

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

1.1. Product identifier

Product form	: Substance
Name	: R-23
Chemical name	: Trifluoromethane
EC-No.	: 200-872-4
CAS-No.	: 75-46-7
REACH registration No.	: 01-2119971823-29
Product code	: 100002300
Formula	: CHF3

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses

Use of the substance/mixture : Refrigerant

1.3. Details of the supplier of the safety data sheet

Supplier

Dehon Service SAS
 26 Avenue du Petit Parc
 94683 VINCENNES Cedex
 France
 T 01 43 98 75 00, F 01 43 98 21 51
ContactFDS@climalife.dehon.com

Other

Climalife Kft Budepesta sucursală Bucuresti Romania
 Bulevardul Hristo Botev, Nr. 28,
 Biroul NR 4, Modulul I
 Bucuresti Sectorul 3
 Romania
ContactFDS@climalife.dehon.com

Other

Dehon Kälte-Fachvertriebs GmbH
 Robert-Bosch-Strasse 14
 40668 MEERBUSCH
 Germany
 T 00 49 2150 7073 0 , F 00 49 2150 7073 17
ContactFDS@climalife.dehon.com

Other

Dehon Service Belgium s.a/n.v.
 Avenue Carton de Wiart, 79
 1090 Bruxelles
 Belgium
 T 00 32 2 421 01 70, F 00 32 2 426 96 62
ContactFDS@climalife.dehon.com

Other

Friogas sa
 Poligono Industrial SEPES
 Parcela 10
 46500 SAGUNTO (Valencia)
 Spain
 T 00 34 9 6 266 36 32, F 00 34 9 6 266 50 25
ContactFDS@climalife.dehon.com

Other

Prochimac SA
 ZI Petits Champs 15
 CH-1400 Yverdon-les-Bains

Other

Climalife Hongrie Kft.
 Villányi út 47
 1118 Budapest
 Hungary
 T (36) 23 431 660
ContactFDS@climalife.dehon.com

Other

Climalife Supplied by Inventec Performance Chemicals Italia SRL
 Via del Lavoro, 10/G
 20874 Busnago MB
 Italia
 T +39 39-5973480, F +39 39-5973490
ContactFDS@climalife.dehon.com

Other

Dehon nordic service
 Östra Hamngatan 50B 3tr
 41109 GÖTEBORG
 Sweden
 T 00 46 735 01 90 50
ContactFDS@climalife.dehon.com

Other

Dehon Service Nerderland B.V.
 Van Konijnenburgweg 84
 NL-4612 PL Bergen Op Zoom
 Netherlands
 T 00 31 164 212 830, F 00 31 164 212 831
ContactFDS@climalife.dehon.com

Other

IDS Refrigeration Limited
 22 Apex Court, Woodlands, Bradley Stoke
 BS32 4JT Bristol
 United Kingdom
 T 00 44 1179 802520, F 00 44 1179 802521
ContactFDS@climalife.dehon.com

Other

Galco s.a/n.v.
 Avenue Carton de Wiart, 79
 1090 BRUSSELS

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Switzerland
T 00 41 32 727 36 00, F 00 41 32 727 36 19
ContactFDS@climalife.dehon.com

Other
Climalife Asia Corporation
Room 302-A82, No.3, Building 1509, Xin Zhen Road,
201101 Shanghai, Minhang District
China
T +86 21 6442 3972, F +86 21 6442 3952
ContactFDS@climalife.dehon.com

Other
Teknaly Middle East FZCO
B34BS33O203, Jebel Ali Freezone
Dubai
United Arab Emirates
ContactFDS@climalife.dehon.com

Belgium
T 00 32 2 421 01 84, F 00 32 2 421 01 84 / 00 32 2 425 38 12
ContactFDS@climalife.dehon.com

Other
Galco Singapore Branch
135 Cecil Street #10-01
Singapore
ContactFDS@climalife.dehon.com

1.4. Emergency telephone number

Emergency number : +33 (0) 1 72 11 00 03

Country/Area	Organisation/Company	Address	Emergency number	Comment
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals- 24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	
United Kingdom	National Poisons Information Service (Birmingham Centre) City Hospital	Dudley Road B18 7QH	0344 892 0111	Only for healthcare professionals

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Press. Gas (Liq.) H280
Full text of hazard classes, H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS04

Signal word (CLP) : Warning
Hazard statements (CLP) : H280 - Contains gas under pressure; may explode if heated.
Precautionary statements (CLP) : P403 - Store in a well-ventilated place.
Extra phrases : Greenhouse fluorinated gas falling within Kyoto Protocol (GWP=14800).

2.3. Other hazards

Other hazards which do not result in classification : May cause suffocation by reducing oxygen available for breathing. Contact with the liquid the may cause cold burns/frostbite.

