1,1,1,2-tetrafluoroethane (Refrigerant Gas R-134 a)

CHEMICALS SAFETY INFORMATION SHEET

Version: 1

Review date: 16 / 12 / 2022

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier

Product's name	1,1,1,2-tetrafluoroethane (Refrigerant Gas R-134 a)

1.2 Relevant identified uses of the substance or mixture and uses advised against

Synonym	Norflurane
CAS registration number	811-97-2

1.3 Safety data sheet supplier information

Main recommended uses for the substance or mixture	Refrigerant gas
Usage restrictions	Not available

1.4 Emergency phone number

Company Name	RLX Fluorochemical Importação e Exportação Ltda
Address	Av. Abiurana n.º 450. Distrito Industrial - Manaus, AM
Contact phone	+55 92 3615-7117
Email	cristiane@rlxrefrigerantes.com.br
Web site	www.rlxfluidosrefrigerantes.com.br

1.5 Emergency telephone number

+55 51 3516-9479

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of substance

Gases under pressure (Liquefied gas, H280)

2.2 Appropriate labeling elements

Symbol	Gas cylinder
Pictograms	
Warning word	Warning
Hazard statements	H280 Contains gas under pressure; may explode if heated.
Precautionary statements	**Storage** P410 + P403 Protect from sunlight. Store in a well-ventilated place.

2.3 Other hazards that do not result in classification

Not available

SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS

3.1 Substance

Common chemical name or technical name	1,1,1,2-tetrafluoroethane (Refrigerant Gas R-134 a)
Synonym	Norflurane

CAS registration number	811-97-2

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation	Move victim to fresh air. Monitor respiratory function. If the victim has a cough or difficulty breathing, assess irritation throughout the treatment. Artificial respiration should be introduced by qualified personnel. DO NOT use mouth-to-mouth resuscitation. Do not allow the victim to move unnecessarily. Keep the victim warm and at rest. Transport them to a hospital immediately.
Skin contact	Take off all clothing immediately, wash immediately with plenty of water.
Eye contact	Rinse immediately with water, remove contact lenses, as appropriate, and consult a physician.
Ingestion	Not applicable. Product in gaseous form.

If possible, take this SDS with your doctor.

4.2 Most important symptoms and effects, acute or delayed

Not available

4.3 Notes to doctor

Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Use mist water, alcohol resistant foam, carbon dioxide (CO2) or dry chemical powder.

5.2 Specific hazards of the substance or mixture

Gas under pressure. Do not approach the cylinder when it is at risk of explosion, in case of explosion it could project violently.

5.3 Fire protection team protection measures

Positive pressure self-contained breathing apparatus (SCBA) with full protective clothing. Containers and tanks involved in the fire should be cooled with water mist. Eliminate sources of ignition if safe.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Wear appropriate protective equipment. Isolate and flag the area. Do not smoke. Avoid contact with product, avoid contact with eyes, skin and inhalation.

6.1.2 For emergency service personnel

Not applicable

6.2 Environmental precautions

Prevent dispersed product from reaching ventilation system or confined areas.

6.3 Methods and materials for containment and cleaning

Isolate spill or leak area to at least 100 meters in all directions. Evacuate and ventilate the area. Stop flow of leak if possible and remove sources of heat.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Handle in a well-ventilated area or general local exhaust / ventilation system. Avoid formation of vapors and mists. Avoid contact with incompatible materials. Adopt personal protective measures. Observe the expiration date. Do not reuse the empty package. Do not wash containers in lakes, fountains, rivers and other bodies of water. Do not eat, drink or smoke while handling the product. Wash after handling, especially before meals. After work, remove protective clothing and bathe.

7.2 Conditions for safe storage, including any incompatibilities

Store in covered, dry and well-ventilated area. Protect packaging from physical damage. Keep container tightly closed when not in use. Keep away from incompatible materials, odorous or toxic substances.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

8.1 Control parameters

Appropriate engineering controls	Provide local exhaust or general ventilation in the work area to minimize vapor concentration. Eye wash supplies and emergency safety showers should be available in the immediate vicinity of any potential exposure.

8.2 Exposure control

Biological Limit (s)	Not applicable

8.3 Personal protective equipment

Eye / face protection	Wear safety glasses with side shields or wide vision goggles when overflowing or breaking transfer connections.
Skin and body protection	PVC / Neoprene safety gloves, steel toed safety shoes, suitable protective clothing.
Breath protection	Use organic vapor filter respirator at concentrations up to 10 times TLV. For even higher concentrations, wear air-supplied mask, or self-contained breathing apparatus operating at pressure recommended by Local, State, or Federal regulations.
Thermal hazards	There are no thermal hazards related to this product.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Gas
Color	colorless
Odor and odor limit	Not available
Melting point / freezing point	-108 ° C
Boiling point and boiling temperature range	-26 ° C
Flammability (solid / gas)	Not available
Lower / upper flammability or explosive limits	Not available
Flash point	Not available
Auto-ignition temperature	> 743 ° C
Decomposition temperature	Not available
pH	Not available
Kinematic viscosity	Not available
Dynamic viscosity	Not available
Solubility (ies)	g / L The 25 ° C Insoluble in water
Partition coefficient -n-octanol / water (log Kow)	1,06 (experimental data)

Steam pressure	574 hPa
Relative density	4,24 g / cm³ The 20 ° C
Vapor density	Not available
Particle characteristics	Not available
Additional Information	Not available

