

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH)
(EC) 2020/878



CARBON DIOXIDE

Version No. 4
Revision data :
30/04/2022
Issuing date: 01/03/2019

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name: *Carbon dioxide*, *Karbodinas*, *Carbon dioxide E290*, *Carbon dioxide R744*

Substance name: carbon dioxide.

Identification number: N/A

EC No.: 204-696-9

CAS No.: 124-38-9

REACH Registration No.: exempt from registration under Annex V to the Regulation (EC) No. 1907/2006.

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

1.2.1 Relevant identified uses: Carbon dioxide is used as an insufflation gas and as a cooling agent.

It can be used as an insufflation gas for minimal invasive surgery (laparoscopy, endoscopy, and arthroscopy) to enlarge and stabilize body cavities for better visibility of the surgical field.

in its liquid phase, it can be used to provide temperatures down to -76° C, for cryotherapy or for local analgesia by external application onto the skin surface.

Other medical applications include transient respiratory stimulation and encouragement of deep breathing and coughing to prevent or treat atelectasis.

1.2.2 Uses advised against: No

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer/Supplier: UAB Gaschema,

Address: Jonalaukio k. 1, Jonavos sav., Ruklos sen., LT 55259

Country: Republic of Lithuania

Telephone number: +370 349 56259

Website of the manufacturer/supplier: www.gaschema.lt.

Competent person responsible for the SDS: Z. Andriulaitienė, z.andriulaitiene@gaschema.lt

1.4 Emergency telephone number

Please contact: Poison Information and Control Office in the Republic of Lithuania by phone ++370 52362052, cell phone +370 687 53378, on site <http://www.apsinuodijau.lt/information-in-english/> or by the Common emergency Center by 112.

Helpdesk services work 24 hours a day, 365 days a year.

Other remarks (language in which assistance is provided): assistance is provided in Lithuanian.

Poison Control Centers in Europe are available on site <http://www.who.int/pcs/poisons/centre/directory/euro/en/>.

Telephone numbers of poison control centers in the European Economic Area: **IRELAND** (Dublin) +353 1 8379964; **AUSTRIA** (Vienna) +43 1 406 43 43; **BELGIUM** (Brussels) +32 70 245 245; **BULGARIA** (Sofia) +359 2 9154 409; **CZECH REPUBLIC** (Prah) +420 224 919 293; **DENMARK** (Copenhagen) 82 12 12 12; **ESTONIA** (Tallinn) 112; **GREECE** (Athens) +30 10 779 3777; **ICELAND** (Reykjavik) +354 525 111, +354 543 2222; **ITALY** (Rome) +39 06 305 4343; **LATVIA** (Ryga) +371 704 2468; **MALTA** (Valletta) 2425 0000; **NORWAY** (Oslo) 22 591300; **NETHERLANDS** (Bilthoven) +31 30 274 88 88; **FRANCE** (Paris) +33 1 40 0548 48; **FINLAND** (Helsinki) +358 9 471 977; **HUNGARY** (Budapest) 06 80 20 11 99; **GERMANY** (Berlin) +49 30 19240.

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Classification according to Regulation (EC) No 1272/2008:

Liquefied gas, H280 (for cylinders, cylinder packs only),

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Refrigerated liquefied gas, H281 (for isothermal, cryogenic vessels and tanks only)

2.1.2 Classification according to Directive 67/548/EEC: not classified as hazardous.

2.1.3 Additional information:

For full text of hazard statements: see Section 16.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008:



Signal word: Warning

Hazard statements:

H280 Contains gas under pressure; may explode if heated. (For cylinders, cylinder packs only)

H281 Contains refrigerated gas; may cause cryogenic burns or injury (for isothermal, cryogenic vessels and tanks only)

Precautionary statements:

P250 Do not subject to shock

P282: Wear cold insulating gloves/face shield/eye protection (for isothermal, cryogenic vessels and tanks only)

P336: Thaw frosted parts with lukewarm water. Do not rub affected area (for isothermal, cryogenic vessels and tanks only)

P315 Get immediate medical advice/attention (for isothermal, cryogenic vessels and tanks only)

P403 Store in a well ventilated place (for isothermal, cryogenic vessels and tanks only)

2.3 Other hazards

Carbon dioxide is an inorganic substance, and no PBT or vPvB assessment has been conducted according to Annex No. XIII of Regulation (EC) No. 1907/2006.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

The product is classified as elementary substance according to Regulation (EC) No. 1907/2006.

