

XIAMEN JUDA TRADING CO.,LTD

Material Safety Data Sheet

This MSDS adheres to the standards and regulatory requirements of China and may not meet the regulatory requirements in other countries.

SECTION I – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name in English : 1,1,1,3,3,3-Hexafluoropropane.

Synonyms: HFC-236fa. R-236fa.

Formula: $\text{CF}_3\text{CH}_2\text{CF}_3$

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SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Nature : Substance.

Chemical Name : 1,1,1,3,3,3-Hexafluoropropane.

Concentration: $\geq 99.60\%$.

CAS-No.: 690-39-1.

SECTION III – HAZARDS IDENTIFICATION

Hazardous Classification: Class 2.2 Compressed Gas and Non-combustible Gas.

Primary Routes of Entry: Inhalation, Skin contact.

Emergency Overview: Colorless, volatile liquid with ethereal and faint sweetish odor.

Nonflammable material. Overexposure may cause dizziness and loss of concentration.

Potential Health Effects:

Inhalation of high concentrations of HFC-236fa, such as those that may be achieved under conditions of abuse or inappropriate use, may cause adverse central nervous system and cardiac effects. The effects may include dizziness, lightheadedness, confusion, weakness and unconsciousness, and in extreme cases the heart may become sensitized to pinephrine and may result in death without warning.

HFC-236fa may cause frostbite if liquid or escaping vapor contacts the skin.

HFC-236fa may cause "frostbite-like" effects if the liquid or escaping vapors contact the eyes.

Ingestion is not considered a probable route of exposure for HFC-236fa.

SECTION IV – FIRST AID MEASURES

Eyes: Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation. Get medical attention.

Skin: Promptly flush skin with water until all chemical is removed. Remove clothing contaminated with liquid and wash before reuse.

Inhalation: Immediately remove patient to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. DO NOT give epinephrine (adrenaline). Get medical attention immediately.

Ingestion: Ingestion is an unlikely route of exposure. If a large amount is swallowed, get medical attention.

Notes to Physicians and/or Protection for First-Aiders: Because of possible disturbances of cardiac rhythm, catecholamine drugs such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION V – FIRE FIGHTING MEASURES

Unusual Fire and Explosion Hazards: HFC-236 fa is not flammable at ambient temperatures and atmospheric pressure. However, based on other HFC response, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain finely divided reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

Hazardous Products of Combustion: If involved in a fire the following toxic may be produced by thermal decomposition: Hydrogen fluoride, Carbon monoxide, Carbonyl fluoride.

Fire Fighting Instructions: Keep cylinders cool with a water spray applied from a safe distance. Use a self-contained breathing apparatus if containers rupture or release under fire conditions. Do not allow reentry into areas where this material has been released without first ventilating to remove products of combustion/decomposition.

Special Protective Equipment for Fire-fighters: Use self-contained breathing apparatus and chemically protective clothing.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions: Evacuate area. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation.

Environmental Precautions: Try to stop release. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Clean up Methods: Ventilate area. Absorb excess liquid spillage on inorganic absorbant material such as fine sand, brick dust etc. Place spent absorbant in sealed packages and contact specialist waste disposal contractor.

SECTION VII – HANDLING AND STORAGE

Handling: Avoid breathing vapors or liquid contact with eyes, skin or clothing. Do not puncture or drop containers, expose them to open flame, excessive heat, or direct sunlight. Tank cleaning personnel should use only formal tank entry procedure based on recognized safety principles. HFC-236fa should not be mixed with air above atmospheric pressure for leak testing or any other purpose. Use dry nitrogen to leak test equipment pressurized with HFC-236fa.

Storage: Due to low boiling of 15°C, store in a cool, well-ventilated area of low fire risk. Protect container and its fittings from physical damage. Storage in subsurface locations should be avoided. Do not heat the container or store at a temperature above 51.7°C. Close valve tightly and after use and when empty. If container temperature exceeds boiling point, cool the container before opening.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Authorized Limit Values: 1,1,1,3,3,3-Hexafluoropropane.

AEL * (DuPont) : 1000 ppm, 8 & 12 Hr. TWA

WEEL (AIHA) : 1000 ppm, 8 Hr. TWA

CHINA MAC: No information available.

Engineering Controls: Provide local ventilation suitable for the product decomposition risk.

Respiratory Protection: None required for normal work situations where adequate ventilation is provided. Use approved self-contained, positive pressure respirators for emergencies and in situations where air may be displaced by vapors.

Hand Protection: Protective gloves - chemical resistant.

Eye Protection: Wear safety glasses. Where there is reasonable probability of liquid contact, wear splash-proof goggles. Contact lenses should not be worn under such conditions.