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Contains no PBT and/or vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

Component	
Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	Trifluoromethane (75-46-7)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	Trifluoromethane (75-46-7)

SECTION 3: Composition/information on ingredients

3.1. Substances

Name : R-23
CAS-No. : 75-46-7
EC-No. : 200-872-4

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Trifluoromethane	CAS-No.: 75-46-7 EC-No.: 200-872-4 REACH-no: 01-2119971823-29	100	Press. Gas (Liq.), H280

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Move the affected person away from the contaminated area and into the fresh air. If you feel unwell, seek medical advice.

First-aid measures after 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.

First-aid measures after eye contact : Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Consult an eye specialist immediately.

First-aid measures after ingestion : Not specifically applicable (gas).

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects : CNS depression. Narcosis. Cardiac disorders. Lack of oxygen: risk of death.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray. Foam. Carbon dioxide. Chemical powder.

5.2. Special hazards arising from the substance or mixture

Explosion hazard : Heating will cause a rise in pressure with a risk of bursting. Thermal decomposition can lead to the release of irritating gases and vapours : . Hydrogen fluoride. Carbon oxides (CO, CO₂).

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5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers.
Protection during firefighting : Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Avoid contact with skin and eyes. Evacuate the danger area. Do not breathe smoke. Stop the leak. In closed premises : Ventilate or wear self-contained breathing apparatus (risk of asphyxia). Remove all sources of ignition. Do not smoke.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- Other information : 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 for safe handling : Provide for appropriate exhaust ventilation at places of vapours accumulation. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Use personal protective equipment as required. Remove all sources of ignition. Open drums carefully because content may be under pressure.
Hygiene measures : Do not drink, eat or smoke in the workplace.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Store in a dry, well ventilated place away from sources of heat, ignition and direct sunlight. Store in original container.
Incompatible materials : alkali metals. Alkaline earth metals. Strong oxidizing agents.
Storage temperature : < 52 °C
Packaging materials : Recommended materials Carbon steel, Aluminium. Packing material to avoid : . Plastic materials. Alloys containing more than 2% magnesium.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

National occupational exposure and biological limit values

Trifluoromethane (75-46-7)

EU - Indicative Occupational Exposure Limit (IOEL)

No specific limit

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DNEL and PNEC

Trifluoromethane (75-46-7)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, inhalation	1439 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, inhalation	358 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	0.152 mg/l
PNEC aqua (marine water)	0.015 mg/l
PNEC aqua (intermittent, freshwater)	1.52 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0.652 mg/kg dwt
PNEC sediment (marine water)	0.065 mg/kg dwt
PNEC (Soil)	
PNEC soil	0.042 mg/kg dwt

8.2. Exposure controls

Personal protection equipment

Eye and face protection

Eye protection:

Safety glasses with side shields

Skin protection

Skin and body protection:

Majority cotton protective clothing

Hand protection:

Leather protective gloves. Nitrile-rubber protective gloves. VITON gloves

Respiratory protection

Respiratory protection:

In the event of insufficient ventilation: Gas mask with filter type AX. In a confined area : Self-contained breathing apparatus

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Colour	: Colourless.
Appearance	: Press. Gas (Liq.).
Molecular mass	: 70.01 g/mol
Odour	: Not available
Odour threshold	: Not available
Melting point	: -155.13 °C
Freezing point	: Not applicable
Boiling point	: -82 °C
Flammability	: Non flammable.
Explosive properties	: Not explosive material according to EC criteria.
Oxidising properties	: Non oxidizing material according to EC criteria.
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Flash point	: None
Auto-ignition temperature	: 765 °C

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Decomposition temperature	: 1150 °C
pH	: Not applicable
Viscosity, kinematic	: Not applicable
Solubility	: Water: 0.838 g/l (25°C)
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: 46.99 bar (25°C)
Vapour pressure at 50°C	: Not available
Critical pressure	: 48.32 bar
Density	: 806 kg/m³ (20°C)
Relative density	: Not applicable
Relative vapour density at 20°C	: 2.42 (25°C)
Particle characteristics	: Not applicable

9.2. Other information

Information with regard to physical hazard classes

Critical temperature : 26.14 °C

Other safety characteristics

VOC content : 100 %

SECTION 10: Stability and reactivity

10.1. Reactivity

Contains gas under pressure; may explode if heated.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

Danger of explosion on contact with : Metallic powders.

10.4. Conditions to avoid

Ignition sources. Heat or source of heat. Avoid contact with hot surfaces.

10.5. Incompatible materials

Strong oxidizing agents. alkali metals. Alkaline earth metals. Metallic powders. Powdered metallic salts.

