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Lee & Man Chemical

Safety data sheet for chemical products

1,1-Difluoroethane

CHF_2CH_3

Chemical Safety Data Sheet (SDS)

1,1-Difluoroethane

SECTION 1: Identification of the Chemical and Company

Product name: 1,1-difluoroethane

Company Name: Jiangxi Lihua Chemical Co., Ltd.

Address: Matou Industrial City, Ruichang City, Jiujiang City, Jiangxi Province

Postal Code: 332207

Company Telephone: 0792-8996998

Company Emergency Telephone: 0532-83889090

Fax Number: 0792-8996988

E-mail Address: haifeng_sun@leemanchemical.com

Technical Specification Code: 0086

Effective Date: June 07, 2025

Recommended Uses and Restricted Uses: Used as refrigerant, aerosol propellant, and organic synthesis intermediate.

SECTION 2: Hazards Summary

Emergency Overview: Extremely flammable gas. Contained under high pressure; may explode if heated. May cause drowsiness or dizziness.

GHS Hazard Categories:

- Flammable gases, Category 1
- Pressurized gas
- Specific target organ toxicity - single exposure, Category 3 (anesthetic effect)

  Label Elements:

  Pictogram:

Warning Statement: Danger

Hazard Statements:

Extremely flammable gas. Contained under pressure; may explode if heated. May cause drowsiness or dizziness.

Precautionary Statements:

- Preventive Measures

  - Keep away from heat sources, sparks, open flames, hot surfaces. No smoking.
  - No smoking, eating, or drinking in the workplace.

- Response in Case of Accident

  - In case of gas leakage and fire: Do not extinguish the fire unless the gas leakage can be safely stopped. Eliminate all ignition sources if no danger exists. If exposed or concerned, seek medical attention.

- Safe Storage

  - Protect from sunlight. Store in a well-ventilated place.

- Disposal Considerations

  - [To be specified]

Physical and Chemical Hazards:

Extremely flammable. Can form explosive mixtures with air.

Health Hazards:

Excessive exposure may cause dizziness, disorientation, excitability, central nervous system depression, etc.

Irritating to eyes and upper respiratory tract. Direct contact with liquid product may cause frostbite.

Environmental Hazards:

May be harmful to the environment.

SECTION 3: Composition/Information on Ingredients

Substance：√	Mixture：×
Main Component: 1,1-Difluoroethane	CAS No：75-37-6
Relative Molecular Mass：66.06	Molecular Formula：$C_2H_4F_2$

SECTION 4: First Aid Measures

Inhalation:

Remove the victim quickly to an area with fresh air. Keep the airway unobstructed. If breathing is difficult, provide oxygen. If breathing or heartbeat stops, immediately perform cardiopulmonary resuscitation (CPR). Seek medical attention.

Skin Contact:

In case of frostbite, rewarm with warm water (38–42°C). Avoid hot water or radiant heat, and do not rub the affected area. Seek medical attention.

Eye Contact:

Immediately lift the eyelids and rinse thoroughly with plenty of flowing water or normal saline. Seek medical attention.

SECTION 5: Fire Fighting Measures

Fire Fighting Precautions and Protective Measures:

Cut off the gas source. If the gas source cannot be cut off, do not extinguish the fire at the leakage point. Firefighters must wear self-contained breathing apparatus (SCBA) and full-body fireproof and gas-tight suits, and fight the fire from the upwind direction. Move the container from the fire site to an open area if possible. Spray water to keep the fire-exposed containers cool until the fire is extinguished.

Hazardous Characteristics:

Decomposes when heated to release toxic fluoride gases. Reacts violently with oxidizers. Combustion produces harmful carbon monoxide and hydrogen fluoride.

Extinguishing Media:

Use water mist, foam, dry powder, or carbon dioxide.

