

Carbon dioxide

Print date 10.06.2024
Revision date 10.06.2024
Version 8.0 (en)
replaces version of 06.08.2020 (7.0)

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

1.1 Product identifier

Trade name/designation Carbon dioxide
Art-Nr(n). 3200, 3204, 0069
Substance name Carbon dioxide
EC No 204-696-9
REACH No. -
CAS No 124-38-9

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

* **Use of the substance/mixture**

Basic substance
Cover gas.
Refrigerant
Test gas
Extraction agents

* **1.3 Details of the supplier of the safety data sheet**

Supplier

GHC Gerling, Holz & Co. Handels GmbH
Ruhrstraße 113
D-22761 Hamburg
Telephone +49 40 853 123 0
E-mail hamburg@ghc.de
Website www.ghc.com

Department responsible for information:
GHC Gerling, Holz & Co. Handels GmbH
Telephone +49 40 853 123 0

E-mail (competent person):
msds@ghc.de

* **1.4 Emergency telephone number**

EN: Poison Information Center Mainz +49 6131 19240

* **SECTION 2: Hazards identification**

* **2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [CLP] Classification procedure
Press. Gas (Liq.), H280

Hazard statements for physical hazards

H280 Contains gas under pressure; may explode if heated.

* **2.2 Label elements**

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

Hazard pictograms



GHS04

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Signal word

Warning

Hazard statements

H280 Contains gas under pressure; may explode if heated.

Precautionary statements

P403 Store in a well-ventilated place.

- * **Supplemental hazard information**
 EIGA0357 Asphyxiant in high concentrations.
 Please return container with residual pressure.

* **2.3 Other hazards*** **Adverse human health effects and symptoms**

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
 Contact with liquid may cause cold burns/frostbite.

* **Other adverse effects**

The substance/mixture does not contain components identified as having endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605 in quantities of 0.1% or more.

* **Results of PBT and vPvB assessment**

The substance/mixture does not contain components meeting the PBT/vPvB criteria of the Reach Regulation, Annex XIII, at levels of 0.1% or higher.

* **SECTION 3: Composition / information on ingredients****3.1 Substances**

| | |
|-----------------------|----------------|
| Substance name | Carbon dioxide |
| EC No | 204-696-9 |
| REACH No. | - |
| CAS No | 124-38-9 |

* **Additional information**

Content: >= 99,9 %

Remark

The substance does not require registration according to Article 2 (7) in conjunction with Annex IV / V of the Regulation (EC) No 1907/2006 [REACH].

* **3.2 Mixtures**

not applicable

* **SECTION 4: First aid measures*** **4.1 Description of first aid measures*** **General information**

Remove contaminated, saturated clothing immediately.
 In the event of persistent symptoms obtain medical treatment.
 First aider: Pay attention to self-protection!

Following inhalation

Remove casualty to fresh air and keep warm and at rest.
 In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Obtain medical assistance.

* **Following skin contact**

In case of skin contact rinse with warm water.
 In case of frostbite, wash with plenty of water; do not remove clothing.
 In case of frostbite rinse with lukewarm (not hot) water for at least 15 minutes. Do not remove clothing frozen to the skin.
 Thaw with lukewarm water. Apply a sterile dressing. Obtain medical assistance.

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- * **After eye contact**
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical assistance.

Following ingestion

Ingestion is not considered a potential route of exposure.

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

- * **Symptoms**
Headache
Unconsciousness
Cardiopulmonary arrest.

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor

Treat symptomatically.

- * **SECTION 5: Firefighting measures**

- * **5.1 Extinguishing media**

- * **Suitable extinguishing media**
The product itself does not burn. The product itself does not burn. Match extinguishing measures to surrounding fire.
Extinguishing powder
alcohol resistant foam
Water spray jet

Unsuitable extinguishing media

Full water jet

- * **5.2 Special hazards arising from the substance or mixture**

- * **Hazardous combustion products**
none

- * **5.3 Advice for firefighters**

- * **Special protective equipment for firefighters**
Wear a self-contained breathing apparatus and chemical protective clothing.

