1. Identification of the Substance/Preparation and the Company

Product Identifier:

- **Product Name:** R407C
- **Chemical Name:** Mixture of Difluoromethane (HFC-32), Pentafluoroethane (HFC-125), and 1,1,1,2-Tetrafluoroethane (HFC-134a)
- **Synonyms:** Genetron 407C, Suva 407C, Forane 407C
- **CAS Numbers:**
  - Difluoromethane: 75-10-5
  - Pentafluoroethane: 354-33-6
  - 1,1,1,2-Tetrafluoroethane: 811-97-2
- **EC Numbers:**
  - Difluoromethane: 200-839-4
  - Pentafluoroethane: 206-557-8
  - 1,1,1,2-Tetrafluoroethane: 212-377-0
- **REACH Registration Number:** Not applicable (mixture)

Relevant Identified Uses of the Substance:

- Refrigerant gas used in air conditioning and refrigeration systems.

Details of the Supplier of the SDS:

- **Company Name:** Gaslogic B.V.
- **Address:** Overschiesweg 105, 3044 EH, Rotterdam.
- **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:**

- **Signal Word:** Warning
- **Hazard Statements:**
  - **H280:** Contains gas under pressure; may explode if heated.
- **Precautionary Statements:**
  - **P210:** Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.
  - **P377:** Leaking gas fire: Do not extinguish unless leak can be stopped safely.
  - **P410 + P403:** Protect from sunlight. Store in a well-ventilated place.

2.3 Other Hazards

- **Frostbite risk:** Direct contact with the liquid may cause cold burns or frostbite.
- **Asphyxiation risk:** High concentrations of the gas may displace oxygen, causing suffocation.

---

3. Composition / Information on Ingredients

Substance	CAS Number	EC Number	Concentration (%)
Difluoromethane (HFC-32)	75-10-5	200-839-4	23%
Pentafluoroethane (HFC-125)	354-33-6	206-557-8	25%
1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	212-377-0	52%

---

4. First Aid Measures

4.1 Description of First Aid Measures

- **Inhalation:**
  - Move the affected person to fresh air.
  - Administer oxygen if breathing is difficult.
  - Seek medical attention if symptoms such as dizziness, headache, or nausea occur.
- **Skin Contact:**
  - In case of contact with liquid refrigerant, flush with lukewarm water for at least 15 minutes.
  - Do not rub the affected area; seek medical attention if frostbite occurs.
- **Eye Contact:**
  - Immediately flush eyes with plenty of lukewarm water for at least 15 minutes.
  - Seek medical attention if irritation persists or if injury occurs.
- **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, or confusion caused by 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 asphyxiation.

---

5. Fire-Fighting Measures

5.1 Extinguishing Media

- **Suitable Extinguishing Media:** Use water spray, CO_2, or dry chemical.
- **Unsuitable Extinguishing Media:** Do not use water jets as they could spread the fire.

5.2 Special Hazards Arising from the Substance

- **Explosion risk:** Containers may explode when heated.
- **Toxic gases:** Combustion 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 gear.
- Cool containers exposed to fire with water spray to prevent pressure buildup and potential explosion.

---

6. Accidental Release Measures

6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

- Evacuate the area and ensure proper ventilation.
- Use personal protective equipment (PPE), including gloves and goggles.
- Eliminate all ignition sources and avoid sparks.

6.2 Environmental Precautions

- Avoid release into the environment.
- Ventilate the area thoroughly to allow gas to disperse.

6.3 Methods and Material for Containment and Cleaning Up

- Stop the leak if it is safe to do so.
- Allow the gas to disperse in a well-ventilated area.

---

7. Handling and Storage

7.1 Precautions for Safe Handling

- Avoid inhalation of vapors or gas.
- Ensure good ventilation in confined or enclosed areas.
- Keep away from heat, sparks, and open flames.

7.2 Conditions for Safe Storage

- Store in a cool, dry, well-ventilated place away from direct sunlight.
- Keep containers upright and securely closed.
- Ensure that containers are properly labeled.

