



Lee & Man Chemical

Safety data sheet for chemical product

Hydrogen Fluoride

HF

Safety data sheet for chemical product

Hydrogen Fluoride

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product name:

Hydrogen Fluoride; Anhydrous Hydrogen Fluoride

Company name:

Jiangxi Lee & Man Chemical Company Limited

Address:

Dock Industrial City, Jiujiang City, Jiangxi Province

Post code:

332207

Business phone:

0792-8996998

Enterprise emergency number:

0532-83889090

Fax number:

0792-8996988

Email address:

haifeng_sun@leemanchemical.com

Recommended use:

Used for etching glass, and making fluorine compounds. **Restricted use:**

Restricted use: No relevant information was found.

SECTION 2: Hazards identification

Emergency Overview: Fatal if swallowed, fatal in contact with skin, fatal if inhaled, causing severe skin burns and eye damage.

GHS Hazard Category:

Acute Toxicity – Oral, Category 2;

Acute Toxicity – Dermal, Category 1;

Acute toxicity – inhalation, category 2;

Skin corrosion/irritation, Category 1A;

Serious eye damage/eye irritation, Category 1;

Hazardous to the Aquatic Environment - Acute Hazard, Category 3.

Label elements:

Pictograms:



Signal word: Danger

Hazard Statements: Fatal if swallowed, fatal in contact with skin, fatal if inhaled, causes severe skin burns and eye damage, harmful to aquatic life.

Precautionary Statements:

·Precaution

- Avoid contact with eyes, skin or clothing. Wash body contact areas thoroughly after handling. Contaminated work clothes should also be washed thoroughly.

- Avoid breathing gas. Wear protective gloves, protective clothing, protective glasses, and a protective face shield.

- Do not eat, drink or smoke in the workplace.

- Operate only outdoors or in a well-ventilated place.

- Prohibited discharge into the environment.

· Incident response

- IF INHALED: Remove victim to fresh air and rest in a position comfortable for breathing. Get medical attention immediately.

- Skin (or hair) contact: Immediately remove all contaminated clothing, rinse skin with plenty of soap and water, shower. Contaminated clothing must be washed before reuse.

- Eye contact: Rinse carefully with water for several minutes, if contact lenses are present and easily removed, remove contact lenses and continue rinse. If eye irritation continues, seek medical attention.

- Ingestion: Rinse mouth, do not induce vomiting. Get medical attention immediately.

· Safe storage

- Store in a well-ventilated place. Keep container tightly closed. Keep it locked.

· Disposal

- Dispose of this product, its contents and containers in accordance with national and local regulations.

Physical and chemical hazards: non-flammable, no special explosive characteristics. Highly toxic, highly corrosive and irritating, it can cause burns to the human body.

Health Hazards:

Routes of entry: inhalation, ingestion, skin contact

It has strong irritating and corrosive effects on respiratory mucosa and skin. Acute poisoning: Inhalation of high concentrations of hydrogen fluoride can cause irritation to the eyes and respiratory mucosa. In severe cases, bronchitis, pneumonia or pulmonary edema may occur, and even reflex suffocation may occur. Eye contact with local severe pain, severe corneal damage, or even perforation. Hydrogen fluoride is easily soluble in water, and its solution is hydrofluoric acid. In the initial stage of hydrofluoric acid skin burns, the skin is flushed and dry. The wounds were pale, necrotic, and then purple-black or gray-black. Deep burns, or when not handled properly, can form deep, difficult-to-heal ulcers that damage the periosteum and bone. This product burns with severe pain. Chronic Effects: Eye and upper respiratory tract irritation, or epistaxis, hyposmia. There may be tooth erosion. Skeletal X-ray abnormalities and industrial fluorosis are rare.

Environmental hazards: Harmful to aquatic life.

SECTION 3: Composition/information on ingredients

| | |
|---|---------------------------------------|
| Substance: ✓ | Mixture: × |
| Main ingredient: Hydrogen Fluoride | relative molecular mass: 20.01 |
| CAS-No.: 7664-39-3 | Formula : H-F |

SECTION 4: First aid measures

Inhalation: quickly leave the scene to fresh air. Keep the airway open. If breathing is difficult, give oxygen. If breathing or heartbeat stops, perform CPR immediately. Seek medical attention.

Skin Contact: Immediately remove contaminated clothing and rinse thoroughly with calcium chloride solution and plenty of running water for at least 15 minutes. Seek medical attention.

Eye Contact: Immediately lift the eyelids and rinse thoroughly with plenty of running water or saline for at least 5 to 10 minutes. Seek medical attention.

Ingestion: Rinse mouth with water, do not induce vomiting. Give milk or egg whites. Seek medical attention.

