

SECTION I – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name in English:	Refrigerants Gas R134A
Synonyms:	HFA-134A, 1,1,1,2-Tetrafluoroethane
Formula:	C ₂ H ₂ F ₄
Supplier:	Global Refrigerants (S) Pte Ltd
Address:	No.9 TUAS LINK 1, SINGAPORE 638587
Representative in Georgia:	Nemera Ltd
Status:	Exclusive Distributor in Caucasus Region, Trademark Owner
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SECTION II - COMPOSITION/ INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
1,1,1,2- Tetrafluoroethane	811-97-2	>=99.95%

SECTION III – HAZARDS IDENTIFICATION

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

Primary Routes of Entry: Inhalation, Dermal, Eyes

Emergency Overview: Inhalation of high concentrations of vapour is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

Potential Health Hazards:

Skin: Skin contact may cause frostbite from exposure to the liquid.

Eyes: Irritant. Liquid contact will irritate and may cause conjunctivitis.

Inhalation: R134a 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

Eyes: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should 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

Fire and Explosion Hazards: R134a is not flammable at temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Product will decompose at temperatures above 250°C. Hazardous Products of Combustion: Decomposition products include hydrochloric acid, and carbonyl halides, such as phosgene.

Fire Fighting Instructions: Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) for protection against suffocation and possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool and to knock down vapours which may result from product decomposition. Stay upwind and keep out of low areas.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions: Immediately contact emergency personnel. 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 low areas.

SECTION VII – HANDLING AND STORAGE

Handling: Avoid breathing vapours and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders. Follow standard safety precautions for handling and use of compressed gas cylinders. R407C should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52°C (125°F).

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)

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

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 if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Eye Protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling.

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 quick drench shower facilities at convenient locations.

SECTION IX – PHYSICAL & CHEMICAL PROPERTIES

Appearance: Liquefied gas

Odour: Faint ethereal odour

Boiling Point(1013 mbars): -26.3°C

Freezing Point: -101°C

Vapour Pressure: = 6,661 hPa (25°C)

Density: 1.5 g/l (25°C)

Autoignition Temperature: > 750°C

Application: Refrigerant; Foaming agent, air con, substitute for R12

Colour: Colourless

Molecular Weight: 102.03

pH: Neutral

Specific Gravity: 1.48 (21°C)

Vapour Density (air=1):4.32 (20°C)

Solubility: Water0.15% (25°C)

SECTION X – Stability AND REACTIVITY

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

Incompatibility With other Materials: Freshly abraded aluminium surfaces (may cause strong exothermic reaction). Chemically active metals for example sodium, potassium, calcium, magnesium, zinc, or powdered aluminium.

Hazardous Decomposition Products: Hydrochloric and hydrofluoric acids; and carbonyl halides.

Hazardous Polymerization: Will not occur.

SECTION XI - TOXICOLOGICAL INFORMATION

Immediate (Acute) Effects:

Acute Toxicity: Oral route, LD₅₀, not applicable. Dermal route, LD₅₀, not applicable.

Inhalation, LC₅₀, 4 h, rat, > 50 %

Irritation:

*Rabbit, slightly irritant (skin and eyes)

Chronic Toxicity:

Inhalation, AFTER A SINGLE EXPOSURE, DOG, $\geq 7.5\%$, cardiac sensitization following adrenergic stimulation

Comments:

*No appreciable toxic effect. Testicular effect not applicable to human. 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

Nature of the Waste: Not a RCRA hazardous waste.

Waste Treatment: Waste from residues / unused products: Can be used after re-conditioning.

Product removed from the cylinder must be disposed of in accordance with appropriate National 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: Nonflammable Gas

Packing group: III.

Packing Method: Steel cylinder 13.6KG net or 22.7KG net

SECTION XV – REGULATORY INFORMATION

*Common dangerous chemical classification and labeling (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 Labour, Reg 423 [1996], are enacted to control the safe use, production, storage, transport, operation, trade and disposal of dangerous chemicals.

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