attention.
Ingestion	Never give anything by mouth to an unconscious or convulsing person. If conscious, wash out mouth with water. Have conscious person drink several glasses of water or milk to dilute. You can also donate 60 to 125 ml of antacid containing magnesium or calcium. Seek immediate medical attention. Vomiting should only be induced under the direction of a physician or a poison control centre. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Immediately transport to an emergency facility.

Section VII. Reactivity Data

Stability	Stable. Conditions to avoid: High temperatures, sparks, open flames and all other sources of ignition, contamination.
Hazardous decomp. products	Not available.
Incompatibility	Heat. Glass, concrete, potassium tetrafluorosilicate, and other silicon bearing materials will yield silicon tetrafluoride gas. Pressure build-up from this process has been known to blow up glass containers. Carbonates, sulfides and cyanides will yield toxic gases such as carbon dioxide, hydrogen sulfide and hydrogen cyanide. Alkalis, some oxides, fluorine, n-phenylazopiperidine, potassium permanganate, bismuthic acid, metal oxides, phosphorus pentoxide, acetic anhydride, chlorosulfonic acid, methanesulfonic acid, cyanogen fluoride, and other water-reactive materials will cause strong exothermic reactions that can be violent. Reacts with most common metals to produce hydrogen. Is also corrosive to many materials, including leather, plastics, rubbers, coatings, and many organics. Bases, nitric acid, glycerol, lactic acid, propylene glycol, oxidizing agents, reducing agents, arsenic trioxide, calcium oxide, ammonium hydroxide, ethylenediamine, ethyleneimine, 2-aminoethanol, b-propiolacetone, propylene oxide, vinyl acetate.
Reaction Products	Will react violently with water. Silica will dissolve in hydrofluoric acid to produce silicon tetrafluoride which is corrosive and toxic. Hazardous polymerization will not occur.

Section VIII. Preventive Measures

Protective Clothing in case of spill and leak

Wear full protective equipment. Wear self-contained breathing apparatus, neoprene boots and neoprene gloves. Full suit.

Spill and leak

Evacuate and ventilate the area. Eliminate all sources of ignition. Stay upwind: Keep out of low areas. Wear full protective equipment. Cover with calcium hydroxide (See Waste Disposal). Do not use neutralizing mixture containing sand or other silica. Mix carefully with water to form a slurry and place in a suitable container and send for disposal. Material will fume during neutralization; approach from upwind. Provide good ventilation. Flush residue in accordance with applicable disposal regulations. DO NOT empty into drains. DO NOT touch damaged container or spilled material.

Waste disposal

Neutralization with soda ash (sodium carbonate) and sodium bicarbonate (baking soda) will be effervescent and highly exothermic and is not recommended. Use calcium hydroxide (hydrated lime) to neutralize hydrofluoric acid to a pH between 7.0 and 9.0. Neutralization with lime or hydrated lime is expected to be exothermic. Incompleteness of neutralization is shown by effervescence (bubbling) upon addition of a small amount (no more than a few grammes) of sodium carbonate (soda ash) or sodium bicarbonate (baking soda). Dispose of waste material at an approved (hazardous) waste treatment/ disposal facility in accordance with applicable local, provincial and federal regulations. Harmful to aquatic life at very low concentrations. Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

Storage and Handling

Do not add water to acids. Instead, dilute by adding acid to water cautiously and with agitation. Store in a cool place away from heated areas, sparks, and flame. Store in a well ventilated area. Store away from incompatible materials. Do not add any other material to the container. Do not wash down the drain. Do not breathe gas/fumes/vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. Keep away from direct sunlight or strong incandescent light. Keep container tightly closed. Manipulate under an adequate fume hood. Empty containers may contain a hazardous residue. Handle and open container with care. Take off immediately all contaminated clothing. This product must be manipulated by qualified personnel. Do not get in eyes, on skin, or on clothing. Wash well after use. In accordance with good storage and handling practices. Do not allow smoking and food consumption while handling. Do not use pressure to dispense. Do not allow water to get inside container because of violent reaction. Protect exposed skin with a suitable cream. May corrode metallic surfaces and glass. Store in an appropriate container. In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible.). Do not expose closed containers above 40°C.

Section IX. Protective Measures

Protective clothing

Face shield and splash goggles. Impervious neoprene or nitrile rubber gloves, apron, coveralls, and/or other resistant protective clothing. Sufficient to protect skin. Prior to use, user should confirm impermeability. A NIOSH/MSHA-approved air-purifying respirator equipped with mist, fume or acid gas cartridges for concentrations up to 25 ppm fluorine. An air-supplied respirator if concentrations are higher or unkown. Do not wear contact lenses. Make eye bath and emergency shower available. Ensure that eyewash station and safety shower is proximal to the work-station location.

Engineering controls

Use in a chemical fume hood to keep airborne levels below recommended exposure limits. Ventilation should be corrosion proof. Do not use in unventilated spaces.

Section X. Other Information

Special Precautions or comments

Extremely corrosive! Highly toxic! Harmful liquid! Readily absorbed through skin. Possible risks of irreversible effects. Do not breathe vapor. Avoid all contact with the product. Avoid prolonged or repeated exposure. Use in a chemical fume hood. Corrosive effects on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures following any exposure is essential. Consult a physician and/or the nearest poison control center for all exposures. When diluting, add this product to water in small amounts to avoid spattering. Never add water to this product. The water should be lukewarm. Never start with hot or cold water. Handle and open container with care. Container should be opened only by a technically qualified person.
RTECS NO: MW7875000 (Hydrofluoric acid).

NFPA

Prepared by MSDS Department/Département de F.S..

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