Health Hazards: See Health Hazards in Hazards Summary.

SECTION 5: Firefighting measures

Fire fighting methods: Firefighters must wear air breathing apparatus and full-body fire-proof and anti-gas suits, and operate fire-fighting at the sheltered place upwind. Move the container

from the fire area to an open area as much as possible. Keep fire containers cool by spraying water until the fire is over.

Extinguishing agent: mist water, foam.

Hazardous properties: Hydrogen fluoride is a highly reactive substance that can react with various substances. Extremely corrosive.

SECTION 6: Accidental release measures

Protective measures, protective equipment and emergency procedures for operators: Delineate a warning area according to the influence area of liquid flow and vapor diffusion. Unrelated personnel are quickly evacuated from the crosswind and upwind to the safe area, and access is strictly restricted. It is recommended that emergency personnel wear self-contained positive pressure breathing apparatus, anti-corrosion, anti-virus clothing, and rubber acid-base-resistant gloves. Do not touch or step over spillage. Cut off sources of leaks as much as possible.

Environmental protection measures: prevent the diffusion of gas through sewers, ventilation systems and confined spaces.

Containment, Cleanup of Spilled Chemicals: If possible, invert container to allow gas rather than liquid to escape. Spray water to dilute and dissolve. High concentration leakage areas, spray ammonia or other dilute lye to neutralize. Absorb large quantities of liquids with sand, inert material or vermiculite. Neutralize with limestone, crushed limestone or sodium bicarbonate. Isolate the leak area until the gas has dissipated. If there is a large amount of leakage, build a dike or dig a pit to contain it.

SECTION 7: Handling and storage

Operation and disposal: closed operation, pay attention to ventilation. The operation is as mechanized and automated as possible. Operators must undergo special training and strictly abide by operating procedures. It is recommended that operators wear self-priming filter respirators (full face masks), rubber acid and alkali resistant clothing, and rubber acid and alkali resistant gloves. Avoid generating fumes. Prevent gas or vapor leakage into workplace air. Keep away from flammable and combustible materials. When handling, lightly load and unload to prevent damage to cylinders and accessories. Equipped with leakage emergency treatment equipment. Empty containers may be harmful residues.

Storage: Store in a cool, ventilated warehouse. Keep away from fire and heat sources. The temperature of the warehouse should not exceed 30°C, and the relative humidity of the warehouse should not exceed 80%. It should be stored separately from flammable or combustible materials, edible chemicals. Do not mix storage. The storage area should be equipped with leakage emergency treatment equipment.

SECTION 8: Exposure controls/personal protection

Occupational exposure limits:

China (MAC) 2[F] mg/m³

United States (ACGIH) 0.5ppm TLV-TWA 2ppm[pi] TLV-C

Biological exposure limit: Urine fluoride: 42mmol/mol creatinine (7mg/g creatinine) (sampling time: after work shift).

Monitoring methods: ion selective electrode method; ion chromatography.

Biomonitoring test method: ion-selective electrode determination method of fluoride in urine.

Engineering control: closed operation, pay attention to ventilation. Safety showers and eye wash facilities are provided.

Respiratory protection: When you may be exposed to its fumes, you must wear self-priming filter respirators (full face masks) or air respirators. In emergency rescue, it is recommended to wear air breathing apparatus.

Hand Protection: Wear rubber acid and alkali resistant gloves.

Eye Protection: Respiratory protection has been covered.

Skin and body protection: Wear rubber acid and alkali resistant clothing.

Other protection: Smoking, eating and drinking are prohibited at the work site. After work, take a shower and change clothes. Store poison-contaminated clothes separately and wash them for later use. Maintain good personal habits.

SECTION 9: Physical and chemical properties

Appearance and properties: colorless gas odor: pungent odor

pH value: meaningless

Melting point (°C): -83.3

Boiling point (°C): 19.4

Flash point (°C): meaningless

Upper explosion limit [% (V/V)]: meaningless

Lower explosion limit [% (V/V)]: meaningless

Saturated vapor pressure (kPa): 53.32 (2.5°C)

Relative vapor density (air=1): 0.7

Relative Density (Water=1): 0.988 Log

Octanol/Water Partition Coefficient: 0.230

Auto-ignition temperature (° C): meaningless

Critical temperature (° C): 188

Critical pressure (MPa): 6.48

Solubility: easily soluble in water, ethanol, slightly soluble in ether

SECTION 10: Stability and reactivity

Stability: Stable Hazardous (decomposition) products: No information available

Conditions to avoid: Moist air

Materials to avoid: Flammable or combustible

Hazardous reactions: Reacts with flammable or combustible substances, metals, glass and many other substances

SECTION 11: Toxicological information

Acute toxicity: LC50: 1276ppm (1h) (rat inhalation); 342ppm (1h) (mice inhalation).

