

Safety Data Sheet (SDS) for Refrigerant Gas R-407F**Version:** 1.1**Date:** 27-05-2025**1. Identification of the Substance/Preparation and the Company****Product Identifier:**

- **Product Name:** R-407F
- **Chemical Name:** Mixture of Pentafluoroethane (HFC-125), 1,1,1,2-Tetrafluoroethane (HFC-134a), and Difluoromethane (HFC-32)
- **Synonyms:** Genetron Performax LT, Freon 407F
- **CAS Numbers:**
 - Pentafluoroethane: 354-33-6
 - 1,1,1,2-Tetrafluoroethane: 811-97-2
 - Difluoromethane: 75-10-5
- **EC Numbers:**
 - Pentafluoroethane: 206-557-8
 - 1,1,1,2-Tetrafluoroethane: 212-377-0
 - Difluoromethane: 200-839-4
- **REACH Registration Number:** Not applicable (mixture)

Relevant Identified Uses of the Substance:

- Refrigerant gas for air conditioning and refrigeration systems.

Details of the Supplier of the SDS:

- **Company Name:** Gaslogic B.V.
- **Address:** Overschiesweg 105, 3044 EH, Rotterdam, Netherlands
- **Telephone Number:** +31 103 22 09 94
- **Email Address:** info@gaslogic.nl

Emergency Telephone Number:

- +44 344 892 0111 (Available 24 hours)

2. Hazards Identification**2.1 Classification of the Substance**

According to Regulation (EC) No 1272/2008 (CLP):

- **Physical Hazards:**
 - Gases Under Pressure – Liquefied Gas (H280)
- **Health Hazards:**
 - Not classified as hazardous.
- **Environmental Hazards:**
 - Not classified as hazardous.

2.2 Label Elements

- **Pictogram:** GHS04 (Gas Cylinder)
- **Signal Word:** Warning
- **Hazard Statements:**
 - H280: Contains gas under pressure; may explode if heated.
- **Precautionary Statements:**
 - P410 + P403: Protect from sunlight. Store in a well-ventilated place.

2.3 Other Hazards

- **Frostbite risk:** Contact with liquid can cause cold burns or frostbite.
- **Asphyxiation risk:** High concentrations can displace oxygen in confined spaces, leading to suffocation.
- **Environmental note:** R-407F has a Global Warming Potential (GWP) of approximately 1825. It has no ozone depletion potential (ODP).

3. Composition / Information on Ingredients

Substance	CAS Number	EC Number	Concentration (%)
Pentafluoroethane (HFC-125)	354-33-6	206-557-8	40%
1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	212-377-0	40%
Difluoromethane (HFC-32)	75-10-5	200-839-4	20%

4. First Aid Measures

4.1 Description of First Aid Measures

- **Inhalation:**
 - Move the person to fresh air.
 - If breathing is difficult, administer oxygen.
 - Seek immediate medical attention if symptoms such as dizziness, headache, or nausea persist.
- **Skin Contact:**
 - If skin comes into contact with liquid refrigerant, flush with lukewarm water for at least 15 minutes.
 - Do not rub affected areas; seek medical attention if frostbite or burns occur.
- **Eye Contact:**
 - Immediately flush eyes with lukewarm water for at least 15 minutes.
 - Seek medical attention if irritation persists or if injury is suspected.
- **Ingestion:**
 - Ingestion is unlikely due to the gaseous state.
 - If ingestion occurs, seek immediate medical attention.

4.2 Most Important Symptoms and Effects

- **Acute effects:** Dizziness, headache, nausea, and confusion from inhalation.
- **Skin contact:** Frostbite or cold burns from contact with liquid refrigerant.

4.3 Indication of Immediate Medical Attention

- Immediate medical attention is required for frostbite or in cases of high inhalation exposure leading to asphyxiation.

5. Fire-Fighting Measures

5.1 Extinguishing Media

- **Suitable Extinguishing Media:** Use CO₂, dry chemical, or water spray.
- **Unsuitable Extinguishing Media:** Do not use water jets, as they may spread the fire.