- * **Additional information**

If possible, shut off gas valves and move containers to a safe location.
Use water spray jet to protect personnel and to cool endangered containers.
Exposure to fire may cause rupture / explosion of the containers.
Dispose of fire residues and contaminated extinguishing water in accordance with local, official regulations.

- * **SECTION 6: Accidental release measures**

- * **6.1 Personal precautions, protective equipment and emergency procedures**

- * **For non-emergency personnel**
Use personal protection equipment.
Leave the danger area.
Keep people away and stay on the upwind side.

- * **For emergency responders**
Personal protection by wearing close-fitting protective clothing and breathing apparatus.
Pay attention to extension of gas especially at ground (heavier than air) and in direction of the wind.
Remove persons to safety.

- * **6.2 Environmental precautions**

If possible, stop flow of product.
Do not allow to enter into soil/subsoil.
Do not allow to enter into surface water or drains.

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* 6.3 Methods and material for containment and cleaning up

- * **For containment**
If necessary, secure leaky pressure receptacles using a salvage container.
Prevent the liquid from spreading over a wide area (set up barriers, cover sewage systems).
Limit expansion of the gas (water spray jet).
- * **For cleaning up**
Leave to vapourize.
Provide adequate ventilation.

* 6.4 Reference to other sections

Disposal: see section 13
Personal protection equipment: see section 8

* SECTION 7: Handling and storage

* 7.1 Precautions for safe handling

- * **Protective measures**
Use only in well-ventilated areas.
Transfer and handle product only in closed systems.
Usual measures for fire prevention.
Containers' temperature should not be increased above 50 °C.
The working pressure in the receptacle must not exceed the saturation vapour pressure of the pure product resulting at a temperature of 50 °C.
Prevent cylinders from falling over.
Ensure valve protection device is correctly fitted.
Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
Open valve slowly to avoid pressure shock.
Do not allow backflow into the container.
Entering of water into the container must be prevented.
No water to valves, flanges and other fittings.
Purging of pipes and valves with inert gases - to avoid: water, solvents.
- * **Advices on general occupational hygiene**
When using do not eat, drink, smoke, sniff.
Wash hands before breaks and after work.
Remove contaminated clothing and protective equipment before entering eating areas.

* 7.2 Conditions for safe storage, including any incompatibilities

- * **Requirements for storage rooms and vessels**
All regulations and local requirements for the storage of containers have to be respected.
Keep container tightly closed and in a well-ventilated place.
Containers' temperature should not be increased above 50 °C.
Prevent cylinders from falling over.
Only use containers specifically approved for the substance/product.
Information on suitable materials for receptacles and valves see ISO 11114.
- * **Materials to avoid**
Do not store together with explosives.
Do not store together with flammable liquids.
Do not store together with flammable solids.
Do not store together with pyrophoric and self-heating substances.
Do not store together with oxidizing liquids or oxidizing solids.
Do not store together with toxic liquids or toxic solids.
Do not store together with infectious substances.
Do not store together with radioactive material.
Do not store together with food or feed.

* 7.3 Specific end use(s)

- * **Recommendation**
See section 1.2
An exposure scenario is not required.

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

| CAS No | EC No | Substance name | occupational exposure limit value |
|----------|-----------|----------------|--|
| 124-38-9 | 204-696-9 | Carbon dioxide | 5000 [ml/m ³ (ppm)] 9000 [mg/m ³] (1) 15 minutes reference period (IE) |

* **8.2 Exposure controls****Appropriate engineering controls****Technical measures to prevent exposure**

Transfer and handle only in enclosed systems.

* **Personal protection equipment****Eye/face protection**

Protective goggles according to EN 166, in case of increased risk add protective face shield.

* **Hand protection**

Safety gloves according to EN 388:
Chromate-free leather

Body protection:

Safety shoes with steel toecap.
Body covering work clothing or chemical resistant suit at increased risk.

* **Respiratory protection**

Keep self contained breathing apparatus readily available for emergency use.

