

R-407F (PERFORMAX LT)
100049400
SECTION 1 Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier
Trade name : R-407F (PERFORMAX LT)

1.2. Relevant identified uses of the substance or mixture and uses advised against
1.2.1 Relevant identified uses : Refrigerant

1.3. Details of the supplier of the safety data sheet

 : DEHON SERVICE
 26 Avenue du Petit Parc
 94683 VINCENNES Cedex France
 Tel : +33 (0) 1 43 98 75 00
 Fax : +33 (0) 1 43 98 21 51

e-mail : ContactFDS@climalife.dehon.com

1.4 Emergency telephone number : EMERGENCY TELEPHONE NUMBER (24h/24) : + 33 (0) 1 72 11 00 03
 Anti-poison Center : INRS/ORFILA (France) : +33 (0) 1 45 42 59 59
 Anti-poison Centre (Belgium) : +32 70 245 245
 Anti-poison Centre (Netherlands) : +31 30 274 8888
 Anti-poison Centre (Spain) : +34 91 562 04 20
 Anti-poison Centre (United Kingdom) : +44 870 600 6266
 Poisons Information Centre (Hungary) : +36 80 201 199

SECTION 2 Hazards identification
2.1. Classification of the substance or mixture
2.1.1. Regulation (EC) No 1272/2008 (CLP)
Physical hazards : Gases under pressure - Liquefied gas (Press. Gas) - H280

2.1.2 Directive EEC/67/548 or 1999/45/CE : This product is not classified as a "hazardous preparation" according to European Community regulations

2.2. Label elements
2.2.1 Labelling EC 1272/2008 (CLP)
Hazard pictograms

Signal words : 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
- **Further data** : Contains : 40% R-134a / 30% R-125 / 30% R-32
 Greenhouse fluorinated gas falling within Kyoto Protocol (GWP = 1825)

2.3. Other hazards
Adverse human health effects : Suffocation hazard by lack of oxygen
 Contact with liquid may cause frostbite and serious damage to eyes

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SECTION 3 Composition/information on ingredients

3.1./3.2. Substance / Preparation : Preparation

Components contributing to the hazard :

Substance name	Contents	CAS No	EC No	Index No	Ref REACH	Classification
1,1,1,2-Tetrafluoroethane	: 40 %	811-97-2	212-377-0	-----	01-2119459374-33	Not classified. (DSD/DPD) Liquefied gas;H280
Pentafluoroethane	: 30 %	354-33-6	206-557-8	-----	01-2119485636-25	Not classified. (DSD/DPD) Liquefied gas;H280
Difluoromethane	: 30 %	75-10-5	200-839-4	-----	01-2119471312-47	F+; R12 Flam. Gas 1;H220 Liquefied gas;H280

SECTION 4 First aid measures

4.1. Description of first aid measures

Inhalation : Move the affected person away from the contaminated area and into the fresh air
If the person feels unwell : Call a doctor**Skin contact** : Immediately remove contaminated clothing or footwear
Immediately rinse with plenty of water
In the event of contact with the liquid: treat resulting frostbite as a burn
If skin burns appear, call a doctor immediately**Eye contact** : Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum)
Consult an eye specialist immediately**Ingestion** : Not specifically applicable (gas)

4.2. Most important symptoms and effects, both acute and delayed

Inhalation : Narcotic effect
Headaches
Cardiac disorders
Dizziness
Asphyxia by lack of oxygen: risk of death**Skin contact** : Rapid evaporation of the liquid may cause frostbite**Eye contact** : May cause eye irritation.**Ingestion** : Not applicable.**4.3. Indication of any immediate medical attention and special treatment needed** : No information available

SECTION 5 Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media : All extinguishing agents can be used**Unsuitable extinguishing media** : None to our knowledge. If there is a fire close by, use suitable extinguishing agents

5.2. Special hazards arising from the substance or mixture

Specific hazards : Pressurized container. On heating there is a risk of bursting due to internal pressure build-up.

On heating : Toxic and corrosive vapours are released

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SECTION 5 Fire-fighting measures (continued)

5.3. Advice for firefighters

- Specific fire fighting methods** : Cool down the containers exposed to heat with a water spray
- Protection of fire-fighters** : Complete protective clothing
Self-contained breathing apparatus

SECTION 6 Accidental release measures

- 6.1. Personal precautions, protective equipment and emergency procedures** : Avoid contact with skin and eyes
Do not breathe vapours
Only qualified personnel equipped with suitable protective equipment may intervene
Evacuate the danger area.
Stop the leak.
Ensure that there is a suitable ventilation system
- 6.2. Environmental precautions** : Do not allow product to spread into the environment
- 6.3. Methods and material for containment and cleaning up** : Recover as much product as possible
Mechanically ventilate the spillage area (risk of asphyxia)
- 6.4 Reference to other sections** : For further information refer to section 8 "Exposure controls/personal protection"