10.6. Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified
Additional information	: Asphyxiating

Trifluoromethane (75-46-7)

LC50 Inhalation - Rat [ppm]	> 663000 ppm/4h
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Skin corrosion/irritation	: Not classified pH: Not applicable
Additional information	: Contact with the liquid the may cause cold burns/frostbite
Serious eye damage/irritation	: Not classified pH: Not applicable
Additional information	: Contact with the liquefied gas may cause severe ocular lesions

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Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified

Trifluoromethane (75-46-7)	
NOAEC (inhalation, rat, vapour, 90 days)	28634 mg/l/6h/day

Aspiration hazard : Not applicable

11.2. Information on other hazards

Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 12: Ecological information

12.1. Toxicity

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

Trifluoromethane (75-46-7)	
LC50 - Fish [1]	633.26 mg/l 96 Hours (Pimephales promelas)
EC50 - Crustacea [1]	323.05 mg/l 48 Hours (Daphnia magna)
EC50 96h - Algae [1]	154.54 mg/l (96 Hours)

12.2. Persistence and degradability

R-23 (75-46-7)

Persistence and degradability : Not established.

Trifluoromethane (75-46-7)

Persistence and degradability : Not readily biodegradable.

12.3. Bioaccumulative potential

Trifluoromethane (75-46-7)

Bioconcentration factor (BCF REACH)	3.2
Partition coefficient n-octanol/water (Log Pow)	0.84
Bioaccumulative potential	Bioaccumulation unlikely.

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Component	
Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	Trifluoromethane (75-46-7)

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Component	
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	Trifluoromethane (75-46-7)

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

12.7. Other adverse effects

Other adverse effects : ODP (R-11=1)=0.

R-23 (75-46-7)	
Other information	GWP (CO ₂ =1/100 years) = 14800




SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Do not allow product to spread into the environment.
Product/Packaging disposal recommendations : Refer to manufacturer or supplier for information on recovery or recycling. Return to the supplier. Destroy at an authorised site.
Additional information : The user's attention is drawn to the possible existence of specific european, national or local regulations regarding disposal.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA

ADR	IMDG	IATA
14.1. UN number or ID number		
UN 1984	UN 1984	UN 1984
14.2. UN proper shipping name		
TRIFLUOROMETHANE (REFRIGERANT GAS R 23)	TRIFLUOROMETHANE (REFRIGERANT GAS R 23)	Trifluoromethane
Transport document description		
UN 1984 TRIFLUOROMETHANE (REFRIGERANT GAS R 23), 2.2, (C/E)	UN 1984 TRIFLUOROMETHANE (REFRIGERANT GAS R 23), 2.2	UN 1984 Trifluoromethane, 2.2
14.3. Transport hazard class(es)		
2.2	2.2	2.2
		
14.4. Packing group		
Not applicable	Not applicable	Not applicable

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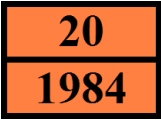
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ADR	IMDG	IATA
14.5. Environmental hazards		
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No EmS-No. (Fire): F-C EmS-No. (Spillage): S-V	Dangerous for the environment: No
No supplementary information available		

14.6. Special precautions for user

Overland transport

Classification code (ADR)	: 2A
Special provisions (ADR)	: 662
Limited quantities (ADR)	: 120ml
Tank code (ADR)	: PxBN(M)
Transport category (ADR)	: 3
Hazard identification number (Kemler No.)	: 20
Orange plates	: 

Tunnel restriction code (ADR)	: C/E
EAC code	: 2T

Transport by sea

Limited quantities (IMDG)	: 120 ml
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Air transport

PCA Limited quantities (IATA)	: Forbidden
PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: 200
PCA max net quantity (IATA)	: 75kg
CAO packing instructions (IATA)	: 200
CAO max net quantity (IATA)	: 150kg

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU-Regulations

Other information, restriction and prohibition regulations : * Regulation (EC) No 517/2014 : Greenhouse fluorinated gas falling within Kyoto Protocol.

REACH Annex XVII (Restriction List)

Not listed on REACH Annex XVII

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)

POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

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Ozone Regulation (2024/590)

Not listed on the Ozone Depletion list (Regulation EU 2024/590)

Council Regulation (EC) for the control of dual-use items

Contains no substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items

VOC Directive (2004/42)

VOC content : 100 %

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

National regulations

Ensure all national/local regulations are observed.

15.2. Chemical safety assessment

Not applicable.

SECTION 16: Other information

Indication of changes		
Section	Changed item	Comments
	Adverse health effects caused by endocrine disrupting properties	Added
	Classification code (RID)	Added
	Flash point (IMDG)	Removed
2.2	Precautionary statements (CLP)	Modified
3	Composition/information on ingredients	Modified
9	Molecular mass	Added
9	VOC content	Added
9	Melting point	Modified
9	Critical pressure	Modified
9	Vapour pressure	Modified
9.1	Critical temperature	Modified
12.2	Persistence and degradability	Added
12.6	Adverse effects on the environment caused by endocrine disrupting properties	Added
12.7	Other information	Added
14.6	Special provisions (ADN)	Added

Other information : For more information regarding the use of this product, please refer to our technical information or contact the sales department in your region.

Full text of H- and EUH-statements:

Press. Gas (Liq.)	Gases under pressure : Liquefied gas
H280	Contains gas under pressure; may explode if heated.

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Safety Data Sheet (SDS), EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.