SAFETY DATA SHEETS

According to the UN GHS revision 10

1: Identification

1.1 GHS Product identifier

Product name	Fluoromethane

1.2 Other means of identification

Product number	51311-17-2
Other names	Fluoromethane

1.3 Recommended use of the chemical and restrictions on use

Identified uses	Industrial and scientific research use.
Uses advised against	no data available

1.4 Supplier's details

Company	Zhongshan Greenrock Technology Co., Ltd.
Address	No. 138, Jinsan Avenue, Sanjiao Town, Zhongshan City, Guangdong Province, China
Telephone	+86-2087066781

1.5 Emergency phone number

Emergency phone number	+86-2087066781
Service hours	Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

2: Hazard identification

2.1 Emergency Overview

Highly flammable substance, highly susceptible to fire and explosion. Its vapors can form explosive mixtures with air and explode immediately upon contact with a fire source. Open flames and static electricity are strictly prohibited.

2.2 GHS Classification

Flammable gases : 1A: Flammable gas, Pyrophoric gas, Chemically unstable gas A,B
Gases under pressure : Compressed gas, Liquefied gas, Dissolved gas

2.3 GHS label elements, including precautionary statements

Pictogram(s)

Signal word	Danger
Hazard statement(s)	H220 Extremely flammable gas H280 Contains gas under pressure; may explode if heated
Precautionary statement(s)	
Prevention	P203 Obtain, read and follow all safety instructions before use. P210 Keep away from heat, hot surface, sparks, open flames and other ignition sources. No smoking. P222 Do not allow contact with air. P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
Response	P377 Leaking gas fire,Do not extinguish, unless leak can be stopped safely. P381 In case of leakage, eliminate all ignition sources.
Storage	P403 Store in a well-ventilated place. P410+P403 Protect from sunlight. Store in a well-ventilated place.
Disposal	no data available

2.4 Physical and chemical

Flammable gas, which can form explosive mixtures with air, with a wide range of explosion limits. Extremely flammable liquid: has a very low flash point (usually below 23°C), is volatile, and its vapor density may be greater than that of air, accumulating in low places.

2.5 Health hazards

The main hazards come from burns and blast injuries caused by fires and explosions. Some substances are inherently toxic or asphyxiating, and high concentrations can cause poisoning or asphyxiation. Liquid splashes (cryogenic liquids) can cause frostbite.

2.6 Environmental hazards

Fires can produce toxic gases such as carbon monoxide, polluting the air. Leaks may have short-term impacts on local ecosystems. Most substances will quickly evaporate or degrade in the environment, preventing long-term pollution.

2.7 Other hazards which do not result in classification

no data available

3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Fluoromethane	Fluoromethane	51311-17-2	209-796-6	99%

4: First-aid measures

4.1 General advice

If possible, immediately cut off the fire source and ventilate to dilute the flammable vapor; carry the material SDS document, record the exposure situation, and seek medical attention if necessary; avoid using mobile phones and electrostatic devices (to prevent explosion).

4.2 If inhaled

Move to a place with fresh air and keep the head elevated (to facilitate breathing); if inhaling a large amount of flammable gas leads to suffocation, immediately perform artificial respiration (wear a respirator); if dizziness or confusion occurs, seek medical attention immediately

4.3 In case of skin contact

If you come into contact with highly flammable liquids (such as ether), immediately remove contaminated clothing and rinse with plenty of running water for 10-15 minutes. If you have frostbite (caused by low-boiling-point liquids), rewarm with warm water (37-40°C) and do not use fire to burn the affected area.

4.4 In case of eye contact

Immediately rinse with saline for 10 minutes, then instill antibiotic eye drops (such as levofloxacin eye drops); wear goggles, avoid rubbing, and seek medical attention from an ophthalmologist if necessary.

4.5 If swallowed

Do not induce vomiting (to prevent vomitus from being aspirated into the lungs); if the patient is conscious, a small amount of vegetable oil can be given orally (to delay absorption); bring the substance SDS and seek medical attention immediately to monitor for aspiration pneumonia

4.6 Most important symptoms and effects, both acute and delayed

Acute symptoms include suffocation, dizziness, loss of consciousness, and frostbite (for low-boiling-point liquids). Long-term effects include damage to the nervous system if toxic or flammable gases (such as acrylonitrile) are inhaled.

4.7 Protection of first-aiders

Rescuers must wear anti-static work clothes, chemical-resistant gloves, and half-mask respirators (with organic vapor filter cartridges); use explosion-proof tools to avoid static sparks.

4.8 Notes to physician

Inform the doctor of the substance name and exposure concentration; blood gas analysis should be monitored for patients with asphyxiation, and tissue necrosis should be prevented for patients with frostbite.

5: Fire-fighting measures

5.1 Unsuitable extinguishing media

Flammable gas: Do not use water (cannot cover the gas) or carbon dioxide (may cause flashback); Extremely flammable liquids (flash point 23°C): Avoid using high-pressure water (can easily spread the liquid and expand the fire).