SECTION 7 Handling and storage

7.1. Precautions for safe handling

- Technical measures** : Ventilation
- Precautions** : Avoid contact with skin and eyes
Do not breathe vapour
- Industrial hygiene** : Do not drink, eat or smoke in the workplace

7.2. Conditions for safe storage, including any incompatibilities

- Recommended** : Store :
- the container tightly closed
- in a dry, well-ventilated area
- away from any source of ignition
- away from any source of heat
- Incompatible products** : Alkaline earth metals
Alkali metals
- Packaging :** : Pressurized metal container
- Packaging materials**
- Recommended** : Stainless steel
Ordinary steel
- Not suitable** : Magnesium and its alloys.
Plastic materials.
Zinc and its alloys.
Alloys containing more than 2% magnesium
- 7.3. Specific end use(s)** : No data

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SECTION 8 Exposure controls/personal protection
8.1. Control parameters
Engineering measures : Ensure good ventilation of the work station

8.1.1. Occupational Exposure Limits : 1,1,1,2-Tetrafluoroethane : United Kingdom : WEL - TWA (8h; mg/m³) : 4240
 1,1,1,2-Tetrafluoroethane : United Kingdom : WEL - TWA (8h; ppm) : 1000
 1,1,1,2-Tetrafluoroethane : Germany : MAK - TWA (8h; mg/m³) : 4200
 1,1,1,2-Tetrafluoroethane : Germany : MAK - TWA (8h; ppm) : 1000
 1,1,1,2-Tetrafluoroethane : Germany : TRK - STEL (15min; mg/m³) : 33600
 1,1,1,2-Tetrafluoroethane : Germany : TRK - STEL (15min; ppm) : 8000
 Pentafluoroethane : France : LEP - VME (8h; ppm) : 1000
 Difluoromethane : France : LEP - VME (8h; mg/m³) : 2130
 Difluoromethane : France : LEP - VME (8h; ppm) : 1000

Personal protection :
- Respiratory protection : In the event of insufficient ventilation: Mask with AX canister
 In a confined area : Self-contained breathing apparatus (ARI)
- Hand protection : Leather or nitrile-rubber protective gloves
 Protective gloves made of Viton
- Eye protection : Safety spectacles with side shields
- Skin protection : Majority cotton clothing

SECTION 9 Physical and chemical properties
9.1. Information on basic physical and chemical properties
9.1.a. Appearance
Physical state : Liquefied gas
Colour : Colourless
9.1.b. Odour : slightly ethereal.
9.1.c. Odour threshold : No data
9.1.d. pH : Not applicable
9.1.e. Melting point / Freezing point : No data
9.1.f. Initial boiling point - boiling range : -45.5 °C
9.1.g. Flash point : Not applicable
9.1.h. Evaporation rate : No data
9.1.i. Flammability : Non flammable.
9.1.j. Explosion limits (lower - upper) : None.
9.1.k. Vapour pressure : 11.4 bar at 20 °C
 24.3 bar at 50 °C
9.1.l. Vapour density : No data
9.1.m. Density : Liquid :
 1.139 g/cm³ at 20 °C
 0.988 g/cm³ at 50 °C
9.1.n. Solubility
-in water : Insoluble
9.1.o. Partition coefficient : n-octanol / water : R-134a:1.06 ; R-125:1.48 ; R-32:0.21
9.1.p. Auto-ignition temperature : No data

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SECTION 9 Physical and chemical properties (continued)

9.1.q. Thermal decomposition	: No data
9.1.r. Viscosity	: Not applicable
9.1.s. Explosive Properties	: Not explosive material according to EC criteria
9.1.t. Oxidising properties	: Non oxidizing material according to EC criteria
9.2. Other information	
Henry's constant :	: R-134a : 5.06 kPa.m ³ /mol R-125 : 309 kPa.m ³ /mol R-32 : 29.6 kPa.m ³ /mol

SECTION 10 Stability and reactivity

10.1. Reactivity	: None under normal conditions
10.2. Chemical stability	: Stable at ambient temperature and under normal conditions of use
10.3. Possibility of hazardous reactions	: No information available
10.4. Conditions to avoid	: - high temperatures, naked flames
10.5. Incompatible materials	: - alkaline earth metals. - alkali metals
10.6. Hazardous decomposition products	: On thermal decomposition (pyrolysis), releases : Carbon oxides (CO, CO ₂) Fluorinated hydrocarbons

SECTION 11 Toxicological information

11.1. Information on toxicological effects

• Acute toxicity

On ingredients

Pentafluoroethane : Rat inhalation LC50 [ppm/4h] : 800000

Difluoromethane : Rat inhalation LC50 [mg/l/4h] : 2158

1,1,1,2-Tetrafluoroethane : Rat inhalation LC50 [ppm/4h] : > 500000

• Skin corrosion/irritation : No information available

• Serious eye damage/irritation : No information available

• Respiratory or skin sensitisation : No information available

• Germ cell mutagenicity : No information available

• Carcinogenicity : No information available

• Reproductive toxicity : No information available

• STOT-single exposure : No information available

• STOT-repeated exposure : No information available

• Aspiration hazard : No information available

Other information : Contact with liquefied gas may cause severe ocular lesions
Contact with liquefied gas may cause frostbite.