SECTION 6: Leak Emergency Treatment

Personnel Protection Measures, Protective Equipment, and Emergency Procedures:

Eliminate all ignition sources. Designate a warning zone based on the affected area of gas diffusion, and evacuate unrelated personnel to a safe area from the upwind and crosswind directions. Emergency responders are advised to wear positive-pressure self-contained breathing apparatus (SCBA) and anti-static clothing. When liquefied gas leaks, wear anti-static and cold-resistant clothing and chemical-resistant gloves. All equipment used during operations should be grounded. Stop the leakage source if possible. If feasible, invert the container to release gas instead of liquid. Spray water mist to suppress vapors or change the direction of the vapor cloud, avoiding water flow contact with the leaked substance. Do not directly spray water onto the leaked substance or leakage source.

Environmental Protection Measures:

Prevent gas from diffusing through sewers, ventilation systems, and confined spaces.

Methods for Containment, Clearance, and Disposal Materials:

Isolate the leakage area until the gas dissipates.

SECTION 7: Handling and Storage

Handling Precautions:

Conduct closed operations with comprehensive ventilation. Operators must receive special training and strictly follow operating procedures. Keep away from ignition sources and heat. Smoking is prohibited in the workplace. It is recommended that operators wear a filtering half-mask respirator, chemical safety goggles, anti-static work clothes, and chemical-resistant gloves. Avoid contact with oxidizers and active metal powders. Use explosion-proof ventilation systems and equipment. Prevent gas leakage into the workplace air. During transportation, cylinders and containers must be grounded and bonded to prevent static electricity. Handle with care to avoid damage to cylinders and accessories. Equip with appropriate fire-fighting equipment and leakage emergency treatment equipment.

Storage Precautions:

Store in a cool, ventilated special warehouse for flammable gases. Keep away from ignition sources and heat. The warehouse temperature should not exceed 30°C. Store separately from oxidizers, active metal powders, etc. Avoid mixed storage. Use explosion-proof lighting and ventilation facilities. Prohibit the use of mechanical equipment and tools that easily generate sparks. The storage area should be equipped with leakage emergency treatment equipment.

SECTION 8: Exposure Controls/Personal Protection

Occupational Exposure Limits:

- China PC-TWA: Not established
- ACGIH (USA): Not established

Biological Exposure Limits:

Not established.

Monitoring Methods:

Not established.

Engineering Controls:

Closed production process with comprehensive ventilation. Provide safety shower and eye wash facilities.

Respiratory Protection:

General special protection is not required, but a filtering half-mask respirator is recommended in special cases.

Eye Protection:

Wear chemical safety goggles when necessary.

Skin and Body Protection:

Wear anti-static work clothes.

Hand Protection:

Wear general work protective gloves.

Other Protections:

No smoking, eating, or drinking in the workplace. Take a shower and change clothes after work. Store contaminated clothes separately and wash before reuse. Maintain good hygiene practices.

SECTION 9: Physical and Chemical Properties

Appearance and Properties: Colorless, odorless, flammable gas	**pH:** Not applicable
Melting Point (°C): -117	**Boiling Point (°C):** -24.7
Relative Density (Water = 1): 0.91	**Relative Vapor Density (Air = 1):** 2.32

Saturated Vapor Pressure (kPa): 531.96 (21.1°C)	**Heat of Combustion (kJ/mol):** -1222.85
Critical Temperature (°C): 113.6	**Critical Pressure (MPa):** 4.50
Octanol/Water Partition Coefficient: 0.75	**Flash Point (°C):** -79
Upper Explosive Limit (% V/V): 18.0	**爆炸下限%(V/V)：** 3.7
Autoignition Temperature (°C): No data	**Viscosity (mPa·s):** 0.263 (10°C)
Solubility: Insoluble in water	

SECTION 10: Stability and Reactivity

Stability: Stable

Hazardous Decomposition Products: Hydrogen fluoride

Incompatible Materials: Strong oxidizers, magnesium, aluminum and their alloys

Conditions to Avoid: Heating

Hazardous Reactions: Contact with incompatible materials such as strong oxidizers poses a risk of fire and explosion.

