

Trade name: R744**Product no.:** R744**Current version :** 3.0.0, issued: 07.11.2022**Replaced version:** 2.0.1, issued: 10.05.2021**Region:** GB**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier****Trade name****R744**Substance name
JustificationCarbon dioxide
exempted from registration in accordance with Article 2 (7) of Regulation (EC) No 1907/2006 (REACH).**Identification numbers**CAS no. 124-38-9
EC no. 204-696-9**1.2 Relevant identified uses of the substance or mixture and uses advised against****Relevant identified uses of the substance or mixture**Industrial Use
Professional use
Consumer use
Chemical synthesis
Formulation of mixturesAerosol
Propellant
Protective gas during welding
Carrier gas, inert gas, calibration gas
Process gas, auxiliary gas, test gas
Food processing industry
Burning, melting and cutting processes
Use in laboratories
Use in printing systems
Extinguishant
Refrigerant**Uses advised against**

No data available.

1.3 Details of the supplier of the safety data sheet**Address**TEGA - Technische Gase und Gasetechnik GmbH
Werner-von-Siemens-Straße 18
97076 WürzburgTelephone no. +49 931 2093-220
Fax no. +49 931 2093-180
e-mail kaeltemittel@tega.de**Advice on Safety Data Sheet**

sdb_info@umco.de

1.4 Emergency telephone numberFor medical advice (in German and English):
+49 (0)551 192 40 (Giftinformationszentrum Nord)**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****Classification in accordance with Regulation (EC) No 1272/2008 (CLP)**

Press. Gas liq.; H280

Classification information

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This product is assessed and classified using the methods and criteria below referred to in Article 9 of Regulation (EC) n° 1272/2008:

Physical hazards: determined through assessment data based on the methods or standards referred to in part 2 of Annex I to CLP

Health hazards and environmental hazards: determined through toxicological and ecotoxicological assessment data based on the methods or standards referred to in Part 3 and 4 of Annex I to CLP.

2.2 Label elements

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

Product identifier

124-38-9 (carbon dioxide)

Hazard pictograms



GHS04

Signal word

Warning

Hazard statement(s)

H280 Contains gas under pressure; may explode if heated.

Precautionary statement(s)

P403 Store in a well-ventilated place.

Supplemental label elements

Asphyxiating in high concentrations!

Contact with the evaporating liquid can lead to frostbite of the skin.

Wear protective gloves with cold insulation and additionally history shield or eye protection

Use only according to safety data sheet.

Refilling prohibited.

2.3 Other hazards

PBT assessment

The product is not considered to be a PBT.

vPvB assessment

The product is not considered to be a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical characterization

Substance name Carbon dioxide

Formula CO₂

Molecular weight 44.01

Identification numbers

CAS no. 124-38-9

EC no. 204-696-9

Other information

| Note | Specific concentration limits | M-factor (acute) | M-factor (chronic) |
|------|-------------------------------|------------------|--------------------|
| U | - | - | - |

Full text for the notes: pls. see section 16 "Notes relating to the identification, classification and labelling of substances ((EC) No 1272/2008, Annex VI)".

3.2 Mixtures

Not applicable. The product is not a mixture.

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In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Remove affected person from danger area, lay him down. Seek medical advice immediately.

After inhalation

Remove affected persons from dangerous area by observing suitable respiratory protection measures. Ensure supply of fresh air. Irregular breathing/no breathing: artificial respiration. Call a doctor immediately.

After skin contact

In case of contact with skin wash off immediately with soap and water. In case of frostbite, rinse with plenty of water. Do not remove clothing.

After eye contact

Remove contact lenses. Rinse eye thoroughly under running water keeping eyelids wide open and protecting the unaffected eye (at least 10 to 15 minutes).

After ingestion

Rinse the mouth thoroughly with water. Do not induce vomiting. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed**Symptoms**

Shortness of breath; respiratory arrest. Frostbite; Unconsciousness; Asphyxiating in high concentrations

4.3 Indication of any immediate medical attention and special treatment needed

Thaw frosted parts with lukewarm water. Do not rub affected area. Get medical attention immediately.

