

R-407C
10407
SECTION 1 Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier

Trade name : R-407C

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

Labelling EC 67/548 or EC 1999/45 : None

- Further data : Contains : Greenhouse fluorinated gas falling within Kyoto Protocol

2.3. Other hazards : Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing
 Liquefied gas : Contact with liquid may cause frostbite and serious damage to eyes
 Not classified as flammable by EC criteria but may present a hazard in the event of a fire

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SECTION 3 Composition/information on ingredients

3.1./3.2. Substance / Preparation : Preparation.
Chemical nature : Blend of 1,1-Difluoromethane (R-32) , Pentafluoroethane (R-125) & 1,1,1,2-Tetrafluoroethane (R-134a)

Components contributing to the hazard :

Substance name	Contents	CAS No	EC No	Index No	Ref REACH	Classification
Difluoromethane	23 %	75-10-5	200-839-4	----	01-2119471312-47	F+; R12 Flam. Gas 1;H220 Liquefied gas;H280
Pentafluoroethane	25 %	354-33-6	206-557-8	----	01-2119485636-25	Not classified. (DSD/DPD) Liquefied gas;H280
1,1,1,2-Tetrafluoroethane	52 %	811-97-2	212-377-0	----	01-2119459374-33	Not classified. (DSD/DPD) 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 : In the event of contact with the liquid: treat resulting frostbite as a burn
 Rinse with plenty of water. DO NOT remove clothing (since it may stick to the skin).
 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 : Difficulty in breathing
 Dizziness
 Drowsiness
 Headaches
 Loss of consciousness.
 Cardiac disorders
Skin contact : Contact with liquefied gas may cause frostbite.
Eye contact : No information available
Ingestion : No information available
4.3. Indication of any immediate medical attention and special treatment needed : Do not administer adrenalin

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SECTION 5 Fire-fighting measures
5.1. Extinguishing media

Suitable extinguishing media : Water spray
Carbon dioxide (CO₂)
Foam
Powders

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 : On heating : Toxic and corrosive vapours are released
May form an explosive mixture in the presence of air
The vapours are denser than air and may travel along the ground. Distance ignition possible
Exposure to fire may cause containers to rupture/explode.

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
Remove all sources of ignition
Do not attempt to take action without suitable protective equipment
Evacuate the danger area.
Stop the leak.
Do not breathe vapours
Mechanically ventilate the spillage area (risk of asphyxia)

6.2. Environmental precautions : Do not discharge the product into the environment

6.3. Methods and material for containment and cleaning up

- **Cleaning/decontamination** : Allow the residual product to evaporate.

SECTION 7 Handling and storage
7.1. Precautions for safe handling

Technical measures : Ventilation

Precautions : Avoid the build-up of electrostatic charge
Work in a well-ventilated area
Smoking is forbidden

Industrial hygiene : Do not drink, eat or smoke in the workplace

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions

- **Recommended** : Store :
- away from any source of ignition
- in a cool, well-ventilated area
- the container tightly closed

* **Incompatible products** : Strong oxidizing agents
Alkaline earth metals
Alkali metals
Finely divided metals.

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SECTION 7 Handling and storage (continued)
Packaging materials

- * - Recommended : Ordinary steel , Stainless steel , Aluminium.
 - Not suitable : Alloys containing more than 2% magnesium
 7.3. Specific end use(s) : No data

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 : France : LEP - VME (8h; mg/m³) : 4420
 1,1,1,2-Tetrafluoroethane : France : LEP - VME (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
 - **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 information available
9.1.d. pH : Not applicable
9.1.e. Melting point / Freezing point : No information available
9.1.f. Initial boiling point - boiling range : - 43.8 °C
9.1.g. Flash point : Not applicable
9.1.h. Evaporation rate : No information available
9.1.i. Flammability : Non flammable.
9.1.j. Explosion limits (lower - upper) : None.
9.1.k. Vapour pressure : 22,1 bar at 50 °C
 11,88 bar at 25 °C
9.1.l. Vapour density

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SECTION 9 Physical and chemical properties (continued)