SECTION 11: Toxicological Information

Acute Toxicity: LC_{50}: 977000 mg/m³ (mouse, inhalation, 2h)

Skin Irritation or Corrosion: No data

Eye Irritation or Corrosion: No data

Respiratory or Skin Sensitization: No data

Germ Cell Mutagenicity: No data

Carcinogenicity: No data

Reproductive Toxicity: No data

Specific Target Organ Toxicity - Single Exposure: No data

Specific Target Organ Toxicity - Repeated Exposure: No data

Inhalation Hazard: No data

SECTION 12: Ecological Information

Ecotoxicity: No data

Biodegradability: No data

Abiotic Degradability: In air, with a hydroxyl radical concentration of 5.00×10^5 molecules/cm³, the degradation half-life is 472 days (theoretical).

Potential Bioaccumulation: Based on Kow value prediction, the substance may have weak bioaccumulation potential.

Mobility in Soil: Based on Koc value prediction, the substance may be prone to migration.

SECTION: Disposal Considerations

Waste Chemicals: Incineration is recommended. Hydrogen halides emitted from incinerators should be removed by acid scrubbers.

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

Disposal Precautions: Refer to national and local regulations before disposal.

SECTION 14: Transport Information

- **UN Number:** 1030
- **UN Transport Name:** 1,1-Difluoroethane
- **UN Hazard Class:** 2.1
- **Packaging Group:** —
- **Packaging Marking**

- **Marine Pollutant:** No
- **Transport Precautions:** When transporting in cylinders, ensure the cylinder cap is securely fastened. Cylinders should generally be placed horizontally in the same direction, not crossed; the height shall not exceed the protective railing of the vehicle, and be secured with triangular wooden blocks to prevent rolling. Transport vehicles should be equipped with appropriate fire-fighting equipment. Exhaust pipes of vehicles transporting this substance must be equipped with flame arrestors. Prohibit the use of mechanical equipment and tools that easily generate sparks for loading and unloading. Do not transport mixed with oxidizers, active metal powders, etc. Transport in the morning and evening in summer to prevent sun exposure. During stopovers, keep away from ignition sources and heat. When transporting by road, follow the specified route and do not stop in residential areas or densely populated areas. Rail transport prohibits rolling.

SECTION 15: Regulatory Information

The following laws, regulations, and standards stipulate the safe use, storage, transportation, loading/unloading, classification, and labeling of this chemical:

- Work Safety Law of the People's Republic of China
- Law of the People's Republic of China on the Prevention and Treatment of Occupational Diseases
    - Occupational Disease Classification and Catalog: Not listed
- Regulations on the Safety Management of Hazardous Chemicals
    - Hazardous Chemicals Catalog: Listed
    - List of Explosive Hazardous Chemicals: Not listed
    - Catalog of Key Regulated Hazardous Chemicals: Not listed
    - GB18218-2018 *Identification of Major Hazard Installations for Hazardous Chemicals* (Table 1): Not listed
- Regulations on Labor Protection in Workplaces Using Toxic Substances
    - List of Highly Toxic Substances: Not listed
- Regulations on the Administration of Precursor Chemicals
    - Classification and List of Precursor Chemicals: Not listed

SECTION 16: Other Information

References:

(1) *Latest Practical Handbook of Chemical Dangerous Goods*, edited by Liu Dehui
(2) *Comprehensive Handbook of Hazardous Chemicals Safety Technology (3rd Edition)*, edited by Sun Wanfu

Disclaimer:

The information in this SDS applies only to the specified product. Unless otherwise specified, all substances in this product may have unknown hazards, and caution should be exercised when using it. Although this SDS describes certain hazards, we do not guarantee that these are the only hazards. This SDS is provided to trained personnel for safe use of the product. The relevant data herein serve only as guidance for safe operation, use, processing, storage, disposal, and leakage response, and shall not be construed as a guarantee or quality indicator.