Skin Protection: Use protective, impervious gloves and clothing made of neoprene, nitrile or butyl rubber if prolonged or repeated contact with liquid is anticipated. Wash clothing promptly, if wet. Remove any non-impervious clothing and wash before re-use.

Other Precautions: High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick drench shower facilities at convenient locations.

SECTION IX – PHYSICAL & CHEMICAL PROPERTIES

Appearance: Gas/Volatile liquid

Colour: Colourless

Molecular Weight: 152.05

Odor/Odour: No odour warning properties.

pH: Neutral

Boiling Point(1,013 hPa): -1.4 °C

Melting Point: -98°C

Freezing Point : -102 °C

Vapor Pressure: 2.3 bar(a)(20°C)

Vapor Density (air=1): 5.3

Density: 1.371g/cm³ (20°C)

Solubility: 724 mg/l@ ambient room temperature

Application: Mainly used as fire retardant, cryogen, spraying agent, vesicant & heat carrier .

SECTION X – STABILITY AND REACTIVITY

Stability: Stable under normal conditions of handling and use. Avoid sources of ignition such as sparks, hot spots, welding flames and lighted cigarettes which may yield toxic and/or corrosive decomposition products.

Incompatibility With Other Materials: Incompatible with strong bases, metallic sodium, potassium, lithium.

Hazardous Decomposition Products: Decomposes in open flames and hot (glowing) surfaces. Hazardous gas/vapor produced is oxides of carbon, hydrogen fluoride.

Hazardous Polymerization: Will not occur.

SECTION XI – TOXICOLOGICAL INFORMATION

HFC-236fa

Inhalation 4 hour LC₅₀: > 457,000 ppm in rats

* Single exposure by inhalation caused narcosis and cardiac sensitization, a potentially fatal disturbance of heart rhythm associated with a heightened sensitivity to the action of epinephrine; in a cardiac sensitization screening test in dogs exposed to concentrations of 50,000 to 250,000 ppm evidence of sensitization occurred at 150,000 ppm.

* Repeated exposures caused a reduced startle response in rats. No other significant toxicological effects were observed.

No-Observed-Adverse-Effect-Level (NOAEL): 20,000ppm.

* Developmental studies conducted in rats and rabbits at dose levels of 5000, 20,000 or 50,000 ppm produced no evidence of developmental toxicity.

* HFC 236fa was not uniquely toxic to the rat or rabbit conceptus. Specific studies to evaluate the effect on female reproductive performance have not been conducted; however, limited information obtained from studies on developmental toxicity do not indicate adverse effects on female reproductive performance.

* Tests have shown that HFC 236fa does not cause genetic damage in bacterial or mammalian cell cultures. No animal data are available to define carcinogenic effects of HFC 236fa.

SECTION XII – ECOLOGICAL INFORMATION

General: When discharged in large quantities may contribute to the greenhouse effect.

Global warming factor: 6300 (CO₂=1)

Aquatic Toxicity:

96 hour LC₅₀ - Zebra fish: 292 mg/L

96 hour LC₅₀ - Freshwater algae: > 186 mg/L

48 hour LC₅₀ - Daphnia magna: 299 mg/L

SECTION XIII – DISPOSAL CONSIDERATIONS

General: Avoid discharge to atmosphere.

Waste Treatment: Dispose in compliance with national and local regulations. It is recommended to contact the producer for recycling/recovery.

SECTION XIV – TRANSPORT INFORMATION

Classification Code : 2.2.

UN-No. : 3163.

Marking : 5.

Primary Label: Non-combustible Gas.

Packing Group : III.

Packing Method: Steel Cylinder.

SECTION XV – REGULATORY INFORMATION

* Regulations on the Control over Safety of Dangerous Chemicals (State Council Decree 344 [2002]).

* Common dangerous chemical classification and labelling (GB13690-92).

* Regulations on the Safety Use of Chemicals in Workplaces (Department of Labor, Reg 423 [1996]), are enacted to control the safe use, production, storage, transport, operation, trade and disposal of dangerous chemicals.

SECTION XVI – OTHER INFORMATION

Sources of key data used to compile the datasheet:

* MSDS/HFC-236fa, MATHESON TRI-GAS, INC.

* MSDS/ZYRON 236fa, Dupont Fluoroproduct.

* HFC-236fa clean agent Properties, Uses, Storage, and Handling, Dupont Fluoroproducts

Department: Foreign Trade Dept; Enviroment, Safety and Quality Management Dept.
Xiamen Juda Trading Co.ltd.

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The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. It 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.

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