Identification of hazardous components

CAS No.	EC No.	REACH registration No.	Weight % content	Name	Classification according to Regulation (EC) No 1272/2008 [CLP / GHS] requirements
124-38-9	204-696-9	Exempt from registration pursuant to Annex V of Regulation (EC) No. 1907/2006.	99.9-99.95	Carbon dioxide	Liquefied gas H280 (for cylinders, cylinder packs only), Refrigerated liquefied gas H281 (for isothermal, cryogenic vessels and tanks only)

4. FIRST AID MEASURES

4.1 Description of first aid measures

Relevant routes of exposure:

Inhalation: remove the person affected with carbon dioxide to fresh air, provide oxygen, get medical attention.

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<p>Skin contact: <i>bind the frostbite affected areas with sterile dressing. Get medical attention.</i></p> <p>Eye contact: <i>rinse thoroughly with water. Get medical attention.</i></p> <p>Ingestion: <i>not required.</i></p> <p>4.2 Most important symptoms and effects, both acute and delayed <i>None known.</i></p> <p>4.3 Indication of any immediate medical attention and special treatment needed <i>None</i></p>
<p>5. FIREFIGHTING MEASURES</p> <p>5.1 Extinguishing media Suitable extinguishing media: <i>carbon dioxide is non-flammable</i> Extinguishing media, which must not be used for safety reasons: <i>none.</i> Unsuitable extinguishing media: <i>none</i></p> <p>5.2 Special hazards arising from the substance or mixture <i>None</i></p> <p>5.3 Advice for firefighters <i>Used insulating gas masks. EN 137 Respiratory protective devices, self-contained open-circuit compressed air breathing apparatus with full face mask- Requirements, testing, marking.</i> <i>EN 469 Protective clothing for firefighters. EN 659 Protective gloves for firefighters</i></p>
<p>6. ACCIDENTAL RELEASE MEASURES</p> <p>6.1 Personal precautions, protective equipment and emergency procedures. For non-emergency personnel: <i>Avoid contact with the product. Use personal protective equipment listed in Section 8.</i> <i>Ecological protection measures: none needed.</i> For emergency responders: <i>Avoid contact with the product. Use personal protective equipment listed in Section 8.</i></p> <p>6.2 Environmental precautions <i>None needed.</i></p> <p>6.3 Methods and material for containment and cleaning up. <i>None</i></p> <p>6.4 References to other sections <i>See Section 8 for personal protective equipment and Section 13 for waste disposal methods.</i></p>
<p>7. HANDLING AND STORAGE</p> <p>7.1 Precautions for safe handling Usage requirements and recommendations: <i>liquid carbon dioxide production and storage premises must be provided with supply-exhaust ventilation under the Lithuanian Technical Construction Regulation STR 2.09.02 "Heating, ventilation and air conditioning", and emergency ventilation.</i></p> <p>Storage requirements: <i>liquid carbon dioxide is stored in cylinders or isothermal tanks. Cylinders are stored in dedicated warehouses or enclosed sites covered with roof that protects the cylinders from exposure to atmospheric precipitations and direct sunlight.</i></p>

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Instructions on limit amount of the substance/preparation to be stored under the conditions specified: *no regulations apply.*

7.2 Conditions for safe storage, including any incompatibilities

Conditions for safe storage, including any incompatibilities: *no.*

Requirements to substance/preparation packages: *cylinders, isothermal tanks shall conform to the regulations on pressure vessels.*

7.3 Specific end use(s)

Carbon dioxide is used as an insufflation gas and as a cooling agent.

It can be used as an insufflation gas for minimal invasive surgery (laparoscopy, endoscopy, and arthroscopy) to enlarge and stabilize body cavities for better visibility of the surgical field. In its liquid phase, it can be used to provide temperatures down to -76° C, for cryotherapy or for local analgesia by external application onto the skin surface.