Vapour density (air = 1) :	: 3,59
9.1.m. Density	: Liquid : 1,138 g/cm ³ at 25 °C
9.1.n. Solubility	: No data
9.1.o. Partition coefficient : n-octanol / water	: 1.06 (log Pow) - 1,1,1,2-Tetrafluoroethane (R-134a) 0.21 (log Pow) - Difluoromethane (R-32) 1.48 (log Pow) - Pentafluoroethane (R-125)
9.1.p. Auto-ignition temperature	: No information available
9.1.q. Thermal decomposition	: No information available
9.1.r. Viscosity	: No information available
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	
Critical temperature :	: + 86,05 °C
Critical pressure :	: 46,3 bar

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 dangerous reactions known under normal conditions of use
10.4. Conditions to avoid	: - high temperatures, naked flames
* 10.5. Incompatible materials	: - strong oxidizing agents - alkali metals - alkaline earth metals. - Finely divided metals.
10.6. Hazardous decomposition products :	: On thermal decomposition (pyrolysis), releases : Carbon oxides (CO, CO ₂) Hydrogen fluoride Fluorophosgene

SECTION 11 Toxicological information

11.1. Information on toxicological effects	
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
• Acute toxicity	: No information available
• Skin corrosion/irritation	: Contact with liquefied gas may cause frostbite.
• Serious eye damage/irritation	: Contact with liquefied gas may cause severe ocular lesions No information available
• Respiratory or skin sensitisation	: No information available
• Germ cell mutagenicity	: No information available
• Carcinogenicity	: No information available

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SECTION 11 Toxicological information (continued)

- Reproductive toxicity : No information available
- STOT-single exposure : No information available
- STOT-repeated exposure : No information available
- Aspiration hazard : No information available

SECTION 12 Ecological information

12.1. Toxicity

Effects on the aquatic environment : The product does not have any known adverse effects on the 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

- : No easy biodegradable
- R-32 :
Water : 5 % biodegradation after 28 days
Air : Half-life = 1472 days
- R-125 :
Water : 5 % biodegradation after 28 days
Air : Half-life = 28.3 years (estimated value)
- R-134a :
Water : 3 % biodegradation after 28 days
Air : Half-life = 8.6-16.7 years

12.3. Bioaccumulative potential

Octanol/water partition coefficient

- : Practically not bioaccumulable
- R-32 : 0.21
- R-125 : 1.48
- R-134a : 1.06

12.4. Mobility in soil

- : No information available

12.5. Results of PBT and vPvB assessment

- : This mixture contains no substance meeting PBT and vPvB criteria

12.6. Other adverse effects

Ozone depletion potential

- : ODP (R-11=1)=0

Greenhouse effect

- : R-134a : GWP (CO₂=1/100 years) = 1300
- : R-32 : GWP (CO₂=1/100 years) = 550
- : R-125 : GWP (CO₂=1/100 years) = 3400

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SECTION 13 Disposal considerations

- 13.1. Waste treatment methods** : Dispose in a safe manner in accordance with local/national regulations.
WASTE FROM PRODUCT :
Destruction/Disposal : Consult the manufacturer or supplier for information regarding recovery and recycling of the product
CONTAMINATED PACKAGING :
Destruction/Disposal : Reuse or recycle following decontamination.
 Destroy at an authorised site
NOTE : The user's attention is drawn to the possible existence of specific european, national or local regulations regarding disposal

SECTION 14 Transport information

- 14.1. UN number** : 3340
14.2. UN proper shipping name : REFRIGERANT GAS R 407C
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** : -
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 : EmS Nr : 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

- NOTE** : The above regulatory prescriptions are those valid on the date of publication of this sheet
 However, given the possible evolution of transport regulations for hazardous materials, in case the present sheet is dating back to more than 12 months ago, it would be advisable to check their validity with your commercial agency

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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 : N° 1185

REGULATION EC No 842/2006 : Greenhouse fluorinated gas falling within Kyoto Protocol

15.2. Chemical safety assessment : No information available

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** : Modifications are indicated by an asterisk (*)

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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