Hydrofluoric acid 70 %

000000001807

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SECTION 1. IDENTIFICATION

Product name	:	Hydrofluoric acid 70 %
Number	:	000000001807
Product Use Description	:	Chemical-technical application
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	:	Honeywell International Inc. 115 Tabor Road Morris Plains, NJ 07950-2546
For more information call	:	800-522-8001 +1-973-455-6300(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**
	:	
	:	(24 hours/day, 7 days/week)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Form	:	liquid
Color	:	colourless
Odor	:	stinging

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

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.
Wear 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.
Keep only in original container.

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

Hazards not otherwise classified : Causes severe burns which may not be immediately painful or visible.
May cause hypocalcemia (depletion of calcium in the body) which may be fatal.
Specialized medical treatment is required for all exposures.

Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Mixture

Chemical name	CAS-No.	Concentration
Hydrofluoric acid	7664-39-3	70.00 %
Water	7732-18-5	30.00 %

SECTION 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

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

SECTION 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	:	Fire or intense heat may cause violent rupture of packages.

firefighting		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	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	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 and materials for containment and 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.

SECTION 7. HANDLING AND STORAGE

Handling

Precautions for 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

Conditions for safe storage, including any incompatibilities	:	Keep containers tightly closed in a cool, well-ventilated place. Store in a place accessible by authorized persons only. Store away from incompatible substances.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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).
Engineering measures	:	Use with local exhaust ventilation. Apply technical measures to comply with the occupational exposure limits.
Eye protection	:	Wear as appropriate: Goggles or face shield, giving complete protection to eyes
Hand protection	:	Protective gloves Gloves must be inspected prior to use. Replace when worn.
Skin and body protection	:	Wear suitable protective equipment. complete suit protecting against chemicals
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.
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.

Exposure Guidelines

Components	CAS-No.	Value	Control	Upda	Basis

			parameters	te	
Hydrofluoric acid	7664-39-3	Conc : Concentration:	(30 ppm) NIOSH IDLH (Immediately Dangerous to Life or Health Concentrations)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards, as amended

Hydrofluoric acid	7664-39-3	SKIN_DES : Skin designation:	Danger of cutaneous absorption	01 2020	ACGIH:US. ACGIH Threshold Limit Values, as amended
Further information	:	Expressed as : as F			

Hydrofluoric acid	7664-39-3	TWA : Time weighted average	(0.5 ppm)	2008	ACGIH:US. ACGIH Threshold Limit Values, as amended
Further information	:	Expressed as : as F			

Hydrofluoric acid	7664-39-3	Ceiling : Ceiling Limit Value:	(2 ppm)	2008	ACGIH:US. ACGIH Threshold Limit Values, as amended
Further information	:	Expressed as : as F			

Hydrofluoric acid	7664-39-3	Ceil_Time : Ceiling Limit Value and Time Period (if specified) :	5 mg/m3 (6 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards, as amended

Hydrofluoric acid	7664-39-3	REL : Recommended exposure limit (REL):	2.5 mg/m3 (3 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards, as amended

Hydrofluoric acid	7664-39-3	PEL : Permissible exposure limit	2.5 mg/m3	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
Further information	:	Expressed as : as F			

Hydrofluoric acid	7664-39-3	STEL : Short term exposure limit	(6 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Further information	:	Expressed as : as F			

Hydrofluoric acid	7664-39-3	TWA : Time weighted average	(3 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Further information	:	Expressed as : as F			

Hydrofluoric acid	7664-39-3	TWA : Time weighted average	(3 ppm)	02 2006	OSHA/Z2:US. OSHA Table Z-2 (29 CFR 1910.1000), as amended

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	:	liquid
Color	:	colourless
Odor	:	stinging
pH	:	Note: acidic
Freezing point	:	ca. -76 °C
Boiling point/boiling range	:	ca. 65 °C at 1,013 hPa
Flash point	:	Note: Not applicable
Lower explosion limit	:	Note: Not applicable
Upper explosion limit	:	Note: Not applicable
Vapor pressure	:	183 hPa at 21.1 °C(70.0 °F)
Vapor density	:	2.21 at 21.1 °C 1.76 at 26.7 °C
Density	:	ca. 1.230 g/cm3 at 20 °C
Water solubility	:	Note: completely miscible
Ignition temperature	:	Note: Not applicable

