

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

1.1. Product identifier

Product form	: Substance
Name	: R-744
Chemical name	: Carbon dioxide
EC-No.	: 204-696-9
CAS-No.	: 124-38-9
Product code	: 100174400
REACH registration exemptions	: Exempted from REACH registration Annex IV

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

Relevant identified uses

Use of the substance/mixture : Use as 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

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Contact with the liquid may cause frostbite and serious damage to eyes. Under certain temperature and pressure conditions may form a flammable mixture in the presence of air.

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.

2.3. Other hazards

Other hazards which do not result in classification : Asphyxiant in high concentrations. Contact with the liquid the may cause cold burns/frostbite.

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

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This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
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	Carbon dioxide (124-38-9)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	Carbon dioxide (124-38-9)

SECTION 3: Composition/information on ingredients

3.1. Substances

Name : R-744
CAS-No. : 124-38-9
EC-No. : 204-696-9

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Carbon dioxide	CAS-No.: 124-38-9 EC-No.: 204-696-9 REACH-no: Exempted Art 2(7)(a) - Annex IV (*)	100	Press. Gas (Liq.), H280

(*) REACH registration exemptions (full phrase explanation) See section 15

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 : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First-aid measures after skin contact : In the event of contact with the liquid: treat resulting frostbite as a burn. In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

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 : Ingestion is not considered a potential route of exposure.

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

Symptoms/effects : In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Disturbances of consciousness. Headache.

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.
Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Explosion hazard : Heating will cause a rise in pressure with a risk of bursting.

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5.3. Advice for firefighters

- Firefighting instructions : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems. If possible, stop flow of product. Use water spray or fog to knock down fire fumes if possible. Move containers away from the fire area if this can be done without risk.
- 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 : Try to stop release. Evacuate the danger area. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Act in accordance with local emergency plan. Stay upwind. Oxygen detectors should be used when asphyxiating gases may be released.
- No additional information available

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material for containment and cleaning up

- Other information : Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).

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 : Handle in accordance with good industrial hygiene and safety procedures. Do not breathe gas. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Take precautionary measures against static discharge. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Avoid suck back of water, acid and alkalis.
- 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 cool, well-ventilated area, at temperature not exceeding 50°C, away from any source of ignition. only in the original container. Keep/Store away from Incompatible materials.

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

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Carbon dioxide (124-38-9)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Carbon dioxide
IOEL TWA	9000 mg/m ³
	5000 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC
Ireland - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA	9000 mg/m ³
	5000 ppm
OEL STEL	27000 mg/m ³
	15000 ppm
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024
United Kingdom - Occupational Exposure Limits	
Local name	Carbon dioxide
WEL TWA (OEL TWA)	9150 mg/m ³
	5000 ppm
WEL STEL (OEL STEL)	27400 mg/m ³
	15000 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

8.2. Exposure controls

Appropriate engineering controls

Appropriate engineering controls:

Provide local exhaust or general room ventilation. Do not exceed the occupational exposure limits (OEL).

Personal protection equipment

Eye and face protection

Eye protection:

Safety glasses with side shields

Skin protection

Skin and body protection:

Majority cotton protective clothing. safety foot-wear

Hand protection:

cold-insulating gloves. Leather or nitrile-rubber protective 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.

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Appearance	: Press. Gas (Liq.).
Molecular mass	: 44.01 g/mol
Odour	: No odour warning properties.
Odour threshold	: Not available
Melting point	: -56.55 °C
Freezing point	: Not applicable
Boiling point	: Not available
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	: Not applicable.
Auto-ignition temperature	: Not available
Decomposition temperature	: Not applicable.
pH	: Not applicable
Viscosity, kinematic	: 61.928 mm ² /s
Viscosity, dynamic	: 0.044 Pa·s 10 ⁻³ (30°C)
Solubility	: Material highly soluble in water. Water: 0.2 g/l (20°C)
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: 57.29 bar (20°C)
Vapour pressure at 50°C	: Not available
Critical pressure	: 73.77 bar
Density	: 710.5 kg/m ³
Relative density	: 0.773
Relative vapour density at 20°C	: Not applicable
Relative gas density	: 1.52
Particle characteristics	: Not applicable

9.2. Other information

Information with regard to physical hazard classes

Critical temperature : 30.97 °C

Other safety characteristics

VOC content : 100 %

SECTION 10: Stability and reactivity

10.1. Reactivity

No information available.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

None under normal use.