---

8. Exposure Controls / Personal Protection

8.1 Control Parameters

Substance	Occupational Exposure Limits (OELs)
Difluoromethane (HFC-32)	1,000 ppm (TWA)
Pentafluoroethane (HFC-125)	Not established
1,1,1,2-Tetrafluoroethane (HFC-134a)	1,000 ppm (TWA)

8.2 Exposure Controls

Engineering Controls:

- Use local exhaust ventilation to keep vapor concentrations below exposure limits.
- Ensure proper gas detection systems are installed.

Personal Protective Equipment:

- **Respiratory Protection:** Use an approved respirator if exposure limits are exceeded.
- **Hand Protection:** Wear insulated gloves when handling liquid refrigerant.
- **Eye Protection:** Use safety goggles or face shields to protect from liquid splashes.
- **Skin Protection:** Wear protective clothing to prevent direct skin exposure to liquid refrigerant.

---

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	-43.6°C
Flash Point	Not applicable
Vapor Pressure	10,500 kPa at 25°C
Vapor Density	3.5 (air = 1)
Solubility in Water	Slight
Partition Coefficient (Kow)	Not available
Auto-ignition Temperature	750°C
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, sparks, open flames, and direct sunlight.

10.5 Incompatible Materials

- Strong oxidizing agents, alkali metals.

10.6 Hazardous Decomposition Products

- Thermal decomposition may produce toxic gases, such as hydrogen fluoride and carbonyl fluoride.

11. Toxicological Information

11.1 Information on Toxicological Effects

Acute Toxicity:

- **Inhalation:** High concentrations may cause dizziness, drowsiness, or unconsciousness.
- **Skin and Eye Contact:** Exposure to liquid refrigerant may cause frostbite or cold burns.

Skin Corrosion/Irritation:

- Frostbite or cold burns may result from direct contact with the liquid.

Serious Eye Damage/Irritation:

- Liquid refrigerant may cause serious eye injury or irritation.

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 if inhaled in 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 of this product are expected to persist in the atmosphere.

12.3 Bioaccumulative Potential

- Low bioaccumulation potential due to high volatility.

12.4 Mobility in Soil

- Highly volatile and 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 according to local, regional, and national regulations.
- **Packaging Disposal:** Return empty cylinders to the supplier or dispose of them in accordance with local regulations.

---

14. Transport Information (Extended Chapter)

14.1 UN Number

- **UN 3340**

14.2 UN Proper Shipping Name

- **Refrigerant Gas R407C**

14.3 Transport Hazard Class(es)

- **Class 2.2 (Non-flammable Gas)**

14.4 Packing Group

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

14.5 Environmental Hazards

- **Not classified as a marine pollutant** under IMDG.

14.6 Special Precautions for User

- Ensure adequate ventilation during transport.
- Cylinders must be transported upright and properly secured.
- Ensure that all cylinders are correctly 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 this product 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) – Prohibited in tunnels of category C when transported in bulk.

Transport by Sea (IMDG):

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

Transport by Air (IATA):

- **Packing Instruction:** 200
- **Passenger Aircraft:** Limited to smaller quantities.
- **Cargo Aircraft Only:** Larger quantities allowed, but ensure proper ventilation and stowage.

Special Handling Instructions:

- Personnel transporting R407C must be trained in handling compressed gases.
- Inspect cylinders for leaks or damage before transport and ensure that they are equipped with pressure relief devices.
- Ensure compliance with all local and international regulations regarding the transport of compressed gases.

---

15. Regulatory Information

15.1 Safety, Health, and Environmental Regulations/Legislation Specific for the Substance

- **EU Regulations:**
  - **REACH Registration:** The components of this product are registered under REACH.
  - **CLP Regulation (EC) No 1272/2008:** Classified and labeled according to CLP regulation.
  - **F-gas Regulation:** Subject to restrictions under the F-gas regulation.

15.2 Chemical Safety Assessment

- A chemical safety assessment has not been conducted 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

Training Advice:

- Personnel handling R407C should be trained in proper handling, storage, and emergency procedures, particularly when working with pressurized gases.

Disclaimer:

- The information provided in this SDS is correct to the best of our knowledge and based on available information at the time of publication. This SDS is intended to provide guidance for the safe handling, use, processing, storage, transportation, and disposal of the product. It should not be considered a guarantee of any specific properties.