



# SAFETY DATA SHEET

Page : 1 / 8

Version : 1

Date : 2 / 5 / 2014

Supersedes : 0 / 0 / 0

**R-434A****10434**

## SECTION 1 Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

Trade name : R-434A

### 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

Classification EC 67/548 or EC 1999/45 : This product is not classified as a "hazardous preparation" according to European Community regulations

### 2.2. Label elements

Labelling EC 67/548 or EC 1999/45

#### S Phrase(s)

S7/9 : Keep container tightly closed and in well-ventilated place.  
S24/25 : Avoid contact with skin and eyes.  
S47 : Keep at temperature not exceeding 50 °C.  
S51 : Use only in well-ventilated areas  
S61 : Avoid release to the environment. Refer to special instructions/Safety data sheets.

#### - Further data

Contains : Greenhouse fluorinated gas falling within Kyoto Protocol

### 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

## 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
Pentafluoroethane	: 60 to 70 %	354-33-6	206-557-8	-----	01-2119485636-25	Not classified. (DSD/DPD) Liquefied gas;H280
1,1,1-Trifluoroethane	: 10 to 20 %	420-46-2	206-996-5	-----	01-2119492869-13	F+; R12 Flam. Gas 1;H220 Liquefied gas;H280

## 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**In case of emergency : +33 (0) 1 72 11 00 03**

## R-434A

## 10434

### SECTION 3 Composition/information on ingredients (continued)

Substance name	Contents	CAS No	EC No	Index No	Ref REACH	Classification
1,1,1,2-Tetrafluoroethane	: 10 to 20 %	811-97-2	212-377-0	-----	01-2119459374-33	Not classified. (DSD/DPD) Liquefied gas;H280
Isobutane	: 1 to 5 %	75-28-5	200-857-2	601-004-00-0	01-2119485395-27	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  
Immediately rinse with plenty of water  
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

- 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

#### 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

#### 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

**In case of emergency : +33 (0) 1 72 11 00 03**

## R-434A

## 10434

### SECTION 6 Accidental release measures

- 6.1. Personal precautions, protective equipment and emergency procedures** : Avoid contact with skin and eyes  
 Do not smoke  
 Prevent the product from entering cellars, basements or pits  
 Stop the leak.  
 Remove all sources of ignition  
 Do not breathe gas.  
 Heavy vapours. Shut off low-level openings in the vicinity (ventilation shafts, drains...)  
 Mechanically ventilate the spillage area.
- 6.2. Environmental precautions** : Contain the spilled material by bunding
- 6.3. Methods and material for containment and cleaning up**
- **Cleaning/decontamination** : Allow the residual product to evaporate.
  - **Recovery** : Recover as much product as possible
- 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** : Use in a closed system  
 Ventilation
- Precautions** : Avoid high temperatures.  
 Avoid contact with hot surfaces
- 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
    - away from any source of heat
    - at temperature not exceeding 45 °C
    - in a cool, well-ventilated area
- Incompatible products** : Alkaline earth metals  
 Alkali metals  
 Finely divided metals (Mg, Al, Zn)
- 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

#### 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

In case of emergency : +33 (0) 1 72 11 00 03

**R-434A**
**10434**
**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** : Pentafluoroethane : France : LEP - VME (8h; ppm) : 1000  
 1,1,1-Trifluoroethane : France : LEP - VME (8h; ppm) : 1000 (recommended)  
 1,1,1,2-Tetrafluoroethane : United Kingdom : WEL - TWA (8h; mg/m<sup>3</sup>) : 4240  
 1,1,1,2-Tetrafluoroethane : United Kingdom : WEL - TWA (8h; ppm) : 1000  
 1,1,1,2-Tetrafluoroethane : France : LEP - VME (8h; mg/m<sup>3</sup>) : 4420  
 1,1,1,2-Tetrafluoroethane : France : LEP - VME (8h; ppm) : 1000  
 1,1,1,2-Tetrafluoroethane : Germany : MAK - TWA (8h; mg/m<sup>3</sup>) : 4200  
 1,1,1,2-Tetrafluoroethane : Germany : MAK - TWA (8h; ppm) : 1000  
 1,1,1,2-Tetrafluoroethane : Germany : TRK - STEL (15min; mg/m<sup>3</sup>) : 33600  
 1,1,1,2-Tetrafluoroethane : Germany : TRK - STEL (15min; ppm) : 8000  
 Isobutane : Germany : MAK - TWA (8h; mg/m<sup>3</sup>) : 2400  
 Isobutane : Germany : MAK - TWA (8h; ppm) : 1000  
 Isobutane : Germany : MAK - STEL (15min; mg/m<sup>3</sup>) : 9600  
 Isobutane : Germany : MAK - STEL (15min; ppm) : 4000

**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

- **Skin protection** : Majority cotton clothing

- **Eye protection** : Safety spectacles with side shields

**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** : -44.9 °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** : 11.8 Bar absolute at 25 °C