Skin irritation or corrosion: Rat percutaneous: 50% (3min), severe irritation.

Eye irritation or corrosion: human eye: 50mg, severe irritation.

Respiratory or skin sensitization: No information available.

Germ cell mutagenicity: DNA damage: Drosophila melanogaster inhalation 1300ppb (6 weeks). Sex chromosome deletion and nondisjunction: Drosophila melanogaster inhalation at 2900ppb.

Cytogenetic analysis: rats inhaled 1 mg/m³, 6 hours a day, for a total of 24 hours (intermittent.)

Carcinogenicity: No relevant information was found.

Reproductive toxicity: Rat inhalation minimum toxic concentration (TCL0): 4980ug/m³ (1 to 22 days of pregnancy), causing stillbirth.

Specific target organ toxicity - single exposure: No relevant information was found.

Specific target organ toxicity----- Repeated exposure: Rabbits inhaled 33-41mg/m³, average 20mg/m³, after 1-5.5 months, mucosal irritation, weight loss, dyspnea, decreased hemoglobin, reticulocyte increased, and some animals died.

Aspiration Hazard: No information available.

SECTION 12: Ecological information

Ecotoxicity: LC50 51mg/L (96h) (fish) EC50 97mg/L (48h) (Daphnia); 10.3mg/L (96h) (algae).

Persistence and Degradability: No relevant information was found.

Bioaccumulative potential: No relevant data found.

Mobility in soil: No relevant information found.

SECTION 13: Disposal considerations

Waste chemicals: neutralized with excess lime water, the precipitated precipitate is landfilled or recycled, and the supernatant is diluted and discharged into the wastewater system.

Contaminated Packaging: Return container to manufacturer or dispose of in accordance with national and local regulations.

Disposal Precautions: Please refer to relevant national and local regulations before disposal.

SECTION 14: Transport information

UN Dangerous Goods Number (UN Number): 1052 **UN Shipping Name:** Anhydrous Hydrogen Fluoride

United Nations hazard classification: Class 8 Class 6.1 **Packing group:** I

Packaging Category:-

packaging sign



Marine Pollutants: No

Packing method: steel gas cylinder; ordinary wooden box outside the ampoule.

Transportation Precautions: The packaging should be complete and the loading should be secure at the time of departure. During transportation, make sure that the container does not leak, collapse, fall or be damaged. It is strictly forbidden to mix and transport with flammable or combustible materials, edible chemicals, etc. The transport vehicle shall be equipped with leakage emergency treatment equipment during transportation. During transportation, it should be protected from exposure to sunlight, rain, and high temperature. When transporting by road, it is necessary to drive according to the prescribed route, and do not stop in residential areas and densely populated areas.

SECTION 15: Regulatory information

The following laws, regulations and standards provide corresponding provisions on the safe use, storage, transportation, handling, classification and marking of chemicals:

Production Safety Law of the People's Republic of China;

Law of the People's Republic of China on the Prevention and Control of Occupational Diseases
Classification and Catalogue of Occupational Diseases: Poisoning by Fluorine and its Inorganic Compounds;

Regulations on the Safety Management of Hazardous Chemicals: Catalogue of Hazardous Chemicals: Included. Inventory of explosive hazardous chemicals: not listed. List of Hazardous Chemicals under Key Supervision: Included. GB18218-2018 "Identification of Major Hazardous Sources of Hazardous Chemicals" (Table 1): Included. Category: toxic substances, critical quantity (t): 1;
Labor Protection Regulations for Workplaces Using Toxic Substances Catalogue of Highly Toxic Substances: Included;

Regulations on the Administration of Precursor Chemicals Classification and Variety List of Precursor Chemicals: Not listed;

Chemical Classification and Hazard Publicity General Rules (GB13690--2009);

The classification and product name number of dangerous goods (GB6944-2012) is classified as Class 8 corrosive substances.

SECTION 16: Other information

References:

- (1) The latest practical manual for chemical dangerous goods;
- (2) Complete book on safety technology of hazardous chemicals;

Disclaimer:

The information in this SDS applies only to the specified product, unless otherwise specified, all substances in this product have unknown hazards and should be used with care. While certain hazards are described in this SDS, we do not guarantee that these are the only hazards. This SDS provides information on the safety of product use only for those users of this product who have received appropriate professional training. The relevant data is only used as a guide for safe handling, use, processing, storage, disposal and leakage, etc., and cannot be used as an indicator of guarantee and quality.