Respiratory protection necessary at:

high concentrations

Respiratory protection complying with EN 137.

Do not use any filter apparatus.

In case of rescue and maintenance activities in storage containers use environment-independent breathing apparatus because of risk of suffocation due to displacement of oxygen.

* **Thermal hazards**

Use cold-resistant protective equipment.

* **Environmental exposure controls*** **Remark**

Prevent release to the environment.

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

Refrigerated liquefied gas

Colour

colourless

Odour

odourless

Safety relevant basis data

| | Value | Method | Source, Remark |
|--|----------|--------|-------------------|
| Odour threshold: | | | not applicable |
| Melting point/freezing point | | | not applicable |
| Boiling point or initial boiling point and boiling range | -78.5 °C | | Sublimation point |
| flammability | | | not determined |

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| | Value | Method | Source, Remark |
|---|---------------------------|--------|----------------|
| Lower and upper explosion limit | Upper explosion limit | | not determined |
| Lower and upper explosion limit | Lower explosion limit | | not determined |
| Flash point | | | not applicable |
| Auto-ignition temperature | | | not determined |
| Decomposition temperature | | | not determined |
| pH | | | not applicable |
| Viscosity | | | not applicable |
| Solubility(ies) | Water solubility 2 g/L | | |
| Partition coefficient n-octanol/water (log value) | 0.83 | | |
| Vapour pressure | 57.3 bar (20°C) | | |
| Density and/or relative density | | | not applicable |
| Relative vapour density | 1.53 | | |
| particle characteristics | | | not applicable |

*** 9.2 Other information***** Information with regard to physical hazard classes***** Gases under pressure****Safety characteristics**

| | Value | Method, Result | Source, Remark |
|----------------------|-------|----------------|----------------|
| Critical temperature | 31 °C | | |

*** Other information**

Vapours are heavier than air.

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

See section "Possibility of hazardous reactions".

*** 10.2 Chemical stability**

The substance is chemically stable under recommended conditions of storage, use and temperature.

*** 10.3 Possibility of hazardous reactions**

Reactions with strong alkalis.
 Reactions with alkali metals.
 Reactions with peroxides.
 Reactions with amines.

*** 10.4 Conditions to avoid**

Heat sources / heat - risk of bursting.
 Ignition sources, open flames, glowing metal surfaces, etc.

*** 10.5 Incompatible materials**

Ammonia
 Powdered metals
 Water

10.6 Hazardous decomposition products

When handled and stored appropriately, no dangerous decomposition products are known.

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* **SECTION 11: Toxicological information**

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

* **Acute toxicity**

* **Animal data**

| | Effective dose | Method,Evaluation | Source, Remark |
|---------------------------|----------------|-------------------|----------------|
| Acute oral toxicity | not determined | | |
| Acute dermal toxicity | not determined | | |
| Acute inhalation toxicity | not determined | | |

* **Assessment/classification**
No data available

* **Skin corrosion/irritation**

* **Other information**
Study technically not feasible.

* **Serious eye damage/irritation**

* **Other information**
Study technically not feasible.

* **Sensitisation to the respiratory tract**

* **Assessment/classification**
No data available

* **Skin sensitisation**

* **Other information**
Study technically not feasible.

* **Germ cell mutagenicity**

* **Assessment/classification**
No data available

* **Carcinogenicity**

* **Assessment/classification**
No data available

* **Reproductive toxicity**

* **Assessment/classification**
No data available

* **STOT-single exposure**

* **STOT SE 1 and 2**

* **Assessment/classification**
No data available

* **STOT-repeated exposure**

* **Assessment/classification**
No data available

* **Aspiration hazard**

* **Assessment/classification**
Study technically not feasible.