9.2 Other information

Explosives	Not available
Flammable gases	Not available
Aerosols	Not available
Oxidizing gases	Not available
Gases under pressure	Not available
Flammable liquids	Not available
Flammable solids	Not available
Self-reactive substances and mixtures	Not available
Pyrophoric liquids	Not available
Pyrophoric solids	Not available
Substances and mixtures subject to self-heating	Not available
Substances and mixtures that, in contact with water, emit flammable gases	Not available
Oxidizing liquids	Not available
Oxidizing solids	Not available
Organic peroxides	Not available
Corrosive to metals	Not available
Desensitized explosives	Not available

9.3 Other security features

Mechanical sensitivity	Not available
Self-accelerated polymerization temperature / Self - Accelerating Polymerization Temperature (TPAA/SAPT)	Not available
Formation of explosive dust and air mixtures	Not available
Acid/alkaline buffer	Not available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Not applicable

10.2 Chemical stability

Not applicable

10.3 Possibility of dangerous reactions

Not applicable

10.4 Conditions to avoid

Elevated temperatures.

10.5 Incompatible materials

Active metals, strong oxidizing agents.

10.6 Hazardous decomposition products

Hazardous decomposition products are not known.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity	Not available
Skin corrosion / irritation	Not available
Serious eye damage / eye irritation	Not available
Respiratory or skin sensitization	Not available
Germ cell mutagenicity	Not available
Carcinogenicity	Not available
Reproductive toxicity	Not available
Specific target organ toxicity - Single exposure	Not available
Specific target organ toxicity - Repeated exposure	Not available
Aspiration hazard	Not available

SECTION 12: ECOLOGICAL INFORMATION

12.1 Ecotoxicity

Type of Ecotoxicity	Time course	Test	Species	Dose
CL_{50} (peixes)	24 hora(s)	In vitro	Oncorhynchus mykiss	560 mg/L
CEr_{50} (algas e outras plantas aquáticas)	72 hora(s)	In vitro	Pseudokirchneriella subcapitata (Selenastrum capricornutum)	118,1 mg/L

12.2 Persistence and degradability

Due to the lack of data, the product is expected to show persistence and not be rapidly degradable.

12.3 Bioaccumulative potential

Not available.
Partition coefficient -n-octanol / water (log Kow): 1,06 (experimental data).

12.4 Soil mobility

Not available

12.5 Results of PBT and vPvB assessment

Not available

SECTION 13: FINAL DESTINATION CONSIDERATIONS

13.1 Waste treatment methods

Product	Treatment and disposal procedures should be evaluated individually for each product. Existing federal, state and local laws should be consulted.

Waste	Keep the remains of the product in their original packaging and properly sealed. Disposal must be performed as established for the product. Federal, State, or Local laws should be consulted.
Used packaging	Do not reuse empty packaging. These may contain product residue and should be kept closed and directed for proper disposal as established for the product. Federal, State, or Local laws should be consulted.

SECTION 14: TRANSPORT INFORMATION

Ground transportation	Resolution n ° 5.998 of november 3, 2022 of the National Land Transport Agency (ANTT), Approves the Complementary Instructions to the Regulation of Land Transport of Dangerous Products and its modifications.
UN number	3159
Proper shipping name	1,1,1,2-TETRAFLUOROETANO (GAS REFRIGERANTE R
Class	2.2
Subsidiary risk class or subclass	N/A
Risk number	20
Packing group	N/A
Shipping	Rules of maritime authority (NORMAM). NORMAM 01/DPC: vessels employed in open sea navigation. NORMAM 02/DPC: vessels employed in interior navigation. IMO - "International Maritime Organization". International Maritime Dangerous Goods Code (IMDG Code).
UN number	3159
Proper shipping name	1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R
Class	2.2
Subsidiary risk class or subclass	N/A
EmS	N/A
Packing group	N/A
Danger to the environment	The product is not considered a marine pollutant.
Air Transport	RBAC N ° 175 - (BRAZILIAN CIVIL AVIATION REGULATION) - TRANSPORT OF DANGEROUS ARTICLES IN CIVIL AIRCRAFT. IS N ° 175-001 - SUPPLEMENTARY INSTRUCTION - IS. ICAO - "International Civil AviationOrganization" - Doc 9284-NA / 905. IATA - "International Air Transport Association". Dangerous Goods Regulation (DGR).
UN number	3159
Proper shipping name	1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R
Class	2.2
Subsidiary risk class or subclass	N/A
Packing group	N/A

SECTION 15: REGULATORY INFORMATION

FDS prepared in accordance with ABNT (Brazilian association of technical standards) 14725: 2023
Ordinance No. 229 of May 24, 2011 - Regulatory Standard 26
National decree No. 2,657 of July 3, 1998

SECTION 16: OTHER INFORMATION

Date of preparation of the last version	16 / 12 / 2022
Changes made to the SDS relative to the previous version	Not available
Captions and abbreviations	Not available
References	
Other information	This SDS was prepared based on current knowledge about the proper handling of the product and under normal conditions of use, according to the application specified on the packaging. Any other use of the product that involves its combination with other materials, in addition to forms of use other than those indicated, are the responsibility of the user. It is recommended that the handling of any chemical substance requires prior knowledge of its hazards by the user. In the workplace, the company that uses the product must promote the training of its employees on the possible risks arising from exposure to the chemical.