Safety Data Sheet

R-507

According to Regulation (EU) n º 1907/2006 (Reach), Annex II

1. Identification of the substance/mixture and of the company/undertaking

Product identifier
Trade name: R507
Product description: Mixed refrigerant. Mixed of R143a and R125.
Retrofitted refrigerant for R22 and R502

Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Used as refrigerant.
Uses advised against: No uses advised against.

Manufacturer & Importer:
GEFRIEREN, S.A. de C.V.
Boulevard Benito Juárez 10, San Mateo Cuautepec, 54948 Tultitlán de Mariano Escobedo, Méx.
E – mail: ventas@gefrieren-gas.com
Tlf.: (55) 4550 43 03
www.gefrieren-gas.com

2. Hazards identification

- **Classification of the substance or mixture**
  Classification according to Regulation (EC) No 1272/2008[CLP]
  Gases under pressure (Liquefied gases); H280

  Classification according to Council Directive 1999/45/EEC [DPD]
  This product does not meet the criteria for classification in any hazard class according to Directive 67/548/EEC on classification, labelling and packaging of substances.

  Additional information
  Full text of H-statement(s): see section 16.

- **Label Elements**
  Labelling according to Regulation (EC) No 1272/2008 [CLP]
  Trade name: R507
  Hazard pictogram(s):

GHS04

Signal 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.

Supplemental Hazard information (EUH):
No information available.

Special rules for supplemental label elements for certain mixtures:
No information available.

Labelling according to Directive 1999/45/EC
Symbol(s) and Indication(s) of Danger: No pictogram is used.
Risk Phrase: No risk phrase is used.
Safety Phrases: No safety phrase is used.

Other hazards:
Fluorinated greenhouse gases, which has climatic warming potential.

3. Composition/information on ingredients

Substance information

Substance name	Synonym	CAS No.	EC No.	Molecular formula	Classification according to DSD	%(w/w)
1,1,1-trifluoroethane	R143a	420-46-2	206-996-5	C2H3F3	F; R12	49.5±1
Pentafluoroethane	R125	354-33-6	206-557-8	C2HF5	-	50.5±1

Substance name	Synonym	CAS No.	EC No.	Molecular formula	Classification according to CLP	%(w/w)
1,1,1-trifluoroethane	R143a	420-46-2	206-996-5	C2H3F3	Flam. Gas 1; H220 Press. Gas (Liq. gas); H280	49.5±1

Pentafluoroethane	R125	354-33-6	206-557-8	C2HF5	Press. Gas (Comp. gas); H280	50.5±1

Remark: The rest unspecified ingredients are impurities, and they are not hazard.
Full text of R-phrase(s) and H-statement(s): see section 16.

4. First aid measures

General notes: In all cases of doubt, or when symptoms persist, seek medical attention.

Following inhalation:
Remove patient from exposure, keep warm and at rest. Administer oxygen if necessary. Apply artificial respiration if breathing has ceased or shows signs of failing. In the event of cardiac arrest apply external cardiac massage. Obtain immediate medical attention.
Following skin contact:
Thaw affected areas with water. Remove contaminated clothing. Caution: clothing may adhere to the skin in the case of freeze burns. After contact with skin, wash immediately with plenty of warm water. If irritation or blistering occur obtain medical attention.
Following eye contact:
Immediately irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 10 minutes. Obtain immediate medical attention.
Following ingestion:
Ingestion is not considered a potential route of exposure. Do not induce vomiting. Provided the patient is conscious, wash out mouth with water and give 200-300 ml (half a pint) of water to drink. Obtain immediate medical attention.
Notes for the doctor:
Adrenaline and similar sympathomimetic drugs should be avoided following exposure as cardiac arrhythmia may result with possible subsequent cardiac arrest. Treat symptomatically and supportively. Treatment may vary with condition of victim and specifics of incident.

Most important symptoms and effects, both acute and delayed
Low acute toxicity. High exposures may cause an abnormal heart rhythm and prove suddenly fatal.
Very high atmospheric concentrations may cause anesthetic effects and asphyxiation.
Liquid splashes or spray may cause freeze burns to skin and eyes.