5.2 Special Hazards Arising from the Substance

- **Explosion risk:** Containers may explode if exposed to heat or flames.
- **Toxic gases:** Thermal decomposition (e.g., in fire) may release toxic gases, such as hydrogen fluoride and carbonyl fluoride.

5.3 Advice for Firefighters

- Wear self-contained breathing apparatus (SCBA) and full protective clothing.
- Cool exposed containers with water spray to prevent explosions.

6. Accidental Release Measures

6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

- Evacuate the area and ensure proper ventilation.
- Wear personal protective equipment (PPE), including cold-resistant gloves and goggles.
- Avoid ignition sources, though R-407F is non-flammable under standard conditions.

6.2 Environmental Precautions

- Avoid discharge into water systems or drains.
- Allow the gas to dissipate in well-ventilated areas.

6.3 Methods and Material for Containment and Cleaning Up

- Stop the leak if it can be done safely.
- Allow the gas to disperse naturally.

7. Handling and Storage

7.1 Precautions for Safe Handling

- Avoid inhalation of gas and vapor.
- Ensure good ventilation in confined spaces.
- Avoid exposure to heat or direct sunlight.

7.2 Conditions for Safe Storage

- Store in a cool, dry, well-ventilated area away from direct sunlight.
- Keep containers upright and secured to prevent movement or damage.
- Ensure that containers are labeled and properly closed.

8. Exposure Controls / Personal Protection

8.1 Control Parameters

Substance	Occupational Exposure Limits (OELs)
Pentafluoroethane (HFC-125)	1,000 ppm (TWA, AIHA WEEL)
1,1,1,2-Tetrafluoroethane (HFC-134a)	1,000 ppm (TWA)
Difluoromethane (HFC-32)	1,000 ppm (TWA)

8.2 Exposure Controls

Engineering Controls:

- Use local exhaust ventilation in enclosed or confined areas.
- Ensure proper gas detection systems are in place.

Personal Protective Equipment:

- **Respiratory Protection:** Use an approved respirator if exposure limits are exceeded.
- **Hand Protection:** Use cold-resistant gloves when handling liquid refrigerant.
- **Eye Protection:** Wear safety goggles or a face shield when handling liquid refrigerant.
- **Skin Protection:** Wear protective clothing to avoid skin exposure.

9. Physical and Chemical Properties

Property	Value
Physical State	Gas at ambient temperature
Appearance	Colorless gas
Odor	Slight ethereal odor
Melting Point	Not available
Boiling Point	-47.1°C
Flash Point	Not applicable (non-flammable)
Vapor Pressure	12,000 kPa at 25°C
Vapor Density	3.6 (air = 1)
Solubility in Water	Slight
Partition Coefficient (Kow)	Not available
Auto-ignition Temperature	Not applicable (non-flammable)
Decomposition Temperature	>400°C

10. Stability and Reactivity**10.1 Reactivity**

- Not reactive under normal conditions.

10.2 Chemical Stability

- Stable under recommended storage and handling conditions.

10.3 Possibility of Hazardous Reactions

- No hazardous reactions are expected under normal use.

10.4 Conditions to Avoid

- Avoid exposure to heat or direct sunlight.

10.5 Incompatible Materials

- Strong oxidizers, alkali metals.

10.6 Hazardous Decomposition Products

- Thermal decomposition may produce toxic gases, such as hydrogen fluoride and carbonyl fluoride, under high-temperature conditions (e.g., fire).

11. Toxicological Information**11.1 Information on Toxicological Effects****Acute Toxicity:**

- **Inhalation:** May cause dizziness, drowsiness, or unconsciousness at high concentrations.
- **Skin and Eye Contact:** Contact with liquid refrigerant may cause frostbite or cold burns.

Skin Corrosion/Irritation:

- Frostbite may occur from direct contact with liquid refrigerant.

Serious Eye Damage/Irritation:

- Contact with liquid refrigerant may cause serious eye damage.

Respiratory or Skin Sensitization:

- Not classified as a sensitizer.

Carcinogenicity:

- Not classified as carcinogenic by IARC, NTP, or OSHA.

Germ Cell Mutagenicity:

- Not classified as mutagenic.

Reproductive Toxicity:

- Not classified as toxic to reproduction.

STOT – Single Exposure:

- May cause dizziness, drowsiness, and respiratory irritation at high concentrations.