**9.1.l. Vapour density** : 53.1 kg/m<sup>3</sup> at 25 °C

**9.1.m. Density** : 1 096 kg/m<sup>3</sup> at 25 °C

**9.1.n. Solubility**  
 -in water : Insoluble

**9.1.o. Partition coefficient : n-octanol / water** : R-125: log Kow = 1.48  
 R-134a : log Kow = 1.06  
 R-143a : log Kow = 1.73  
 R-600a : log Kow = 2.8

**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

**In case of emergency : +33 (0) 1 72 11 00 03**

**R-434A**
**10434**
**SECTION 9 Physical and chemical properties (continued)**

<b>9.1.p. Auto-ignition temperature</b>	: No information available
<b>9.1.q. Thermal decomposition</b>	: No information available
<b>9.1.r. Viscosity</b>	: No information available
<b>9.1.s. Explosive Properties</b>	: Not explosive material according to EC criteria
<b>9.1.t. Oxidising properties</b>	: Non oxidizing material according to EC criteria
<b>9.2. Other information</b>	
<b>Critical pressure :</b>	: 39.31 bar absolute
<b>Critical temperature :</b>	: 77.83 °C

**SECTION 10 Stability and reactivity**

<b>10.1. Reactivity</b>	: None under normal conditions
<b>10.2. Chemical stability</b>	: Stable at ambient temperature and under normal conditions of use
<b>10.3. Possibility of hazardous reactions</b>	: No dangerous reactions known under normal conditions of use
<b>10.4. Conditions to avoid</b>	: May decompose : - on contact with hot surfaces and flames
<b>10.5. Incompatible materials</b>	: - alkaline earth metals. - alkali metals - finely divided metals (Al, Mg, Zn)
<b>10.6. Hazardous decomposition products :</b>	: Carbon oxides (CO, CO <sub>2</sub> ) Hydrogen fluoride

**SECTION 11 Toxicological information**

<b>11.1. Information on toxicological effects</b>	
• <b>Acute toxicity</b>	: No information available
<b>On ingredients</b>	
<b>Pentafluoroethane</b>	: Rat inhalation LC50 [ppm/4h] : 800000
<b>1,1,1-Trifluoroethane</b>	: Rat inhalation LC50 [ppm/4h] : 591000
<b>Isobutane</b>	: Rat inhalation LC50 [mg/l/4h] : 658
	: Inhalation (mouse) LC50 [mg/l/1h] : 52
<b>1,1,1,2-Tetrafluoroethane</b>	: Rat inhalation LC50 [ppm/4h] : > 500000
• <b>Irritation</b>	: No information available
• <b>Corrosivity</b>	: No information available
• <b>Sensitisation</b>	: No information available
• <b>Repeated dose toxicity</b>	: No information available
• <b>Carcinogenicity</b>	: No information available
• <b>Mutagenicity</b>	: No information available
• <b>Toxicity for reproduction</b>	: No information available

**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

**In case of emergency : +33 (0) 1 72 11 00 03**

**R-434A**
**10434**
**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-Trifluoroethane** : 48 Hours - LC80 - Daphnia magna [mg/l] : 390  
 : 96 Hours - LC50 - Fish (Oncorhynchus mykiss) [mg/l] : > 40  
 : 96 Hour - EC50 - Algae [mg/l] : 71
- 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**

- : R-125 : Life in atmosphere : 33 years  
 R-134a : Life in atmosphere : 14.6 years  
 R-143a : Life in atmosphere : 48 years  
 R-600a : Life in atmosphere : ~ 10 years

**12.3. Bioaccumulative potential**

- : Not potentially bioaccumulable.

**12.4. Mobility in soil**

- : No information available

**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**

- : R-125 : GWP (CO2=1/100 years) = 3400  
 R-134a : GWP (CO2=1/100 years) = 1300  
 R-143a : GWP (CO2=1/100 years) = 4300

**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

**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

**In case of emergency : +33 (0) 1 72 11 00 03**

**R-434A**

**10434**

**SECTION 14 Transport information**

14.1. UN number : UN 3163  
 14.2. UN proper shipping name : LIQUEFIED GAS, N.O.S. (Pentafluoroethane, 1,1,1,2-Tetrafluoroethane)  
 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) :  
 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**

**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

**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

**NOTE** : The regulatory information given in this part only indicate the principal regulations specifically applicable to the product described in the Safety Data Sheet.  
 The cited basic Community texts are being updated and transcribed in national law.  
 Refer to all applicable national, international and local regulations or provisions.  
 The user's attention is drawn to the possible existence of additional provisions which complete these regulations.

**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

**In case of emergency : +33 (0) 1 72 11 00 03**



## SAFETY DATA SHEET

Page : 8 / 8

Version : 1

Date : 2 / 5 / 2014

Supersedes : 0 / 0 / 0

**R-434A****10434**

### SECTION 15 Regulatory information (continued)

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**

#### 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

**In case of emergency : +33 (0) 1 72 11 00 03**