Decomposition temperature	:	Note: Fire or intense heat may cause violent rupture of packages.
Corrosivity	:	Note: Corrosive to metals

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Hazardous polymerisation does not occur.
Incompatible materials	:	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.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	Acute toxicity estimate: 7.14 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate: 0.76 mg/l , vapour Exposure time: 4 h Method: Calculation method

Acute dermal toxicity	:	Acute toxicity estimate: 7.14 mg/kg Method: Calculation method
Skin irritation Hydrofluoric acid	:	Species: Rabbit Classification: Corrosive Method: OECD
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.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity to fish Hydrofluoric acid	:	LC50: 107.5 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) Test substance: Fluoride ion LC50: 925 mg/l Exposure time: 96 h Species: Gambusia affinis (Mosquito fish) Test substance: Fluoride ion

Toxicity to daphnia and other aquatic invertebrates

Hydrofluoric acid	:	EC50: 270 mg/l Exposure time: 48 h Species: Daphnia (water flea) Test substance: Sodium fluoride

Further information on ecology

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	Observe all Federal, State, and Local Environmental regulations.

SECTION 14. TRANSPORT INFORMATION

DOT	UN/ID No.	:	UN 1790
	Proper shipping name	:	Hydrofluoric acid
	Class		8
	Packing group		I
	Hazard Labels		8 (6.1)
IATA	UN/ID No.	:	UN 1790
	Description of the goods	:	Hydrofluoric acid
	Class	:	8
	Packaging group	:	I
	Hazard Labels	:	8 (6.1)
	Packing instruction (cargo aircraft)	:	854
	Packing instruction (passenger aircraft)	:	850
IMDG	UN/ID No.	:	UN 1790
	Description of the goods	:	Hydrofluoric acid
	Class	:	8
	Packaging group	:	I
	Hazard Labels	:	8 (6.1)
	EmS Number	:	F-A, S-B

Marine pollutant : no
IMDG Code segregation group 1 – ACIDS,

SECTION 15. REGULATORY INFORMATION

Inventories

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. Existing Chemicals Inventory (KECI)	:	On the inventory, or in compliance with the inventory
Philippines. Inventory of Chemicals and Chemical Substances (PICCS)	:	On the inventory, or in compliance with the inventory
China. Inventory of Existing Chemical Substances (IECSC)	:	On the inventory, or in compliance with the inventory
NZIOC - New Zealand	:	On the inventory, or in compliance with the inventory

National regulatory information

US. EPA CERCLA Hazardous Substances (40 CFR 302)	:	The following component(s) of this product is/are subject to release reporting under 40 CFR 302 when release exceeds the Reportable Quantity (RQ): Reportable quantity: 100 lbs
	:	Hydrogen fluoride 7664-39-3

SARA 302 Components	:	The following components are subject to reporting levels established by SARA Title III, Section 302:	
	:	Hydrofluoric acid	7664-39-3
SARA 313 Components	:	The following components are subject to reporting levels established by SARA Title III, Section 313:	
	:	Hydrofluoric acid	7664-39-3
SARA 311/312 Hazards	:	Acute Health Hazard Chronic Health Hazard	
CERCLA Reportable Quantity	:	143 lbs	
California Prop. 65	:	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.	

Massachusetts RTK	:	Hydrofluoric acid	7664-39-3
New Jersey RTK	:	Hydrofluoric acid	7664-39-3
Pennsylvania RTK	:	Hydrofluoric acid	7664-39-3

SECTION 16. OTHER INFORMATION

		HMIS III	NFPA
Health hazard	:	4*	4
Flammability	:	0	0
Physical Hazard	:	1	
Instability	:		1

* - Chronic health hazard
Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

Further information

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.
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Prepared by Honeywell Performance Materials and Technologies Product Stewardship Group