
MATERIAL SAFETY DATA SHEET

(MIXED REFRIGERANT R404A)

1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Product Identification: Mixed Refrigerant (R125+R143+R134a)

Formula: CF_3CHF_2 / CF_3CH_3 / CH_2FCF_3

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
PENTAFLUOROETHANE (R125)	354-33-6	44
1,1,1-TRIFLUOROETHANE (R143)	420-46-2	52
TETRAFLUOROETHANE (R134a)	811-97-2	4

3. PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Molecular weight:	86.23g/mol
Boiling Point of Saturated Liquid:	-26.5°C
Critical Pressure:	4.25MPa
Critical temperature:	72.4
Form:	Liquefied Gas
Color:	Clear, Colorless

4. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: Not applicable

Fire and Explosion Hazards

Cylinders may rupture under fire conditions. Decomposition may occur forming toxic gases.

Extinguishing Media

Use media appropriate for surrounding material.

Fire Fighting Instructions

Cool tank/container with water spray. Self-contained breathing apparatus (SCBA) may be required if cylinders rupture or release under fire conditions.

5.HAZARDS IDENTIFICATION

Potential Health Effects

Inhalation of high concentrations of vapor 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.

Human Health Effects

Skin contact may cause frostbite from exposure to the liquid. Inhalation may include nonspecific discomfort, such as nausea, headache, or weakness; or temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.

Higher exposures to vapors may lead to these effects: temporary lung irritation effects with cough, discomfort, difficulty breathing or shortness of breath; temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation, abnormal kidney function as detected by laboratory tests or fatality from gross overexposure. Individuals with preexisting diseases of the central nervous system, cardiovascular system, lungs or kidneys may have increased susceptibility to the toxicity of excessive exposures.

6.FIRST AID MEASURES

First Aid

INHALATION

If high concentrations are inhaled, immediately remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

Flush skin with water for at least 15 minutes after excessive contact. Seek medical assistance if irritation is present. Wash contaminated clothing before reuse. Treat for frostbite if necessary by gently warming affected area.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

Ingestion is not considered a potential route of exposure.

Notes to Physicians

Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should only be used with special caution in situations of emergency life support.

7.ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Ventilate area, especially low or enclosed places where heavy vapors might collect. Remove open flames. Use self-contained breathing apparatus (SCBA) if large spill or leak occurs.

Spill Clean Up

Comply with Federal, State and local regulations for reporting releases.

8.HANDLING AND STORAGE

Handling (Personnel)

Avoid breathing vapors or mist. Avoid contact with eyes or skin. Use with sufficient ventilation to keep employee exposure below recommended limits.

Storage

Store in a clean, dry place. Do not heat above 52 °C(126°F).

9.EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use sufficient ventilation to keep employee exposure below recommended limits. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places. Refrigerant concentration monitors may be necessary to determine vapor concentrations in work areas prior to use of torches or other open flames, or if employees are entering enclosed areas.

Personal Protective Equipment

Lined butyl gloves should be used to avoid prolonged or repeated exposure. Chemical splash goggles should be available for use as needed to prevent eye contact.

Fire protective clothing (NOMEX) with antistatic control should be worn when handling this product.

Under normal manufacturing conditions, no respiratory protection is required when using this product.

Self-contained breathing apparatus (SCBA) is required if a large release occurs.

Hazard Class:	2.2
UN No.:	3337
Primary label:	Nonflammable Gas

15.REGULATORY INFORMATION

Number in Annex

Not dangerous according to Dir. 88/EEC.

EC Classification

-Symbol

-Labeling of cylinders Labeling "Dangerous for environment" not classified in the absence of classification to be applied to dangerous preparations.

-Risk phases

-EEC Hazard Class

16.OTHER INFORMATION

The information given correspond to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product that confirms to the specification, unless otherwise stated. In the case of combinations and mixtures one must make that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and environment.

Indicates updated section.

End of MSDS