

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/cm ³ 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/m ³ /4h (rat) (NLM Dataset)
R125	LC50 = 2735 g/m ³ /2h (mouse) (NLM Dataset) LC50 = 2910 g/m ³ /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:	LIQUEFIED 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.