

R-422A (Isceon® MO79)
100079
SECTION 1 Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier
Trade name : R-422A (Isceon® MO79)

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 : 85.1% Pentafluoroethane (R-125) / 11.5% 1,1,1,2-Tetrafluoroethane (R-134a) / 3.4% Isobutane (R-600a)
 Greenhouse fluorinated gas falling within Kyoto Protocol
 (GWP = 3143)

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

Physical and chemical hazards :
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SECTION 2 Hazards identification (continued)
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	: 85.1 %	354-33-6	206-557-8	----	01-2119485636-25	Not classified. (DSD/DPD) Liquefied gas;H280
1,1,1,2-Tetrafluoroethane	: 11.5 %	811-97-2	212-377-0	----	01-2119459374-33	Not classified. (DSD/DPD) Liquefied gas;H280
Isobutane	: 3.4 %	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

 : In the event of exposure to high concentrations :
 Headaches
 Dizziness
 Dizziness
 Narcotic effect
 Cardiac disorders

Skin contact

 : Rapid evaporation of the liquid may cause frostbite
 Irritation
 Itching
 Rednesses
 Swelling.

Eye contact

 : Rapid evaporation of the liquid may cause frostbite
 Irritation
 Watering of the eyes
 Rednesses

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 : 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

SECTION 6 Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures : Avoid contact with skin and eyes
 Do not breathe gas.
 Do not smoke
 Prevent the product from entering cellars, basements or pits
 Stop the leak.
 Remove all sources of ignition
 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
- Recovery : Recover as much product as possible

- 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 : Avoid contact with hot surfaces
 Avoid high temperatures.

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

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions
- Recommended : Store :
 - in a dry, well-ventilated area
 - away from any source of ignition
 - away from any source of heat

Incompatible products : Strong oxidizing agents
 Alkaline earth metals
 Alkali metals
 Finely divided metals (Mg, Al, Zn)

Packaging : Pressurized metal container

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SECTION 7 Handling and storage (continued)
Packaging materials

- Recommended : Ordinary steel
Stainless steel
- Not suitable : Plastic materials.
Magnesium and its alloys.
Zinc and its alloys.
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 :
 - Pentafluoroethane : France : LEP - VME (8h; ppm) : 1000
 - 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
 - Isobutane : Belgium : GWBB - TWA (8h; ppm) : 1000
 - Isobutane : Germany : MAK - TWA (8h; mg/m³) : 2400
 - Isobutane : Germany : MAK - TWA (8h; ppm) : 1000
 - Isobutane : Germany : MAK - STEL (15min; mg/m³) : 9600
 - Isobutane : Germany : MAK - STEL (15min; ppm) : 4000
 - Isobutane : Switzerland : LEP - VME (8h; mg/m³) : 1900
 - Isobutane : Switzerland : LEP - VME (8h; ppm) : 800

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
- 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 : Neutral
- 9.1.e. Melting point / Freezing point : No information available
- 9.1.f. Initial boiling point - boiling range : -48,6 °C (under 1.013 bar)

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SECTION 9 Physical and chemical properties (continued)

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	: 12.7 bar at 25 °C 23.3 bar at 50 °C
9.1.l. Vapour density	: No information available
9.1.m. Density	: Liquid : 1.136 g/cm ³ at 25 °C
9.1.n. Solubility	
-in water	: Slightly soluble
9.1.o. Partition coefficient : n-octanol / water	: Pentafluoroethane (R-125) : 1.48 (log Pow) 1,1,1,2-Tetrafluoroethane (R-134a) : 1.06 (log Pow) Isobutane : 2.7 (log Pow)
9.1.p. Auto-ignition temperature	: Not applicable
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 :	: 71.7 °C
Critical pressure :	: 37.5 bar absolute

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	: May decompose : - on contact with hot surfaces and flames
10.5. Incompatible materials	: - strong oxidizing agents - alkali metals - alkaline earth metals. - finely divided metals (Al, Mg, Zn)
10.6. Hazardous decomposition products	: Carbon oxides (CO, CO ₂) Fluorinated hydrocarbons Carbonyl halogenides Hydrogen halogenides

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SECTION 11 Toxicological information
11.1. Information on toxicological effects

- **Acute toxicity** : No information available
- On ingredients**
- Pentafluoroethane** : Rat inhalation LC50 [ppm/4h] : 800000
- Isobutane** : Rat inhalation LC50 [mg/l/4h] : 658
- 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
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
Persistence

- : R-134a : Half-life in air : 8.6-16.7 y
- : Isobutane : Half-life in air : 6.9 d

12.3. Bioaccumulative potential
Octanol/water partition coefficient

- : Not potentially bioaccumulable.
- : Pentafluoroethane (R-125) : 1.48 (log Pow)
- : 1,1,1,2-Tetrafluoroethane (R-134a) : 1.06 (log Pow)
- : Isobutane : 2.7 (log Pow)

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) = 3143

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SECTION 12 Ecological information (continued)
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 :

- Decontamination/cleaning** : De-gas
- 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

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, Isobutane)
- 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** : Emergency schedule (EmS) : 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** : Not applicable

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MATERIAL SAFETY DATA SHEET

Page : 8 / 8

Version : 5

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R-422A (Isceon® MO79)**100079**

SECTION 14 Transport information (continued)

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

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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