

R-407A
100140700
SECTION 1 Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier
Trade name : R-407A

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
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% 1,1,1,2-Tetrafluoroethane (R-134a) / 20% Difluoromethane (R-32) 40% Pentafluoroethane (R-125) / Greenhouse fluorinated gas falling within Kyoto Protocol (GWP = 2107)

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

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	: 40 %	354-33-6	206-557-8	-----	01-2119485636-25	Not classified. (DSD/DPD) Liquefied gas;H280
Difluoromethane	: 20 %	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** : In the event of contact with the liquid: treat resulting frostbite as a burn
Immediately remove contaminated clothing or footwear
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** : Headaches
Dizziness
Drowsiness
Loss of consciousness
Cardiac disorders
- Skin contact** : No information available
- Eye contact** : No information available
- Ingestion** : No information available

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** : 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

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SECTION 5 Fire-fighting measures (continued)

- Specific hazards** : On heating : Toxic and corrosive vapours are released
- 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 attempt to take action without suitable protective equipment
Do not breathe vapours
Evacuate the danger area.
Stop the leak.
Remove all sources of ignition
Mechanically ventilate the spillage area (risk of asphyxia)
- 6.2. Environmental precautions** : Do not allow product to spread into the environment
- Clean up methods :**
- 6.3. Methods and material for containment and cleaning up**
- Cleaning/decontamination** : Allow the residual product to evaporate.
- 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** : Smoking is forbidden
Avoid the build-up of electrostatic charge
Work in a well-ventilated area
- 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** : Non ferrous metals (Al, Zn, Sn) and their alloys
Strong oxidizing agents
Alkaline earth metals
Alkali metals
- Packaging materials**
- Recommended** : Ordinary steel
- Not suitable** : 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

8.2. Exposure controls
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** : Protective gloves made of Viton
 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 : -45 °C

9.1.g. Flash point : None

9.1.h. Evaporation rate : No information available

9.1.i. Flammability : Not classified as explosive according to EC criteria, but may present risks in the event of a fire

9.1.j. Explosion limits (lower - upper) : No information available

9.1.k. Vapour pressure : 11,27 bar at 21.1 °C
 25,667 bar at 54.4 °C

9.1.l. Vapour density : 3,1

9.1.m. Density : Liquid : 1,145 g/cm³ at 25 °C

9.1.n. Solubility
9.1.o. Partition coefficient : n-octanol / water : Difluoromethane (R-32) : 0.21 (log Pow)
 Pentafluoroethane (R-125) : 1.48 (log Pow)
 1,1,1,2-Tetrafluoroethane (R-134a) : 1.06 (log Pow)

9.1.p. Auto-ignition temperature : The product does not ignite spontaneously.

9.1.q. Thermal decomposition : > 250°C

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SECTION 9 Physical and chemical properties (continued)

- 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 : -

SECTION 10 Stability and reactivity

- 10.1. Reactivity** : None under normal conditions
10.2. Chemical stability : Receptacle under pressure.
 Stable at ambient temperature and under normal conditions of use
 Heating will cause a rise in pressure with a risk of bursting. Protect
 from sunlight
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 : - alkaline earth metals.
 - alkali metals
 - reactive metals (Al, K, Zn ...)
 - strong oxidizing agents
10.6. Hazardous decomposition products : On thermal decomposition (pyrolysis), releases :
 Carbon oxides (CO, CO₂)
 Hydrogen fluoride
 Fluorophosgene

SECTION 11 Toxicological information

- 11.1. Information on toxicological effects**
 • **Acute toxicity** : No information available
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 : 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

: Difluoromethane (R-32) :
Water : 5 % biodegradation after 28 days
Air : Half-life = 1472 days
Pentafluoroethane (R-125) :
Water : 5 % biodegradation after 28 days
Air : Half-life = 28.3 years (estimated value)
1,1,1,2-Tetrafluoroethane (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
Difluoromethane (R-32) : 0.21
Pentafluoroethane (R-125) : 1.48
1,1,1,2-Tetrafluoroethane (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

: GWP (CO₂=1/100 years) = 2107

SECTION 13 Disposal considerations

13.1. Waste treatment methods

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

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SECTION 14 Transport information

14.1. UN number : UN 3338
14.2. UN proper shipping name : REFRIGERANT GAS R 407A
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 : Marine pollutant : NO
 Not classified as dangerous to the aquatic environment
14.6. Special precautions for user
Rail/road (RID/ADR) : Classification code : 2A
 Hazard identification number : 20
 Tunnel restriction code : (C/E)
Sea transport : EmS Nr : F-C, S-V
 Segregation group : -
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
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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