SECTION 5: Firefighting measures**5.1 Extinguishing media****Suitable extinguishing media**

Extinguishing measures to suit surroundings.

Unsuitable extinguishing media

High power water jet

5.2 Special hazards arising from the substance or mixture

The product is not flammable. Liquefied gas: Spilled liquid can cause cold burns. This gas is heavier than air and may accumulate in low areas.

5.3 Advice for firefighters

Use self-contained breathing apparatus. Wear full protective suit. Containers close to fire should be transferred to a safe place. Cool closed containers exposed to fire with water. Pressure increase, bursting and explosion hazard during heating. Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures****For non-emergency personnel**

Refer to protective measures listed in sections 7 and 8. Ensure adequate ventilation. Keep away from ignition sources. Do not breathe gas. Cordon and mark contaminated area. Remove persons to safety. Ensure adequate ventilation.

For emergency responders

No data available. Personal protective equipment (PPE) - see Section 8.

6.2 Environmental precautions

Avoid release in the environment. Suppress gases/vapours/mists with water spray jet.

6.3 Methods and material for containment and cleaning up

Ensure adequate ventilation. Dispose of absorbed material in accordance with the regulations.

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6.4 Reference to other sections

Information regarding safe handling, see section 7. Information regarding personal protective measures, see section 8. Information regarding waste disposal, see section 13.

SECTION 7: Handling and storage**7.1 Precautions for safe handling****Advice on safe handling**

Only qualified and trained persons are authorised to handle. Provide good ventilation at the work area (local exhaust ventilation, if necessary). To be used only according to instructions for use. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose containers heat or sources of ignition. In case of accidental release: danger due to low temperature of the liquid product. The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Keep container tightly closed. Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Comply with the health and safety at work laws.

General protective and hygiene measures

Wash hands before breaks and after work. Do not inhale gases. Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Have emergency shower available.

Advice on protection against fire and explosion

Pay attention to general rules of internal fire prevention. The product is not combustible. Heating up leads to increase of pressure - danger of bursting.

7.2 Conditions for safe storage, including any incompatibilities**Technical measures and storage conditions**

Keep container tightly closed in a cool, well-ventilated place, open and handle carefully. Protect from heat and direct sunlight.

Recommended storage temperature

Value < 50 °C

Requirements for storage rooms and vessels

Containers which are opened must be carefully closed and kept upright to prevent leakage. Always keep in containers of same material as the original.

Incompatible products

Do not store together with: combustible materials; oxidizing agents; oxidizing substances; explosive substances

7.3 Specific end use(s)

No data available.

SECTION 8: Exposure controls/personal protection**8.1 Control parameters****Occupational exposure limit values**

| No | Substance name | CAS no. | EC no. |
|----|---|-------------------------|-----------|
| 1 | carbon dioxide | 124-38-9 | 204-696-9 |
| | 2006/15/EC | | |
| | Carbon dioxide | | |
| | WEL long-term (8-hr TWA reference period) | 9000 mg/m ³ | 5000 ppm |
| | List of approved workplace exposure limits (WELs) / EH40 | | |
| | Carbon dioxide | | |
| | WEL short-term (15 min reference period) | 27400 mg/m ³ | 15000 ppm |
| | WEL long-term (8-hr TWA reference period) | 9150 mg/m ³ | 5000 ppm |

8.2 Exposure controls

Appropriate engineering controls

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Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL (=Occupational Exposure Limit), suitable respiratory protection must be worn.

Personal protective equipment**Respiratory protection**

Self-contained breathing apparatus. In case of insufficient ventilation or long-term effect use breathing apparatus.