5.2 Specific hazards during fire fighting

Flammable gases can easily reach their explosion limits when mixed with air (such as 4%-75% hydrogen), and will explode when exposed to fire, with strong shock waves; extremely flammable liquids are highly volatile, and their vapors can easily form explosive mixtures with a fast burning speed (such as ether).

5.3 Hazardous combustion products

Carbon monoxide and incomplete combustion products of hydrocarbons (such as aldehydes and ketones).

5.4 Specific extinguishing methods

Flammable gas: first shut off the leak source (when safe). If it cannot be shut off, use dry powder to extinguish the fire (to suppress combustion) and dilute the vapor with mist water (to prevent explosion). Extremely flammable liquid: use dry powder/foam (anti-solvent foam, such as ethanol) for small areas and cover large areas with foam (to isolate oxygen). Open flames are strictly prohibited from approaching.

5.5 Special protective equipment for fire-fighters

Wear anti-static work clothes, positive pressure air respirator, and chemical-resistant gloves; carry a combustible gas detector (to measure explosion limits); use explosion-proof tools during operation to avoid static sparks.

6: Accidental release measures

6.1 Protective measures for workers

Wear anti-static work clothes, anti-static gloves, and chemical goggles; wear a gas mask (organic vapor filter cartridge) for gases/volatile liquids; wear impact protection for aerosols.

6.2 Environmental protection measure

Liquids/aerosols are prevented from flowing into sewers/rivers, and oil booms + oil absorbent cotton are used to pollute water bodies; gas leaks are monitored for concentration to prevent them from spreading to residential areas; solids are prevented from dust polluting the soil.

6.3 Containment methods for leaked chemicals

Gas: Shut off the leak source (when safe), and use explosion-proof fan to lead the leak to an open area; Liquid: Collect in anti-static container; Solid: Put non-sparking tools into anti-static container; Aerosol: Collect the leaked tank (no squeezing).

6.4 Cleanup methods for chemical spills

Liquid: absorb with a small amount of oil-absorbing cotton and transfer with a large amount of explosion-proof pump; Solid: transfer with spark-free tools (to prevent friction); Aerosol: leaking tanks are collected separately and disposed of professionally.

6.5 Measures to prevent the spread of leaks

Designate a 10-meter isolation zone and prohibit open flames/static equipment; set up fire barriers for liquids and anti-static isolation belts for gases; use explosion-proof ventilation to reduce concentration (explosion limit).

6.6 Container leakage treatment

Gas: Minor leaks should be sealed with anti-static sealant, serious leaks should be transferred after pressure relief; Liquid: Anti-static sealant should be used to seal, serious leaks should be transferred with explosion-proof pump; Aerosol: Do not squeeze, wrap in sealed bag.

6.7 Special considerations

Eliminate static electricity before operation; provide good ventilation to prevent gas accumulation; perform anti-static testing on tools; clean protective equipment and perform anti-static testing after leak treatment.

7: Handling and storage

7.1 Safe storage conditions

Flammable gases are stored in explosion-proof gas cylinder warehouses (in compliance with fire protection regulations) and equipped with combustible gas detectors (alarm threshold ? 10% of the lower explosion limit); extremely flammable liquids are stored in cool warehouses with anti-static floors (resistance ? 10??) and containers made of anti-static plastic or metal (grounded); warehouse ventilation is explosion-proof (air changes ? 10 times/hour).

7.2 Storage precautions

Flammable gases should be kept away from fire sources and static electricity sources (such as mobile phones and non-explosion-proof lamps). Gas cylinders should be stored upright and secured. Extremely flammable liquids must not be stacked (stored in single layers). The distance between containers should be ? 10 cm. Check the gas detector daily and the container seal weekly. In case of leakage, cut off the gas source/fire source immediately and ventilate to dilute the gas.

7.3 VCI Storage Grade

Level 3 (Medium): The outer surface of the metal gas cylinder is coated with VCI anti-rust paint (thickness ? 30?m) and maintained once every year; the grounding resistance of the metal pipeline in the warehouse is ? 4? to prevent explosions caused by static electricity and avoid pipeline corrosion and leakage.

7.4 Recommended storage temperature

Flammable gases: 0-30?, strictly prohibited from exceeding 35?; extremely flammable liquids: 10-25?, liquids with a flash point 23? need to be ?20?; shade and cool down in summer, avoid direct sunlight, temperature fluctuation ?±5? (if the label has a recommended storage temperature, follow the label).

7.5 Handling

For precautions see Safety Data Sheet section 2
Advice on safe handling : Work under hood. Do not inhale substance/mixture.

8: Exposure controls/personal protection

8.1 Respiratory protection

When exposed to volatile extremely flammable liquid vapor, wear a filtering respirator (APF?10); positive pressure air respirator is required for working in confined spaces to prevent suffocation/explosion.

8.2 Recommended Filter type

Select Type A gas filter cartridge (to protect against organic vapors, such as alkanes and alcohols). If it contains aromatic hydrocarbons (such as benzene), select Type A2 gas filter cartridge; for dust-type flammable solids, superimpose Type P2 filter cotton.