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SECTION 12 Ecological information

12.1. Toxicity

Effects on the aquatic environment

On ingredients

Pentafluoroethane

: 48 Hour - EC50 - Daphnia magna [mg/l] : 100 (Results obtained on a similar product).

: 72 Hours - EC50 - Algae [mg/l] : 114 (Results obtained on a similar product).

: 96 Hours - LC50 - Fish [mg/l] : 100 (Results obtained on a similar product).

1,1,1,2-Tetrafluoroethane

: 6 Hours - EC50 - Bacteria (Methanogens) [mg/l] : > 730

: 48 Hour - EC50 - Daphnia magna [mg/l] : 930

: 96 Hours - LC50 - Fish [mg/l] : 450

12.2. Persistence and degradability

Biodegradability

: Not readily biodegradable

R-134a :

Water : 3 % biodegradation after 28 days

Air : Half-life = 8.6-16.7 years

R-125 :

Water : 5 % biodegradation after 28 days

Air : Half-life = 28.3 years (estimated value)

R-32 :

Water : 5 % biodegradation after 28 days

Air : Half-life = 1472 days

12.3. Bioaccumulative potential

: Not potentially bioaccumulable.

Octanol/water partition coefficient

: R-134a : 1.06

R-125 : 1.48

R-32 : 0.21

12.4. Mobility in soil

Volatility

: Product is volatile from an aqueous solution

12.5. Results of PBT and vPvB assessment

: No information available

12.6. Other adverse effects

Ozone depletion potential

: ODP (R-11=1)=0

Greenhouse effect

: GWP (CO2=1/100 years) = 1825

SECTION 13 Disposal considerations

13.1. Waste treatment methods

WASTE FROM PRODUCT :

Prohibition :

: Do not allow the product to be released into the environment

Destruction/Disposal

: Consult the manufacturer or supplier for information regarding recovery and recycling of the product

If recovery is not possible:

Incinerate at a licensed installation.

CONTAMINATED PACKAGING :

Destruction/Disposal

: Return to the supplier

NOTE

: The user's attention is drawn to the possible existence of specific european, national or local regulations regarding disposal

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SECTION 14 Transport information

- 14.1. UN number : UN 3163
 14.2. UN proper shipping name : LIQUEFIED GAS, N.O.S. (1,1,1,2-Tetrafluoroethane, Pentafluoroethane, Difluoromethane)
 14.3. Transport hazard class(es)
 Rail/road (RID/ADR) : Class : 2
 Sea transport : Class : 2.2
 Air transport (OACI/IATA) : Class : 2.2
 Hazard Label(s) : 2.2



- 14.4. Packing group : Not applicable
 14.5. Environmental hazards : Not classified as dangerous to the aquatic environment
 Marine pollutant : NO
 14.6. Special precautions for user
 Rail/road (RID/ADR) : Tunnel restriction code : (C/E)
 Hazard identification number : 20
 Classification code : 2A
 Sea transport : Segregation group : -
 Emergency schedule (EmS) : F-C, S-V
 Air transport (OACI/IATA) : Cargo aircraft:
 Packing instruction: 200
 Quantity: 150 kg
 Passenger aircraft:
 Packing instruction: 200
 Quantity: 75 kg
 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15 Regulatory information

- 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture : Ensure all national/local regulations are observed.
 France : Classified Installations : applicable
 REGULATION EC No 842/2006 : Contains : Greenhouse fluorinated gas falling within Kyoto Protocol
 15.2. Chemical safety assessment : No information available

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SECTION 16 Other information

Further information	: Product for industrial use only For more information regarding the use of this product, please refer to our technical information or contact the sales department in your region This safety data sheet has been written in conformity with the regulation (UE) 453/2010.
Text of R-Phrases in § 3	: R12 : Extremely flammable.
Text of H-Phrases in § 3	: H220 - Extremely flammable gas H280 - Contains gas under pressure; may explode if heated
* Update	: All chapters have been modified since the previous version

This sheet complements the technical sheets but does not replace them. The information given is based on our knowledge of the product, at the time of publication. It is given in good faith.

Besides, the attention of the user is drawn to the possible risks incurred by using the product for any other use than that for which it was intended.

In no way does this exempt the user from knowing and applying all the regulations controlling his activity. He alone will take on the responsibility for taking the precautions involved by the use of the product.

The aim of all the mandatory regulations mentioned is just to help the user to fulfil his obligations regarding the use of hazardous products.

This information must not be considered exhaustive. It does not exempt the user from ensuring that other obligations than those mentioned could apply, related to the storage and use of the product, this being his sole responsibility.

End of document

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