Eye / face protection

Tightly fitting safety glasses (EN 166). Face shield

Hand protection

Low-temperature-resistant gloves (EN 511). Sufficient protection is given wearing suitable protective gloves checked according to i.e. EN 374, in the event of risk of skin contact with the product. Before use, the protective gloves should be tested in any case for its specific work-station suitability (i.e. mechanical resistance, product compatibility and antistatic properties). Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Protective gloves shall be replaced immediately when physically damaged or worn. Design operations thus to avoid permanent use of protective gloves.

Other

Chemical-resistant work clothes. Protective shoes.

Environmental exposure controls

Information regarding waste disposal, see chapter 13.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties**

| | |
|--|--------------------|
| State of aggregation | |
| gas | |
| Form | |
| liquified gas | |
| Colour | |
| colourless | |
| Odour | |
| odourless | |
| pH value | |
| Value | 3.2 - 3.7 |
| Reference substance | Saturated solution |
| Boiling point / boiling range | |
| Value | -78.5 °C |
| Melting point/freezing point | |
| Value | -56.6 °C |
| Sublimation point / sublimation range | |
| Value | -78.5 °C |
| Decomposition temperature | |
| No data available | |
| Flash point | |
| No data available | |
| Ignition temperature | |
| No data available | |
| Oxidising properties | |
| Not applicable | |
| Flammability | |

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| |
|---------------------------------|
| The product is not combustible. |
|---------------------------------|

Lower explosion limit

| |
|----------------|
| Not applicable |
|----------------|

Upper explosion limit

| |
|----------------|
| Not applicable |
|----------------|

Vapour pressure

| | | |
|-----------------------|------|-----|
| Value | 45.1 | bar |
| Reference temperature | 10 | °C |

Relative vapour density

| | |
|-----------------------|---------|
| Value | 1.522 |
| Reference temperature | 21 °C |
| Comments | Air = 1 |

Relative density

| | |
|-----------------------|----------|
| Value | 1.512 |
| Reference temperature | -56.6 °C |

Density

| |
|-------------------|
| No data available |
|-------------------|

Solubility in water

| | |
|----------|---------|
| Comments | soluble |
|----------|---------|

Solubility

| |
|-------------------|
| No data available |
|-------------------|

Partition coefficient n-octanol/water (log value)

| |
|-------------------|
| No data available |
|-------------------|

Kinematic viscosity

| | | |
|-----------------------|---------|-------|
| Value | 0.07 | mPa*s |
| Reference temperature | 20 | °C |
| Type | dynamic | |

Particle characteristics**9.2 Other information****Other information**

| |
|-------------------------------|
| Critical Temperature: 31,0 °C |
|-------------------------------|

SECTION 10: Stability and reactivity**10.1 Reactivity**

Dangerous reactions are not expected if the product is handled according to its intended use.

10.2 Chemical stability

Stable under recommended storage and handling conditions (See section 7).

10.3 Possibility of hazardous reactions

No data available.

10.4 Conditions to avoid

No data available.

10.5 Incompatible materials

No data available.

10.6 Hazardous decomposition products

None, if handled according to intended use.

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No data available

Acute dermal toxicity

No data available

Acute inhalational toxicity

No data available

Skin corrosion/irritation

No data available

Serious eye damage/irritation

No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Reproduction toxicity

No data available

Carcinogenicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Information on other hazards**Endocrine disrupting properties**

No data available.

Other information

No data available.

SECTION 12: Ecological information**12.1 Toxicity****Toxicity to fish (acute)**

No data available

Toxicity to fish (chronic)

No data available

Toxicity to Daphnia (acute)

No data available

Toxicity to Daphnia (chronic)

No data available

Toxicity to algae (acute)

No data available

Toxicity to algae (chronic)

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No data available

Bacteria toxicity

No data available

12.2 Persistence and degradability**Physico-chemical eliminability**

Comments

The product is highly volatile and can be largely eliminated from the water by stripping.

12.3 Bioaccumulative potential**Bioconcentration factor (BCF)**

Comments

Not relevant for inorganic substances.

12.4 Mobility in soil**Mobility in soil**

Comments

The product is highly volatile.