Indication of the immediate medical attention and special treatment needed
Persons with pre-existing skin, eye, or respiratory disease may be at increased risk from the irritant or allergic properties of this material. Attending physician should treat exposed patients symptomatically.

5. Fire-fighting measures

Extinguishing media
Suitable extinguishing media:
In case of fire in the surroundings: use appropriate extinguishing media.

Unsuitable extinguishing media:
For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture:
This refrigerant is not flammable in air under ambient conditions of temperature and pressure.
Certain mixtures of this refrigerant and air when under pressure may be flammable.
Mixtures of this refrigerant and air under pressure should be avoided.
Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions.
Thermal decomposition will evolve very toxic and corrosive vapors. (Hydrogen fluoride)
Containers may burst if overheated.

Advice for fire-fighters
Shut off gas supply if this can be done safely. If possible, take container out of dangerous zone. Cool cylinders with water spray. Self-contained breathing apparatus (SCBA) may be required if cylinders rupture or release under fire conditions.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Immediately contact emergency personnel. Keep unnecessary personnel away.
Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely.
Isolate area until gas has dispersed.

Environmental precautions
Prevent liquid from entering drains, sewers, basements and work pits since the vapor may create a suffocating atmosphere.

Methods and material for containment and cleaning up
Provided it is safe to do so, isolate the source of the leak.
Allow small spillages to evaporate provided there is adequate ventilation.
Large spillages: Ventilate area. Contain spillages with sand, earth or any suitable adsorbent material.

Reference to other sections
See Section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

7. Handling and Storage

Precautions for safe handling

Avoid inhalation of high concentrations of vapors. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Atmospheric concentrations well below the occupational exposure limit can be achieved by good occupational hygiene practice.

The vapor is heavier than air, high concentrations may be produced at low levels where general ventilation is poor, in such cases provide adequate ventilation or wear suitable respiratory protective equipment with positive air supply. Avoid contact with naked flames and hot surfaces as corrosive and very toxic decomposition products can be formed. Avoid contact between the liquid and skin and eyes.

For correct refrigerant composition, systems should be charged using the liquid phase and not the vapor phase.

Process Hazards:
Liquid refrigerant transfers between refrigerant containers and to and from systems can result in static generation. Ensure adequate earthing. Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions.

Conditions for safe storage, including any incompatibilities
Keep in a well-ventilated place. Keep in a cool place away from fire risk, direct sunlight and all sources of heat such as electric and steam radiators.
Avoid storing near to the intake of air conditioning units, boiler units and open drains.
Cylinders and Drums: Keep container dry. Storage temperature: < 45°C

Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

8. Exposure controls/personal protection

Control parameters:

Occupational exposure limit values:

R-143a CAS #420-46-2 Country of Origin	Occupational exposure values			
	Long term/Eight hours		Short term	
Sweden	500 ppm	1750 mg/m3	750 ppm	2625 mg/m3

R125 CAS # 354-33-6 Country of Origin	Occupational exposure values			
	Long term/Eight hours		Short term	
Sweden	500 ppm	2500 mg/m3	750 ppm	3750 mg/m3

Long Term Exposure Limit (LTEL): 8-hr Time-weighted Average (TWA) 1000 ppm.

Exposure controls:
Appropriate engineering controls:
Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal protective equipment:

- Eye and face protection:
  Sufficient eye protection should be worn. When handling compressed gas, at least glasses with side protection should be worn. When handling liquid gas, chemical safety goggles must be used as well as a protective shield.

- Skin protection:
  Body protection:
  Use protective boots while handling gas cylinders.
  Hand protection: Wear leather gloves to prevent frostbite injuries from rapidly expanding gas when handling pressurized gas bottles.

- Respiratory protection: In an emergency (e.g.: unintentional release of the substance, exceeding the occupational exposure limit value) respiratory protection must be worn. Consider the maximum period for wear. Wear self-contained breathing apparatus. Do not use filter respirator.

Environmental exposure controls:
Do not allow material to be released to the environment without the proper governmental permits.