10.4. Conditions to avoid

Prevent moisture contact.

10.5. Incompatible materials

Combustible materials.

10.6. Hazardous decomposition products

None.

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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	: Suffocation hazard by lack of oxygen
Skin corrosion/irritation	: Not classified
	pH: Not applicable
Additional information	: Contact with the liquid causes frostbite
Serious eye damage/irritation	: Not classified
	pH: Not applicable
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
Aspiration hazard	: Not applicable

R-744 (124-38-9)

Viscosity, kinematic	61.928 mm ² /s
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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
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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

12.2. Persistence and degradability

R-744 (124-38-9)

Persistence and degradability	Not established.
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Carbon dioxide (124-38-9)

Persistence and degradability	Rapidly degradable
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12.3. Bioaccumulative potential

Carbon dioxide (124-38-9)

Partition coefficient n-octanol/water (Log Kow)	0.83
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12.4. Mobility in soil

Carbon dioxide (124-38-9)

Ecology - soil	Highly volatile product.
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12.5. Results of PBT and vPvB assessment

R-744 (124-38-9)

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

Component

Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	Carbon dioxide (124-38-9)
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Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	Carbon dioxide (124-38-9)
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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.
Additional information : GWP (CO2=1/100 years) = 1





SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Refer to manufacturer or supplier for information on recovery or recycling. Dispose in a safe manner in accordance with local/national regulations.
Additional information : Do not discharge into any place where its accumulation could be dangerous.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / RID

ADR	IMDG	IATA	RID
14.1. UN number or ID number			
UN 1013	UN 1013	UN 1013	UN 1013
14.2. UN proper shipping name			
CARBON DIOXIDE	CARBON DIOXIDE	Carbon dioxide	CARBON DIOXIDE
Transport document description			
UN 1013 CARBON DIOXIDE, 2.2, (C/E)	UN 1013 CARBON DIOXIDE, 2.2	UN 1013 Carbon dioxide, 2.2	UN 1013 CARBON DIOXIDE, 2.2
14.3. Transport hazard class(es)			
2.2	2.2	2.2	2.2
			
14.4. Packing group			
Not applicable	Not applicable	Not applicable	Not applicable

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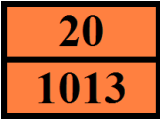

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ADR	IMDG	IATA	RID
14.5. Environmental hazards			
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No EmS-No. (Fire): F-C EmS-No. (Spillage): S-V	Dangerous for the environment: No	Dangerous for the environment: No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

14.6. Special precautions for user

Overland transport

Classification code (ADR)	: 2A
Special provisions (ADR)	: 378, 584, 653, 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

Special provisions (IMDG)	: 378
Limited quantities (IMDG)	: 120 ml

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
Special provisions (IATA)	: A202

Rail transport

Special provisions (RID)	: 378, 584, 653, 662
Transport category (RID)	: 3
Colis express (express parcels) (RID)	: CE3
Hazard identification number (RID)	: 20

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

REACH registration exemptions (full phrase explanation)	
Component name	REACH Registration exemption information
Carbon dioxide	This substance is exempted from Registration according to the provisions of Article 2(7)(a) and Annex IV of REACH

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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)

Not 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)

Ozone Regulation (1005/2009)

Not listed on the Ozone Depletion list (Regulation EU 1005/2009)

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

For this substance a chemical safety assessment is not required

SECTION 16: Other information

Indication of changes:

All chapters have been modified since the previous version.

Indication of changes		
Section	Changed item	Comments
	Issue date	Added
	Supersedes	Modified
	Revision date	Modified
9	Viscosity, dynamic	Added
9	VOC content	Added
9	Solubility in water	Modified
9	Melting point	Modified
9	Boiling point	Removed
9	Vapour pressure	Removed
9	Relative density	Removed
12.2	Persistence and degradability	Added

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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:

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

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.