Other medical applications include transient respiratory stimulation and encouragement of deep breathing and coughing to prevent or treat atelectasis

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limit values: *long-term exposure limit value (LTELV)-9000 mg/m³ CO₂ according to the Lithuanian Hygiene Norm HN 23.*

8.2 Exposure controls

8.2.1 Appropriate engineering controls: *exhaust-supply ventilation*

8.2.2 Individual protection measures:

Eye/face protection: *goggles, organic glass shields.*

Skin protection: *work clothing.*

Hand protection: *gloves.*

Other: *thick cotton fabric suit (blazer, pants), special work footwear.*

Respiratory protection: *Not required.*

Thermal hazards: *Not required.*

8.2.3 Environmental exposure controls: *Not required.*

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance: *colourless, odourless liquid*

pH *Not relevant for liquefied gas*

Melting point/freezing point *-78.5 °C/ -57 °C*

Initial boiling point and boiling range: *-78.5°C*

Flash point: *non-flammable*

Flammability (gas): *non-flammable*

Explosive properties: *non-explosive*

Oxidising properties: *non-oxidising*

Vapour pressure: *569 mmHg*

Relative density: *761 kg/m³ (21.1°C, pressure 5.8 MPa)*

Solubility in water: *1.45 kg/m³*

Partition coefficient: n-octanol/water: *not relevant for inorganic gaseous substances*

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Viscosity: Vapour density: Evaporation rate, Viscosity	<i>0.07 cP at -78 °C</i> <i>not determined</i> <i>no data available</i> <i>Not relevant for gas</i>
9.2 Other information None	
10. STABILITY AND REACTIVITY	
10.1 Reactivity <i>Liquid carbon dioxide turns into gaseous carbon dioxide during evaporation.</i>	
10.2 Chemical stability <i>Liquid carbon dioxide turns into gaseous carbon dioxide during evaporation.</i>	
Need for and presence of stabilizers: <i>not required</i>	
10.3 Possibility of hazardous reactions <i>None.</i>	
10.4 Conditions to avoid <i>Protect from sunlight, store in a well-ventilated room, do not subject to shock.</i>	
10.5 Incompatible materials <i>None.</i>	
10.6 Hazardous decomposition products <i>Gaseous carbon dioxide</i>	
11. TOXICOLOGICAL INFORMATION	
11.1. Information on toxicological effects: nontoxic	
11.1.1. Acute toxicity: nontoxic	
11.1.2. Skin corrosion/irritation: not irritating	
11.1.3. Respiratory or skin sensitization: not sensitizing	
11.1.4. Germ cell mutagenicity: not characteristic	
11.1.5. Carcinogenicity: not characteristic	
11.1.6. Reproductive toxicity: nontoxic	
11.1.7. Specific target organ toxicity (STOT) (single exposure): nontoxic	
11.1.8. Specific target organ toxicity (STOT) (repeated exposure): nontoxic	
11.1.9. Aspiration hazard: none	
12. ECOLOGICAL INFORMATION	
12.1 Toxicity: <i>nontoxic</i>	
12.2 Persistence and degradability: <i>natural substance not degradable</i>	
12.3 Bioaccumulative potential: <i>not characterised by bioaccumulative properties.</i>	
12.4 Mobility in soil: <i>not determined</i>	
12.5 Results of PBT and vPvB assessment Inorganic substances are not subject to PBT or a vPvB assessment according to Annex XIII of Regulation (EC) No. 1907/2006.	
12.6 Other adverse effects: <i>None.</i>	

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13. DISPOSAL CONSIDERATIONS

Requirements: *do not dispose into environment.*

13.1 Waste treatment methods

General methods: *Do not discharge into any place where its accumulation could be dangerous. Vent to atmosphere in a well ventilated place.*

Disposal methods: *Refer to the EIGA code of practice (Doc. 30 “Disposal of Gases” downloadable at <http://www.eiga.org>) for more guidance on suitable disposal methods. Dispose of container supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.*

European Waste Codes

Container: *16 05 05: Gases in pressure containers other than those mentioned in 16 05 04.*