12.5 Results of PBT and vPvB assessment**Results of PBT and vPvB assessment**

PBT assessment

The product is not considered to be a PBT.

vPvB assessment

The product is not considered to be a vPvB.

12.6 Endocrine disrupting properties

No data available.

12.7 Other adverse effects**Other adverse effects**

global warming potential: 1

May contribute to the greenhouse effect in larger quantities in the case of a gas emanation.

SECTION 13: Disposal considerations**13.1 Waste treatment methods****Product**

dispose of in accordance with local regulation.

Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Packaging

Compressed gas packaging under pressure. Do not open by force. Do not heat above 50°C. Dispose of compressed gas packagings only if completely discharged. Do not burn empty compressed gas packagings. Do not pierce, cut or weld uncleaned containers.

SECTION 14: Transport information**14.1 Transport ADR/RID/ADN**

| | |
|---------------------------|----------------|
| Class | 2 |
| Classification code | 2A |
| Hazard identification no. | 20 |
| UN number | UN1013 |
| Proper shipping name | CARBON DIOXIDE |
| Tunnel restriction code | C/E |
| Label | 2.2 RID: (+13) |

14.2 Transport IMDG

| | |
|----------------------|----------------|
| Class | 2.2 |
| UN number | UN1013 |
| Proper shipping name | CARBON DIOXIDE |
| EmS | F-C, S-V |
| Label | 2.2 |

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14.3 Transport ICAO-TI / IATA

| | |
|----------------------|----------------|
| Class | 2.2 |
| UN number | UN1013 |
| Proper shipping name | Carbon dioxide |
| Label | 2.2 |

14.4 Other information

No data available.

14.5 Environmental hazards

Information on environmental hazards, if relevant, please see 14.1 - 14.3.

14.6 Special precautions for user

To be transported always in closed, upright and safe containers. Make sure that persons handling these containers are aware of the rules of conduct in case of incident or spillage.

14.7 Maritime transport in bulk according to IMO instruments

Not relevant

SECTION 15: Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulations****Regulation (EC) No 1907/2006 (REACH) Annex XIV (List of substances subject to authorisation)**

In accordance with the REACH regulation (EC) 1907/2006, the product does not contain any substances that are considered as subject to listing in annex XIV, inventory of substances requiring authorisation.

REACH candidate list of substances of very high concern (SVHC) for authorisation

In accordance with article 57 and article 59 of the Reach regulation (EC) 1907/2006, this substance is not considered as subject to listing in annex XIV, inventory of substances requiring authorisation ("Authorization list").

Regulation (EC) No 1907/2006 (REACH) Annex XVII: RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, MIXTURES AND ARTICLES

The substance is not subject to the provisions of annex XVII (restriction entries) of the Reach regulation (EC) 1907/2006.

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances

This substance is not subject to Part 1 or 2 of Annex I

Other regulations

Adhere to the national sanitary and occupational safety regulations when using this product.

15.2 Chemical safety assessment

A chemical safety assessment has not been carried out for this substance.

SECTION 16: Other information**Sources of key data used to compile the data sheet:**

Regulation (EC) No 1907/2006 (REACH), 1272/2008 (CLP) as amended in each case.

Directives 2000/39/EC, 2006/15/EC, 2009/161/EU, (EU) 2017/164.

National Threshold Limit Values of the corresponding countries as amended in each case.

Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.

The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding section.

Notes relating to the identification, classification and labelling of substances and mixtures ((EC) No 1272/2008, Annex VI)

U

When put on the market gases have to be classified as 'Gases under pressure', in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case.

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Creation of the safety data sheet

UMCO GmbH

This information is based on our present knowledge and experience.

The safety data sheet describes products with a view to safety requirements.

It does not however, constitute a guarantee for any specific product properties and shall not establish a legally valid contractual relationship.

Alterations/supplements:

Alterations to the previous edition are marked in the left-hand margin.

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Prod-ID 754290