

# MSDS=>MATERIAL SAFETY DATA SHEET

No.: 2022-03

## Section 1: Chemical Product And Company Identification

**Product Name:** Hydrofluoric Acid, with not more than 60% hydrogen fluoride (49%)

**Manufacturer/Supplier:** EPOCHMASTER(HONGKONG)INDUSTRY LIMITED

**Add.:** 6/F., MANULIFE PLACE, 348 KWUN TONG ROAD KOWLOON

**Enterprise Emergency Phone Number:** +86-13770711448

**National Emergency Phone Number:** +86-13770711448

**Product Recommendation Use:** Used in atomic energy industry, making element fluorine, fluoride, also can be used as catalyst, fluorination agent for organic or inorganic fluoride manufacturing, also used for stainless steel, non-ferrous metal pickling, glass and glass frosting and pickling, frosting bulb treatment.

**Product Restricted:** N/A

**Effective Date:** March 07, 2022

## Section2: Hazards Identification

**Risk Category:** Main Hazard: 8 Corrosive Substance    Subsidiary Risk : 6.1 Toxic Substance

**Word of Caution:** Danger

**Hazard Pictogram:**



**GHS Risk Category:** Acute toxicity/oral category 2;  
Acute toxicity/dermal category 1;  
Acute toxicity/inhalation category 2;  
Skin corrosion/irritation category 1;  
Serious eye damage/eye irritation category 1.

**Hazard Statements:** H300: Fatal if swallowed.  
H310: Fatal in contact with skin.  
H330: Fatal if inhaled.  
H314: Causes severe skin burns.  
H318: Causes severe eye damage.

**Precaution Instructions:** P260: Do not breathe dust/fume/gas/mist/vapor/spray.

P262: Avoid contact with eyes, skin and clothing.

P264: Wash hands thoroughly after work.

P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well-ventilated area.

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

P284: (If insufficient ventilation) Wear respiratory protection.

### Reaction Prevention

**Instructions:**

P301+P310: If swallowed: call a poison center or doctor/physician immediately.

P302+P352: If on skin: wash with plenty of water.

P361+P364: Remove/take off all contaminated clothing immediately and clean before reuse.

P304+P340: If inhaled: remove victim to fresh air and keep at rest in a position comfortable for breathing.

P301+P330+P331: If swallowed: rinse the mouth, do not induce vomiting.

P303+P361+P353: If on skin or hair: remove/take off all contaminated clothing immediately, rinse skin with water/shower.

P305+P351+P338: If in eyes, rinse cautiously with water for several minutes, remove contact lenses, if present and easy to do, continue rinsing.

P363: Contaminated clothing can be reused after washing.

**Storage Precautions:**

P403+P233: Store in a well-ventilated place, keep container tightly closed, store locked up.

P405: The storage must be locked.

**Disposal Precautions:**

P501: Dispose of contents/containers in accordance with local regulations.

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## Section 3: Components/Composition information

**Pure:** [ ]

**Mixture:** [✓]

**Product Name:** Hydrofluoric Acid, with not more than 60% hydrogen fluoride (49%)

Ingredient	Concentration	CAS No.	EC No.
Hydrogen Fluoride	49%	7664-39-3	231-634-8
Water	51%	7732-18-5	231-791-2

## Section 4: First-aid Measures

**Inhalation:** Separated from the scene rapidly to the fresh air place, maintains the respiratory tract is unobstructed. 2%-4% sodium bicarbonate solution was nebulized. If the breath is difficult, give oxygen. If breathing stops, artificial respiration and heart massage immediately. Seek medical advice.

**Skin Contact:** Take off all contaminated clothing immediately, rinse with plenty of running water at least 15 minutes, or rinse with 2% sodium bicarbonate solution. Seek medical advice.

**Eye Contact:** Filed a eyelid immediately, rinse with plenty of running water at least 15 minutes. Seek medical advice.