Methods of disposal of packaging contaminated with substance/preparation waste (incineration, recycling, landfilling, etc.): *not required*

14. TRANSPORT INFORMATION

14.1 UN number

1013 (for cylinders and cylinder packs only)

2187 (for isothermal, cryogenic vessels and tanks only)

14.2 UN proper shipping name

Carbon dioxide

Carbon dioxide, refrigerated, liquid

14.3 Transport hazard class(es)

2

14.4 Packing group

Not applicable

14.5 Dangerous cargo code:

20 Carbon dioxide

22 Carbon dioxide, refrigerated, liquid

14.6 Special precautions for use

Liquid carbon dioxide in cylinders and isothermal tanks may be transported by all transport modes in accordance with the rules applicable to the cargo carried under the respective transport mode.

Cylinders containing liquid carbon dioxide shall be transported horizontally and separated by partitions, or vertically in special containers with mandatory protection from tipping over.

Commercially sold liquid carbon dioxide not exceeding 1000 kg per transport unit is subject to partial exemption from Requirements under section 1.1.3.6.3 of Restructured ADR of 2001.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code.

Not applicable

15. REGULATORY INFORMATION

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

Normative legislation governing substance/preparation classification, labelling, usage restrictions, occupational safety and health requirements, occupational limit values, waste treatment, etc.:

- Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ L 353, Volume 51, 31.12.2008).

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

- Commission Regulation (EU) No 453/2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

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- Regulation (EC) No. 852/2004 of the European Parliament and of the Council on the Hygiene of Foodstuffs.
- Commission Regulation (EU) No 231/2012 laying down specifications for food additives listed in Annexes II and III to Regulation (EC) No 1333/2008 of the European Parliament and of the Council.
- Lithuanian Hygiene Norm HN 23 "Occupational Exposure Limit Values of Chemical Substances". General Requirements for Exposure Measurement and Assessment.
- Effective Regulations on Employee Protection Against Exposure to Chemical Factors in the Workplace and Regulations on Employee Protection Against Exposure to Carcinogenic and Mutagenic Effects in the Workplace.
- Lithuanian Hygiene Norm HN 36 "Prohibited and Restricted Substances".
- Effective Law on Waste Handling of the Republic of Lithuania.
- Effective Regulations on Waste Handling.
- Effective Regulations for Labelling and Price Indication of the Items (Goods) Sold in the Republic of Lithuania.
- Effective Company Standard IST IST 304434538-01 ,
- Effective "Temporary seamless cylinder usage rules".
- European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).
- Regulation concerning the International Carriage of Dangerous Goods by Rail (RID).
- International Maritime Dangerous Goods Code (IMDG);
Additional information indicated in the label of the substance packaging (container):
15.2 Chemical safety assessment Carbon dioxide is subject to exemption and not registered according to Annex No. V of Regulation (EC) No. 1907/2006, and no chemical safety assessment has been conducted.

16. OTHER INFORMATION

Explanation of abbreviations and acronyms used:

H280: Contains gas under pressure; may explode if heated.

H281: Contains refrigerated gas; may cause cryogenic burns or injury.

P250: Do not subject to shock.

P282: Wear cold insulating gloves/face shield/eye protection.

P336: Thaw frosted parts with lukewarm water. Do not rub affected area.

P315: Get immediate medical advice/attention.

P403: Store in a well-ventilated place.

ADR: Agreement concerning the International Carriage of Dangerous Goods by Road.

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail.

SMGS: Agreement on International Goods Transport by Rail.

Data contained in this Safety Data Sheet must be readily available to all persons whose work involves handling of the substance, preparation. The data provided are correct to the best of our knowledge and are intended to describe the substance in terms of occupational safety and health, environmental protection. The Safety Data Sheet will be updated as soon as new information on the health-related and environmental effect of exposure to the substance, preventive measures on elimination or avoidance of hazards becomes available. The information provided in this Safety Data Sheet is not to be considered specification of other properties of the substance, preparation.

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The end of Safety Data Sheet

UAB Gaschema, General Director

V. Vareika

Approved by:

UAB Gaschema Head of Quality

Z. Andriulaitiene