Aspiration Hazard:

- Not applicable (gaseous state).

12. Ecological Information**12.1 Toxicity**

- Low toxicity to aquatic organisms.
 - LC50 (Fish, 96h): Not available
 - EC50 (Daphnia, 48h): Not available

12.2 Persistence and Degradability

- The components are persistent in the atmosphere and contribute to global warming (GWP $\approx$ 1825 for R-407F).

12.3 Bioaccumulative Potential

- Low potential for bioaccumulation due to high volatility.

12.4 Mobility in Soil

- Highly volatile, expected to partition to the atmosphere.

12.5 Results of PBT and vPvB Assessment

- Not classified as Persistent, Bioaccumulative, and Toxic (PBT) or very Persistent and very Bioaccumulative (vPvB).

13. Disposal Considerations**13.1 Waste Treatment Methods**

- Product Disposal: Recover or recycle if possible. Dispose of in accordance with local, regional, and national regulations, including Regulation (EU) 2024/573 on fluorinated greenhouse gases.
- Packaging Disposal: Empty containers should be returned to the supplier for recycling or disposal according to local regulations.

14. Transport Information**14.1 UN Number**

- UN 3163

14.2 UN Proper Shipping Name

- Liquefied Gas, n.o.s. (contains R-407F)

14.3 Transport Hazard Class(es)

- Class 2.2 (Non-flammable, non-toxic gas)

14.4 Packing Group

- Not applicable (gases do not have a packing group).

14.5 Environmental Hazards

- Not classified as a marine pollutant.

14.6 Special Precautions for User

- Ensure proper ventilation during transport.
- Cylinders must be transported upright and properly secured.
- Ensure that containers are properly labeled with the UN number, hazard class, and correct shipping name.

14.7 Transport in Bulk According to Annex II of MARPOL and the IBC Code

- Not applicable, as R-407F is transported in cylinders and not in bulk.

14.8 Additional Transport Information**Transport by Road/Rail (ADR/RID):**

- **Classification Code:** 2A (Non-flammable, non-toxic gases)
- **Tunnel Restriction Code:** (C/E) – Restrictions apply for transport through certain tunnels.

Transport by Sea (IMDG):

- **EMS Code:** F-C, S-V
- **Stowage:** Store away from heat sources.

Transport by Air (IATA):

- **Packing Instruction:** 200
- **Passenger Aircraft:** Limited to smaller quantities.
- **Cargo Aircraft Only:** Larger quantities are allowed but must be transported with proper ventilation.

Special Handling Instructions:

- Personnel transporting R-407F must be trained in handling non-flammable gases.
- Cylinders must be inspected for leaks or damage before transport.
- Ensure that cylinders are fitted with pressure-relief devices where necessary.

15. Regulatory Information**15.1 Safety, Health, and Environmental Regulations/Legislation Specific for the Substance**

- **EU Regulations:**
 - **REACH Registration:** The individual components of this mixture (Pentafluoroethane, 1,1,1,2-Tetrafluoroethane, and Difluoromethane) are registered under REACH by their respective manufacturers or importers, as applicable. The mixture itself is not subject to REACH registration.
 - **CLP Regulation (EC) No 1272/2008:** Classified and labeled according to CLP regulation.
 - **F-gas Regulation (EU) 2024/573:** Subject to restrictions on the use, emissions, and management of fluorinated greenhouse gases.

15.2 Chemical Safety Assessment

- A chemical safety assessment has not been carried out for this mixture.

16. Other Information**Key Abbreviations:**

- PBT: Persistent, Bioaccumulative, Toxic
- vPvB: Very Persistent, Very Bioaccumulative
- LC50: Lethal Concentration for 50% of organisms
- EC50: Effective Concentration for 50% of organisms
- GWP: Global Warming Potential

Training Advice:

- Personnel handling R-407F should be trained in proper handling, storage, and emergency procedures for non-flammable refrigerant gases.

Disclaimer:

- This information is believed to be accurate based on the current state of knowledge as of May 27, 2025. It is intended to provide guidance for safe handling, use, processing, storage, transportation, and disposal. This SDS should not be considered a guarantee of any specific properties of the product.