**Ingestion:** Rinse mouth with water, drink 10% calcium gluconate, milk or egg white. seek medical advice.

**Cardinal Symptom:** Has the strong irritation and the corrosion function to the respiratory tract mucosa and the skin, inhalation of the high concentration hydrogen fluoride may cause the bronchitis and the pneumonia. At the beginning of skin burn, the skin is flushed and dry, the wound surface is pale and necrotic, and then appears purplish black; deep burns or improper treatment, hydrogen fluoride can penetrate deep into the skin, the formation of skin necrosis and ulcer, and it is not easy to cure.

**Advice to Rescuer:** Take protective measures to protect the rescuer.

**A Special Note from the Doctor:** Be sure to let medical personnel know about the substance involved and take protective measures to protect themselves. Patients should be kept under observation and appropriate measures should be taken to prevent delayed symptoms such as shock, dyspnea and spasm. Prompt medical care and special treatment.

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## Section 5: Fire Fighting Measures

**Dangerous Characteristics:** The product is non-combustible, but reacts with most metals to form combustible gas. Contact with foaming agent H will cause combustion. When meet the open fire and high heat energy can make the pressure inside of the container increase, and there is a risk of cracking and explosion. Leaks into the air create corrosive fumes that can spread along the ground and react with glass and other silicon-containing compounds.

**Fire Extinguishing Method and Agent:** Use carbon dioxide, dry powder, mist water and other fire extinguishing agents. Spray water to cool the container and move it from the fire to an open area if possible. Extinguishing agent: water mist, foam, carbon dioxide and other fire extinguishers.

**Fire Fighting Precaution & Measures:** Fire fighters must wear acid-proof and alkali-proof protective clothing, acid-proof boots and acid-proof gloves, and wear air breathing apparatus to

extinguish fire. Move the container from the fire to an open area if possible. Spray water to keep the fire container cool until the end of the fire fighting.

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## Section 6: Emergency Measures For Leakage

**Operating Personnel Protective Measures, Protective Equipment and Emergency Disposal Procedures:** According to the influence of liquid flow and vapor diffusion, the warning zone is delimited, and irrelevant personnel are evacuated to the safety zone from crosswind and upwind. It is recommended that emergency personnel wear positive pressure self-contained breathing apparatus, acid-proof and alkali-proof clothing and rubber acid-proof gloves. All equipment used in the operation shall be ground to ground. Do not touch cracked containers and spills before wearing proper protective clothing. Spray water vapor has been or change the direction of the vapor cloud to avoid water flow contact leakage. Keep water out of the container.

**Environmental Protection:** Cut off the leakage source as much as possible. Prevent gas from diffusing through drains, ventilation systems and confined spaces.

### **Asylum, Removal Method of Leakage of Chemicals and the Disposal Materials Used:**

--**Small Leakage:** Cover the spill with dry sand or other noncombustible material.

--**Large Leakage:** Build a dike or dig a hole to asylum. Absorb large amounts of liquid with sand, inert material, or vermiculite. Neutralize with lime ( $\text{CaO}$ ), crushed limestone ( $\text{CaCO}_3$ ) or sodium bicarbonate ( $\text{NaHCO}_3$ ). Cover with an insoluble foam to reduce evaporation. Transfer to tanker or special collector with corrosion pump. Preventive measures to prevent secondary hazards: as an emergency preventive measure, when a small amount of leakage, the emergency isolation of 30 meters, the day evacuation to 200 meters away, night evacuation to 600 meters away. When a large number of leakage, the emergency isolation of 125 meters, the day evacuation to 1.1 km away, night evacuation to 2.9 km away. Isolate the leak zone until the gas has dissipated.

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## Section 7: Operation Treatment And Storage

**Operating Considerations:** Airtight operation and pay attention to ventilation. Operation as mechanized and automated as possible. Operators must be specially trained and strictly follow the operating procedures. Operators must wear self-suction filter type gas mask (full cover), wear rubber acid-alkali resistant clothing, wear rubber acid-alkali resistant gloves. Prevent vapor leakage into workplace air. Avoid contact with alkali, active metal powder and glass products. Handle with care to prevent damage of package and container. Equipped with leakage emergency treatment equipment.