Industrial hygiene:
Handle in accordance with good industrial hygiene and safety practice.
Wash hands before breaks and at the end of workday. Avoid contact with skin and eyes.
Avoid inhalation of vapor or mist

9. Physical and chemical properties

Appearance:	Compressed liquefied gas.
Color:	Clear, colorless.
Odor:	Slight ethereal.
pH:	Not available.
Melting point:	No data available.
Boiling point:	-47.1°C
Density:	1.10 mg/cm3 at 20°C
Relative Vapor Density:	3.45 (Air= 1)
Vapor pressure:	8485 mm Hg at 20°C
Partition coefficient (n-octanol/water):	Log pow = 1.740 (R143a, NLM Dataset); Log pow = 2.3 (R125).
Solubility in water:	Insoluble in water; Soluble in: chlorinated solvents, alcohols, esters.
Flash point:	No data available.
Critical temperature	70.9°C
Critical Pressure:	3.79 Mpa
Flammability:	Not flammable.
Decomposition temperature:	No data available.
Explosive properties:	No data available.
Oxidising properties:	Non oxidizer.
Evaporation Rate	No data available.
Viscosity:	No data available

10. Stability and reactivity

- **Reactivity:**
  Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions.

- **Chemical stability:**
  Stable under normal temperature conditions and recommended use.

- **Possibility of hazardous reactions:**
  Can react violently if in contact with alkali metals and alkaline earth metals - sodium, potassium, barium.

- **Conditions to avoid:**
  Avoid open flames and high temperatures.

- **Incompatible materials:**

Finely divided metals, magnesium and alloys containing more than 2% magnesium.

- **Hazardous decomposition products:**
  Hazardous Decomposition Product(s): hydrogen fluoride by thermal decomposition and hydrolysis.

11. Toxicological information

Toxicological information	
Toxicokinetics, metabolism and distribution	
R143a	No data available.
R125	There is a significant accumulation of fluorocarbons in brain, liver & lung compared to blood levels, signifying a tissue distribution of fluorocarbons similar to that of chloroform. (HSDB)
Information on toxicological effects	
Acute toxicity due Inhalation:	
R143a	LC50 = 540 g/m3/4h (rat) (NLM Dataset)
R125	LC50 = 2735 g/m3/2h (mouse) (NLM Dataset) LC50 = 2910 g/m3/4h (rat) (NLM Dataset);
Skin corrosion/irritation:	
Mixture	Liquid splashes or spray may cause freeze burns. Unlikely to be hazardous by skin absorption.
Serious eye damage/irritation:	
R143a	Eyes, Rabbit, non irritant.
R125	No data available.
Mixture	Liquid splashes or spray may cause freeze burns.
CMR effects (Carcinogenicity, Mutagenicity and Toxicity for Reproduction):	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. The substance or mixture is not classified as mutagens or toxic to reproduction.
STOT-single exposure and repeated exposure:	
The substance or mixture is not classified as specific target organ toxicant, single exposure, repeated exposure	

12. Ecological Information

Toxicity	**Acute toxicity to fish:**
R143a	LC50 > 40 mg/l/96h (Rainbow trout)(IUCLD);

R125	Datos no disponibles
Toxicity	**Acute toxicity to daphnia:**
R143a	EC50 = 300 mg/l/48h (Daphnia magna);
Persistence and degradability	
R143a	Decomposed slowly in the lower atmosphere (troposphere). Atmospheric lifetime is 53.5 year(s).
R125	Highly chlorinated/fluorinated compounds are not expected to biodegrade rapidly. (HSDB) Decomposed slowly in the lower atmosphere (troposphere). Atmospheric lifetime is 32.6 year(s).
Bioaccumulative potential	
R143a	Log pow = 1.740 (NLM Dataset) No appreciable bioaccumulation potential is to be expected (log Pow 1-3)
R125	An estimated BCF of 3.1 was calculated for pentafluoroethane, using an estimated log Kow of 1.6 and a regression-derived equation. No appreciable bioaccumulation potential is to be expected. (HSDB)

Mobility in Soil	
R143a	No data available.
R125	The Koc of pentafluoroethane is estimated at approximately 170, using an estimated log Kow of 1.6 and a regression-derived equation. According to a classification scheme, this estimated Koc value suggests that pentafluoroethane is expected to have moderate mobility in soil. (HSDB)
Other adverse effects	
R143a	Global warming potential (GWP) = 4300
R125	Global warming potential (GWP) = 3400

13. Disposal considerations

Waste treatment methods:
Best to recover and recycle. If this is not possible, destruction is to be in an approved facility which is equipped to absorb and neutralize acid gases and other toxic processing products. Mark empty vessels to avoid confusion with full ones.