11.2 Information on other hazards

No data available

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*** SECTION 12: Ecological information***** 12.1 Toxicity***** Aquatic toxicity**

| | Effective dose | Method, Evaluation | Source, Remark |
|---|----------------|--------------------|----------------|
| Acute (short-term) fish toxicity | not determined | | |
| Chronic (long-term) fish toxicity | not determined | | |
| Acute (short-term) toxicity to crustacea | not determined | | |
| Chronic (long-term) toxicity to aquatic invertebrate | not determined | | |
| Acute (short-term) toxicity to algae and cyanobacteria | not determined | | |
| Chronic (long-term) toxicity to aquatic algae and cyanobacteria | not determined | | |
| Toxicity to other aquatic plants/organisms | not determined | | |
| Toxicity to microorganisms | not determined | | |

*** 12.2 Persistence and degradability**

No data available

*** 12.3 Bioaccumulative potential***** Assessment/classification**

No data available

*** 12.4 Mobility in soil**

No data available

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

The substance/mixture does not contain components meeting the PBT/vPvB criteria of the Reach Regulation, Annex XIII, at levels of 0.1% or higher.

*** 12.6 Endocrine disrupting properties**

No data available

*** 12.7 Other adverse effects**

| | Value | Method | Source, Remark |
|----------------------------------|-------|--------|----------------|
| Ozone depletion potential (ODP): | 0 | | |
| Global warming potential (GWP) | 1 | | |

*** SECTION 13: Disposal considerations***** 13.1 Waste treatment methods****Waste codes/waste designations according to EWC/AVV**

| Waste code product | Waste name |
|--------------------|---|
| 160505 | gases in pressure containers other than those mentioned in 16 05 04 |

*** Appropriate disposal / Product**

Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.
 Prevent release to the environment. No disposal via the sewage.

Appropriate disposal / Package

Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

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SECTION 14: Transport information

| | Land transport (ADR/RID) | Sea transport (IMDG) | Air transport (ICAO-TI / IATA-DGR) |
|--|--------------------------|----------------------|------------------------------------|
| 14.1 UN number or ID number | UN 1013 | UN 1013 | UN 1013 |
| 14.2 UN proper shipping name | CARBON DIOXIDE | CARBON DIOXIDE | Carbon dioxide |
| 14.3 Transport hazard class(es) | 2.2 | 2.2 | 2.2 |
| 14.4 Packing group | - | - | - |
| 14.5 Environmental hazards | No | No | No |

14.6 Special precautions for user

No data available

14.7 Maritime transport in bulk according to IMO instruments

No carriage in bulk.

Land transport (ADR/RID)

UN number or ID number UN 1013
 UN proper shipping name CARBON DIOXIDE
 Transport hazard class(es) 2.2
 Hazard label(s) 2.2
 Classification code 2A
 Packing group -
 Environmental hazards No
 Limited quantity (LQ) 120 ml
 Special provisions 378, 392, 584, 653, 662
 Tunnel restriction code C/E

Sea transport (IMDG)

UN number or ID number UN 1013
 UN proper shipping name CARBON DIOXIDE
 Transport hazard class(es) 2.2
 Packing group -
 Environmental hazards No
 Limited quantity (LQ) 120 ml
 Marine pollutant No
 EmS F-C, S-V

Air transport (ICAO-TI / IATA-DGR)

UN number or ID number UN 1013
 UN proper shipping name Carbon dioxide
 Transport hazard class(es) 2.2
 Packing group -
 Environmental hazards No

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* **SECTION 15: Regulatory information**

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

* **EU legislation**

* **Restrictions of occupation**

Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.
Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC).

* **Other regulations (EU)**

* **To follow:**

National and local regulations concerning chemicals shall be observed.

* **15.2 Chemical Safety Assessment**

* **National regulations**

For this substance a chemical safety assessment is not required.

* **SECTION 16: Other information**

* **Abbreviations and acronyms**

Press. Gas (Liq.): Liquefied gas (LG)

Key literature references and sources for data

Information from our suppliers and data from the "GESTIS Substances Database" and the "Registered Substances" database of the European Chemicals Agency (ECHA) were used to create this safety data sheet.

* **Additional information**

The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

Relevant H- and EUH-phrases (Number and full text)

H280 Contains gas under pressure; may explode if heated.

Indication of changes

* Data changed compared with the previous version