**Storage Precautions:** Storage in a cool and ventilation warehouse. Avoid direct sunlight, keep away from fire and heat source, and keep container sealed. The warehouse temperature do not exceed  $30^\circ\text{C}$ , relative humidity do not more than 80%, the storage area should be equipped with

leakage emergency treatment equipment and suitable storage materials. Prohibited compound: it should be stored separately from alkali, active metal powder and glass products, and mixed storage should be avoided by all means. Packing materials: polyethylene drum, blue drum, gallon bottle, etc.

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## Section 8: Exposure Controls / Personal Protection

### Maximum Allowable Concentration:

--China MAC( $\text{mg}/\text{m}^3$ ): 2

--America TLV(ACGIH 2005): 2ppm (Maximum Limits)

**Biological Limit:** N/A

**Monitoring Methods:** Instrument testing.

**Engineering Control:** Tightly airtight to provide adequate local exhaust and overall ventilation. Provide safe shower and eye wash equipment.

**Respiratory Protection:** When the air concentration exceeds the limit, you must wear a gas mask. When emergency rescue or escape, it is recommended to wear self-contained positive pressure breathing apparatus.

**Eye Protection:** Wear chemical protective glasses.

**Skin and Body Protection:** Wear rubber acid and alkali resistant work clothes and work boots.

**Hands Protection:** Wear rubber acid and alkali resistant gloves.

**Other Protection:** Smoking, eating and drinking water is prohibited at the workplace. Shower and change after work. Separate storage of work clothes. Maintain good personal hygiene habit.

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## Section 9: Physical And Chemical Properties

**Appearance and Shape:** Colorless transparent liquid.

**PH Value:** N/A

**The Melting Point ( $^{\circ}\text{C}$ ):**  $-35$

**The Boiling Point ( $^{\circ}\text{C}$ ):** 120 (35.3%)

**Relative Density of Steam (air=1):** 1.23

**Relative Density ( $\text{H}_2\text{O}=1$ ):** N/A

**Upper Explosive Limit% (V/V):** N/A

**Lower Explosive Limit% (V/V):** N/A

**Saturated Vapor Pressure (KPa):** N/A

**Flash Point ( $^{\circ}\text{C}$ ):** 112

**Solubility:** Miscible with water, soluble in ethanol, slightly soluble in ether

**Octanol/Water Partition Coefficient of Value:** N/A

**Autoignition Temperature (°C):** N/A

**Decomposition Temperature (°C):** N/A

**Odor thresholds:** N/A

**Rate of Evaporation:** N/A

**Inflammability:** N/A

**Critical Temperature (°C):** N/A

**Critical Pressure (Mpa):** N/A

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## Section 10: Stability And Reactivity

**Stability:** Stable

**Prohibited Content:** Alkali, reactive metal powder, glass, cyanide.

**Avoid Contact with the Condition:** Open fire, high heat and water.

**Risk Response:** React with most metals to form combustible gas. Contact with foaming agent H will cause combustion.

**Dangerous Decomposition Products:** hydrogen fluoride, fluorine, hydrogen.

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## Section 11: Toxicological Information

**Acute Toxicity:** LC50: 1276ppm (rats inhaled, 1 hour).

**Skin Irritation/Corrosion:** Percutaneous in rats: 50% (3min), severe burn.

**Eye Irritation/Corrosion:** People by eye: 50mg, severe damage.

**Breathing or Skin Allergy:** N/A

**Germ Cell Mutagenicity:** DNA damage: 1300 ppb/6 weeks of inhalation by black belly fly. Sex chromosome deletion and non-segregation: 2900ppb inhaled by black belly fly. Cytogenetics analysis: rats inhaled 1 mg/m<sup>3</sup>/6H/24D (discontinuous).

**Carcinogenicity:** N/A

**Reproductive Toxicity:** Rats inhaled the lowest toxic concentration (TCL0): 4980µg/m<sup>3</sup> (4 hours), 1~22 days after pregnancy, resulting in stillbirth.

**Specific Target Organ System Toxicity--One-Time Contact:** Animal acute toxicity can be seen on the eyes, nasal mucosa irritation, weakness, weight loss. Gastrointestinal disorders can be caused by oral administration. Kidney and circulatory organs are also damaged.

