

R-437A
100043700
SECTION 1 Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier

Trade name : R-437A

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 :
 78.5 % 1,1,1,2-Tetrafluoroethane (R-134a) / 19.5 % Pentafluoroethane (R-125)
 Greenhouse fluorinated gas falling within Kyoto Protocol
 (GWP = 1805)

2.3. Other hazards

 : Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing
 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
Chemical nature : Blend of 1,1,1,2-Tetrafluoroethane (R-134a) & Pentafluoroethane (R-125) , n-Butane (R-600) & n-pentane (R-601)

Components contributing to the hazard :

Substance name	Contents	CAS No	EC No	Index No	Ref REACH	Classification
1,1,1,2-Tetrafluoroethane	78.5 %	811-97-2	212-377-0	----	01-2119459374-33	Not classified. (DSD/DPD) Liquefied gas;H280
Pentafluoroethane	19.5 %	354-33-6	206-557-8	----	01-2119485636-25	Not classified. (DSD/DPD) Liquefied gas;H280
n-Butane	1.4 %	106-97-8	203-448-7	601-004-00-0	01-2119474691-32	F+; R12 Flam. Gas 1;H220 Liquefied gas;H280
n-Pentane	0.6 %	109-66-0	203-692-4	601-006-00-1	01-2119459286-30	F+; R12 Xn; R65 R66 R67 N; R51-53 Flam. Liq. 1;H224 Asp. Tox. 1;H304 STOT SE3; H336 EUH066 Aquatic Chronic 2;H411

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
 Call a POISON CENTER/doctor/physician if you feel unwell
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 : Headaches
 Loss of consciousness
 Drowsiness
 Cardiac disorders
 Dizziness
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

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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 : Pressurized container .
Heating will cause a rise in pressure with a risk of bursting.
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 breathe vapours
Do not attempt to take action without suitable protective equipment
Evacuate the danger area.
Stop the leak.
Ensure that there is a suitable ventilation system
Remove all sources of ignition

6.2. Environmental precautions : Do not allow product to spread into the environment

6.3. Methods and material for containment and cleaning up : Mechanically ventilate the spillage area.

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

Precautions : Work in a well-ventilated area
Pressurized container . Handle and open container with care.
Avoid the build-up of electrostatic charge
Avoid high temperatures.
Avoid contact with hot surfaces
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 :
- only in the original container
- in a cool, well-ventilated area
- the container tightly closed
- away from any source of ignition
- away from any source of heat
- at temperature not exceeding 50 °C

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SECTION 7 Handling and storage (continued)

Incompatible products	: Alkali metals Alkaline earth metals Finely divided metals (Mg, Al, Zn)
Packaging materials	
- Recommended	: Ordinary steel
- Not suitable	: Alloys containing more than 2% magnesium Magnesium and its alloys. Plastic materials.
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/m ³) : 4240 1,1,1,2-Tetrafluoroethane : United Kingdom : WEL - TWA (8h; ppm) : 1000 1,1,1,2-Tetrafluoroethane : Germany : MAK - TWA (8h; mg/m ³) : 4200 1,1,1,2-Tetrafluoroethane : Germany : MAK - TWA (8h; ppm) : 1000 1,1,1,2-Tetrafluoroethane : Germany : TRK - STEL (15min; mg/m ³) : 33600 1,1,1,2-Tetrafluoroethane : Germany : TRK - STEL (15min; ppm) : 8000 Pentafluoroethane : France : LEP - VME (8h; ppm) : 1000 n-Butane : France : LEP - VME (8h; mg/m ³) : 1900 n-Butane : France : LEP - VME (8h; ppm) : 800 n-Butane : United Kingdom : WEL - TWA (8h; mg/m ³) : 1450 n-Butane : United Kingdom : WEL - TWA (8h; ppm) : 600 n-Butane : United Kingdom : WEL - STEL (15min; mg/m ³) : 1850 n-Butane : United Kingdom : WEL - STEL (15min; ppm) : 750 n-Butane : Germany : MAK - TWA (8h; mg/m ³) : 2400 n-Butane : Germany : MAK - TWA (8h; ppm) : 1000 n-Butane : Germany : MAK - STEL (15min; mg/m ³) : 9600 n-Butane : Germany : MAK - STEL (15min; ppm) : 4000 n-Butane : Hungary : AK - TWA (8h; mg/m ³) : 2350 n-Butane : Hungary : AK - STEL (15min; mg/m ³) : 9400 n-Butane : USA (NIOSH) : REL - TWA (8h; mg/m ³) : 1900 n-Butane : USA (NIOSH) : REL - TWA (8h; ppm) : 800 n-Pentane : USA (OSHA) : PEL - TWA (8h; mg/m ³) : 2950 n-Pentane : USA (OSHA) : PEL - TWA (8h; ppm) : 1000 n-Pentane : USA (NIOSH) : REL - TWA (8h; mg/m ³) : 350 n-Pentane : USA (NIOSH) : REL - TWA (8h; ppm) : 120 n-Pentane : United Kingdom : WEL - TWA (8h; mg/m ³) : 1800 n-Pentane : United Kingdom : WEL - TWA (8h; ppm) : 600 n-Pentane : France : LEP - VME (8h; mg/m ³) : 3000 n-Pentane : France : LEP - VME (8h; ppm) : 1000 n-Pentane : Germany : MAK - TWA (8h; mg/m ³) : 3000 n-Pentane : Germany : MAK - TWA (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	: Leather or nitrile-rubber protective gloves Protective gloves made of Viton
- Eye protection	: Safety spectacles with side shields