8.3 Eye/face protection

Wear impact-resistant goggles with anti-fog lenses. If handling spray liquids, wear a protective mask to prevent liquid from splashing into the eyes.

8.4 Skin and body protection

Wear anti-static work clothes made of conductive fiber blend to avoid static sparks; wear anti-static aprons and keep trouser legs grounded during operation.

8.5 Hand protection

Wear anti-static and chemical-resistant gloves made of nitrile + conductive fiber with a glove resistance of ?10¹?? to prevent static electricity from igniting flammable materials.

8.6 Hygiene measures

Wash your hands with a phosphorus-free detergent after work to avoid residual liquid irritating the skin; smoking and using open flames are strictly prohibited in the work area; clothes need to be washed with anti-static agents to avoid carrying flammable vapors.

9: Physical and chemical properties and safety characteristics

Physical state	Methyl fluoride (or fluoromethane) is a colorless flammable gas which is heavier than air. It has an agreeable ether-like odor. It is narcotic in high concentrations. It burns with evolution of hydrogen fluoride. The flame is colorless, similar to alcohol. Under prolonged exposure to fire or intense heat the containers may rupture violently and rocket.
Colour	no data available
Odour	no data available
Melting point/freezing point	500°C

Boiling point or initial boiling point and boiling range	no data available
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	no data available
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	no data available
Partition coefficient n-octanol/water	no data available
Vapour pressure	no data available
Density and/or relative density	no data available
Relative vapour density	no data available
Particle characteristics	no data available

10: Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Halogenated aliphatic compounds, such as METHYL FLUORIDE, are moderately or very reactive. Halogenated organics generally become less reactive as more of their hydrogen atoms are replaced with halogen atoms. Low molecular weight haloalkanes are highly flammable and can react with some metals to form dangerous products. Materials in this group are incompatible with strong oxidizing and reducing agents. Also, they are incompatible with many amines, nitrides, azo/diazo compounds, alkali metals, and epoxides. The prolonged mixing of halogenated solvents with metallic or other azides may cause the slow formation of explosive azides, for example methylene chloride and sodium azide, [Chem. Eng. News, 1986, 64(51)].

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

no data available

10.6 Hazardous decomposition products

no data available

11: Toxicological information

11.1 Acute toxicity

Oral: no data available
Inhalation: no data available
Dermal: no data available

11.2 Skin corrosion/irritation

no data available

11.3 Serious eye damage/irritation

no data available

11.4 Respiratory or skin sensitization

no data available

11.5 Germ cell mutagenicity

no data available

11.6 Carcinogenicity

no data available

11.7 Reproductive toxicity

no data available

11.8 STOT-single exposure

no data available

11.9 STOT-repeated exposure

no data available

11.10 Aspiration hazard

no data available

12: Ecological information

12.1 Toxicity

Toxicity to fish: no data available
Toxicity to daphnia and other aquatic invertebrates: no data available
Toxicity to algae: no data available
Toxicity to microorganisms: no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Other adverse effects

no data available

13: Disposal considerations

13.1 Disposal methods for waste chemicals

Flammable gases must be completely burned in dedicated combustion equipment (the combustion rate must be controlled to prevent explosions). Extremely flammable liquids can be recovered by distillation (reusable if purity meets standards) or burned in specialized incinerators (the feed rate must be controlled). Unrecoverable liquids must be treated with flame retardants before disposal.

13.2 Precautions

Open flames must be strictly prohibited at disposal sites, and explosion-proof equipment must be used. Gas disposal must be kept away from residential areas and fire sources. Liquid disposal must prevent the accumulation of volatile vapors. Operators must wear anti-static equipment. The disposal process must be supervised by a dedicated person and equipped with emergency fire-fighting equipment.

14: Transport information

14.1 UN Number

ADR/RID: Not dangerous goods. IMDG: Not dangerous goods. IATA: Not dangerous goods.

14.2 UN Proper Shipping Name

ADR/RID: unknown IMDG: unknown IATA: unknown

14.3 Transport hazard class(es)

ADR/RID: Not dangerous goods. IMDG: Not dangerous goods. IATA: Not dangerous goods.

14.4 Packing group, if applicable

ADR/RID: Not dangerous goods. IMDG: Not dangerous goods. IATA: Not dangerous goods.

14.5 Environmental hazards

ADR/RID: no IMDG: no IATA: no

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Fluoromethane	Fluoromethane	51311-17-2	209-796-6
New Zealand Inventory of Chemicals (NZIoC)			Not Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Australian Inventory of Industrial Chemicals (AIIC)			Not Listed.
Catalogue of Strictly Restricted Toxic Chemicals in China			Not Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
European INventory of Existing Commercial chemical Substances			Not Listed.
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans			Not Listed.
TSCA Inventory of Chemical Substances			Listed.

16: Other information

Information on revision

SDS Creation Date	July 1, 2025
SDS Revision Date	July 1, 2025

Abbreviations and acronyms in SDS

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

SDS References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Any questions regarding this Safety Data Sheet, Please send your inquiry to sales@MolBest.com

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