**Specific Target Organ System Toxicity--Repeated Contact:** N/A

**Inhalation Hazard:** Rabbits were inhaled 33~41 mg/m<sup>3</sup> with an average of 20mg/m<sup>3</sup>. After 1~5.5 months, can appear mucous membrane irritation, emaciation, dyspnea, decreased hemoglobin, increased reticulocyte count and part of animal death.

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## Section 12: Ecological Information

**Ecological Toxicity:** 60mg/L(freshwater fish)

**Persistence and Degradability:** N/A

**The Potential Biological Cumulative:** It does not accumulate in body.

**Mobility in the Soil:** It can permeate the soil and dissolves the substances in the soil, especially carbonate and other substances.

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## Section 13: Scrap Processing

### Scrap Processing Methods:

--**Product:** It is neutralized by lime water, the precipitate is treated in landfill or recycled, supernatant diluted back into the waste water system.

--**Dirty Packing:** Return the packaging to the manufacturer or dispose according to the requirements of national and local laws and regulations.

**Disposal Note:** It is not allowed to discharge into the soil, water and other environment, it should be treated according to local laws and regulations, or returned to the manufacturer. Disposal personnel must wear protective glasses, wear acid and alkali proof work clothes, pay attention to individual protection, do not directly contact the material.

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## Section 14: Transport Information

**Product Name:** Hydrofluoric Acid, with not more than 60% hydrogen fluoride

**UN No.:** 1790

**UN Transport Name:** Hydrofluoric Acid, with not more than 60% hydrogen fluoride

**UN Risk Category:** Main hazard: 8      Subsidiary Risk : 6.1

**Packing Group:** II (with not more than 60% hydrogen fluoride)

**Package Symbol:** Corrosive + Toxic.

**Packing Method:** Packed in lead drums or special plastic containers.

**Marine Pollutant (yes, no) :** No.

**Transportation Note:** Transportation vehicles should be equipped with leakage emergency treatment equipment. During transportation, it should be protected from the sun, rain and high temperature. Road transport should follow the prescribed route, do not stay in residential areas and densely populated areas. It is strictly prohibited to be mixed with alkali, active metal powder, glass products and edible.

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## Section 15: Regulatory Information

**Regulatory Information:** Safety Production Law of the People's Republic of China (Adopted by the 10th Session of the Standing Committee of the Twelfth National People's Congress on August 31, 2014, and implemented on December 1, 2014);

Prevention and Control Law of Occupational Diseases of the People's Republic of China (Adopted by the 24th Session of the Standing Committee of the eleventh National People's Congress on December 31, 2011);

Environmental Protection Law of the People's Republic of China (Adopted by the 8th Session of the Standing Committee of the Twelfth National People's Congress on April 24, 2014, and implemented on January 1, 2015);

Regulations on Safety Management of Hazardous Chemicals (Decree no. 591 of the State Council, and implemented on December 1, 2011 ) for the safe use of hazardous chemicals, production, storage, transportation, loading and unloading, etc for the corresponding provisions;

Regulations on Safe Use of Chemical in Workplaces (Issued by the Ministry of Labor [1996] no. 423);

Regulations on Labor Protection in Workplaces Using Toxic Substances (Decree no. 352 of the State Council);

List of dangerous goods (GB12268-2012);

The first list of Hazardous Chemicals under Key Supervision (Safety Supervisor [2011] no. 95);

Notice on the Issuance of the First Batch of Safety Measures and Emergency Disposal Principles for Hazardous Chemicals under Key Supervision (Safety Supervisor [2011] no. 142);

Occupational exposure limits for hazardous factors in the workplace, part 1: chemical hazards (GBZ2.1-2019);

Contents and sequence of items of chemical safety technical specification (GB/T16483-2008);  
Catalogue of Hazardous Chemicals (2015)

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## Section 16: Other Information

**Revision Department:** HSE

**The Latest Revision Date:** March 07, 2022

**Audit Unit:** EPOCHMASTER(HONGKONG)INDUSTRY LIMITED

**Modification Note:** This manual is based on the MSDS requirements of the United Nations Uniform Global Classification and Labeling System for Chemicals (GHS) and the United Nations Model Rules for Proposals on the Transport of Dangerous Goods (TDG).