

R-134A

Material Safety Data Sheet

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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 : 1,1,1,2-Tetrafluoroethane.

Synonyms: HFA-134a, HFC-134a.

Formula: CH₂F-CF₃

Supplier: Jinhua Slihe Chemical Co.,Ltd

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SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Nature: Substance

Chemical Name: 1,1,1,2-Tetrafluoroethane

Concentration: >= 99.9%

CAS-No.: 811-97-2

SECTION III – HAZARDS IDENTIFICATION

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

Primary Routes of Entry: Inhalation, Skin Contact.

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

Non-flammable material. Overexposure may cause dizziness and loss of concentration. Lubricant mists may cause eye, skin and respiratory tract irritation.

Potential Health Hazards:

Skin: Direct skin contact with the liquid or cold gas can cause chilling or possibly frostbite of exposed tissues.

Eyes: Liquid contact can cause severe irritation and frostbite. Mist may irritate.

Inhalation: R-134a is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

Ingestion: Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

SECTION IV – FIRST AID MEASURES

R-134A

Material Safety Data Sheet

Eyes: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

Skin: Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

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

Ingestion: Ingestion is unlikely because of the physical properties and is not expected to be hazardous. DO NOT induce vomiting unless instructed to do so by a physician.

Advice to Physician: Because of the 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

Nature of Hazard: R-134a is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions.

Hazardous Products of Combustion: Hazardous decomposition products formed under fire conditions: Hydrogen halides, Carbon dioxide (CO₂), Carbon monoxide, Fluorocarbons, and Carbonyl halides.

Fire Fighting Instructions: Use any standard agent--choose the one most appropriate for type of surrounding fire (material itself is not flammable). Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray. In the event of fire, wear self-contained breathing apparatus.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions: Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for Cleaning-up: Let the product evaporate.

In Case of Spill or Other Release: (Always wear recommended personal protective equipment.) Evacuate unprotected personnel. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return until air has been tested and determined safe, including lowlying areas.

SECTION VII – HANDLING AND STORAGE

Handling: Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not

R-134A

Material Safety Data Sheet

puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

R-134a should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

Storage: Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Keep at temperature not exceeding 52°C. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Authorized Limit Values: 1,1,1,2-Tetrafluoroethane.

SAEL (Solvay) 2001 TWA = 1,000 ppm

Workplace Environmental Exposure Level (AIHA) = 1,000 ppm TWA (8hr)

CHINA MAC: No information available.

Engineering Controls: Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

Personal Protection:

Respiratory Protection: Minimum need if the local exhaust ventilation is adequate. Use only respiratory protection that conforms to international/ national standards. Self-contained breathing apparatus in medium confinement/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.

Hand Protection: Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye Protection: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.

Skin Protection: General work clothing and gloves (leather) should provide adequate protection. Any contaminated clothing should be promptly removed and washed before re-use.

Additional Recommendations: Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quickdrench shower facilities at convenient locations.

SECTION IX – PHYSICAL & CHEMICAL PROPERTIES

Appearance: Liquefied gas

Color/Colour: Colorless/colourless

Odor/Odour: Faint ethereal odor

Molecular Weight: 102.03

Freezing Point: -101°C

Boiling Point (1,013 hPa): -26.3°C

Vapor Pressure: = 6,661 hPa (25 °C)

Vapor Density (air=1): 4.32(20°C)

Density: 1.5 g/l (25°C)

Solubility: Water 0.15 % (25°C)

PH: Neutral

Autoignition Temperature: >750 °C

Application: Refrigerant FOR CFC-12 substitute.

SECTION X – STABILITY AND REACTIVITY

R-134A

Material Safety Data Sheet

Stability: The product is stable. Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

Incompatibility With Other Materials: (Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, zinc.

Hazardous Decomposition Products: Halogens, halogen acids and possibly carbonyl halides.

Hazardous Polymerization: Will not occur.

SECTION XI – TOXICOLOGICAL INFORMATION

Acute Toxicity:

- ♦ Oral route, LD₅₀, not applicable
- ♦ Dermal route, LD₅₀, not applicable
- ♦ Inhalation, LC₅₀, 4 h, rat, > 50 %

Irritation:

- ♦ Rabbit, slightly irritant (skin)
- ♦ Rabbit, slightly irritant (eyes)

Sensitization:

- ♦ Guinea Pig, Non sensitizing (skin)

Chronic Toxicity:

- ♦ Inhalation, after a single exposure, dog, ≥ 7.5 %, cardiac sensitization following adrenergic stimulation
- ♦ Inhalation, after prolonged exposure, rat, Target organ: testes, ≥ 5 % v/v air, Remark: Leydig cells/benign tumours
- ♦ No effect on mutagenesis, carcinogenesis and reproduction

Comments

- ♦ No appreciable toxic effect
- ♦ Testicular effect not applicable to human



SECTION XII – ECOLOGICAL INFORMATION

Degradability (BOD): Is a gas at room temperature; therefore, it is unlikely to remain in water.

Octanol Water Partition Coefficient: Log Pow = 1.06 indicating a low potential for bioaccumulation.

Ozone Depletion Potential (ODP): 0

Global Warming Potential (GWP): 0.25

Product is persistent in air (atmospheric lifetime: 15.7 years). Product is not significantly hazardous for the aquatic environment as: *very low toxicity for aquatic organisms; *considerable volatility; *no bioaccumulation.

SECTION XIII – DISPOSAL CONSIDERATIONS

R-134A

Material Safety Data Sheet

Nature of the Waste: Not a RCRA hazardous waste.

Waste Treatment: Waste from residues / unused products: Can be used after re-conditioning. Contaminated packaging. Product removed from the cylinder must be disposed of in accordance with appropriate State and local regulation. Return cylinders with residual product to the supplier.

SECTION XIV – TRANSPORT INFORMATION

Classification Code: 22053.

UN-No. : 3159.

Marking: 5.

Primary label: Non-combustible Gas.

Packing group: NO

Packing: Steel cylinder 13.6KG net or 22.7KG net or 950KG net.

SECTION XV – REGULATORY INFORMATION

- * Common dangerous chemical classification and labelling (GB13690-92).
- * Regulations on the Control over Safety of Dangerous Chemicals (State Council Decree 344 [2002])
- * 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:

- * Material Safety Data Sheet/SOLKANE-134a
- * Material Safety Data Sheet/DuPont™ SUVA-134a Refrigerant

Department: Foreign Trade Dept.; Environment, Safety and Quality Management Dept.
Jinhua Slihe Chemical 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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