Disposal must comply with federal, state, and local disposal or discharge laws

14. Transport Information

Land transport (ADR/RID/GGVSE)	
UN-No.:	3163
Official transport designation:	LIQUEFIED GAS, N.O.S. (contains 1,1,1-trifluoroethane and pentafluoroethane)
Class:	2.2
Classification Code:	2A
Packing group:	-
Hazard label:	2.2

Sea transport (IMDG-Code/GGVSee)	
Proper Shipping Name:	LIQUEFIED GAS, N.O.S. (contains 1,1,1-trifluoroethane and pentafluoroethane)
Class:	2.2
UN-No.:	3163
Packing group:	-

Air transport (ICAO-TI/IATA-DGR)	
Proper Shipping Name:	RLIQUEFIED GAS, N.O.S. (contains 1,1,1-trifluoroethane and pentafluoroethane)
Class:	2.2
UN-No.:	3163
Packing group:	-

15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture
EU regulation:

- **Authorizations:** No information available.
- **Restrictions on use**: No information available.
- **EINECS:** All the ingredients of the product are listed in the Inventory.
- **DSD (67/548/EEC):** All the ingredients of the product are not listed in the Annex I.
- **Regulation (EC) No 842/2006:** All the ingredients of the product are listed in the Annex I of Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases.

Other chemical regulation:

- USA - TSCA: All the ingredients of the product are listed in the Inventory.
- Canada - DSL: All the ingredients of the product are listed in the Inventory.
- Australia - AICS: All the ingredients of the product are listed in the Inventory.
- Korea - ECL: All the ingredients of the product are listed in the Inventory.
- Japan - ENCS: All the ingredients of the product are listed in the Inventory.

- China - IECSC: All the ingredients of the product are listed in the Inventory.

Chemical Safety Assessment:
No Chemical Safety Assessment has been carried out for this substance

16. Other Information.

Abbreviations and acronyms	
CLP	EU regulation (EC) No 1272/2008 on classification, labelling and packaging of chemical substances and mixtures.
CAS	Chemical Abstracts Service (division of the American Chemical Society).
EINECS	European Inventory of Existing Commercial Chemical Substances.
IARC	International agency for research on cancer.
RID	European Rail Transport.
IMDG	International Maritime Code for Dangerous Goods.
IATA	International Air Transport Association.
DPD	Dangerous Preparations Directive (1999/45/EEC).
DSD	Dangerous Substance Directive (67/548/EEC).
TSCA	Toxic Substances Control Act, The American chemical inventory.
DSL	Domestic Substances List, The Canadian chemical inventory.
AICS	The Australian Inventory of Chemical Substances.
ECL	Existing Chemicals List, the Korean chemical inventory.
ENCS	Japanese Existing and New Chemical Substances.
IECSC	Inventory of existing chemical substances in China.

Key literature references and sources for data	
ESIS IUCLID Dataset:	European chemical Substances Information System.
HSDB:	Hazardous Substances Data Bank.

ICSC:	International Chemical Safety Cards.
NLM Dataset:	United States National library of medicine.
GESTIS Substance database.	

Relevant R-phrases and H-statements	
R12	Extremely flammable
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.

Training advice
Provide adequate information, instruction and training for operators.

Declare to reader
The information in this Safety Data Sheet (SDS) was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable. According to REACH Article 31(5), the SDS shall be supplied in an official language of the Member State(s) where the substance or mixture is placed on the market, unless the recipient Member State(s) concerned provide otherwise. It should also be noted that this SDS is applicable to the countries with English as an official language.