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SECTION 8 Exposure controls/personal protection (continued)

- 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 data

9.1.f. Initial boiling point - boiling range : - 32 °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 : 639.8 kPa, at 20°C

9.1.l. Vapour density : No information available

9.1.m. Density : 1.196 g/cm³ at 20 °C

9.1.n. Solubility

-in water : Slightly soluble

9.1.o. Partition coefficient : n-octanol / water : R-134a : 1.06
R-125 : 1.48

9.1.q. Thermal decomposition : No information available

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

Critical temperature : + 96 °C

Critical pressure : 40.96 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 information available

10.4. Conditions to avoid : - high temperatures, naked flames
Heating will cause a rise in pressure with a risk of bursting.
May decompose :

10.5. Incompatible materials : - alkali metals
- alkaline earth metals.
- Finely divided metals.

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SECTION 10 Stability and reactivity (continued)

10.6. Hazardous decomposition products : On thermal decomposition (pyrolysis), releases :
Carbon oxides (CO, CO₂)
Hydrogen fluoride

SECTION 11 Toxicological information
11.1. Information on toxicological effects
• Acute toxicity
On ingredients
n-Butane

: Rat inhalation LC50 [mg/l/4h] : 658

n-Pentane

: Rat inhalation LC50 [mg/l/4h] : > 5

: Rat oral LD50 [mg/kg] : > 2000

Pentafluoroethane

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

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.

SECTION 12 Ecological information
12.1. Toxicity

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

12.2. Persistence and degradability
Biodegradability

: R-134a :

Air : Half-life = 8.6 - 16.7 years

R-125 :

Water : 5 % biodegradation after 28 days

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

12.3. Bioaccumulative potential
Octanol/water partition coefficient

: Practically not bioaccumulable

R-134a : 1.06

R-125 : 1.48

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

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SECTION 12 Ecological information (continued)

 Greenhouse effect : GWP (CO₂=1/100 years) = 1805

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

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)

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
 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
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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 : applicable

REGULATION EC No 842/2006 : Contains :
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.
R51/53 : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65 : Harmful : may cause lung damage if swallowed
R66 : Repeated exposure may cause skin dryness or cracking
R67 : Vapours may cause drowsiness and dizziness.

Text of H-Phrases in § 3 : EUH066 - Repeated exposure may cause skin dryness or cracking
H220 - Extremely flammable gas
H224 - Extremely flammable liquid and vapour
H280 - Contains gas under pressure; may explode if heated
H304 - May be fatal if swallowed and enters airways
H336 - May cause drowsiness or dizziness
H411 - Toxic to aquatic life with long lasting effects

*** 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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