



Carbon Dioxide

Safety Data Sheet PN-800758

This SDS conforms to Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals

Date of issue: 07/12/2016

Revision edition no.: 3

Supersedes: 30/05/2012

Section: 1. Product and Company Identification

1.1 Product Identifier

| | |
|-------------------------------|--|
| Product form | Substance |
| Product Name | Carbon dioxide |
| CAS No | 124-38-9 |
| Formula | 100% CO ₂ |
| Other means of identification | Zip Sparkling Gas, CARBON DIOXIDE, CO ₂ |

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

| | |
|-------------------------------|---|
| Use of the substances/mixture | Beverage product dispensing. Use as directed. |
|-------------------------------|---|

1.3 Details of supplier of the safety data sheet

| | |
|--|--|
| | Zip Water (AUST) Pty Ltd 67 Allingham Street Condell Park NSW Australia 2200 Telephone 1800 638 633 Email sales@zipindustries.com www.zipwater.com |
|--|--|

1.4 Emergency telephone number

| | |
|----------------------------|--|
| Emergency telephone number | +61 2 406 384 992 +61 2 428 045 027 |
|----------------------------|--|

Section: 2. Hazard Identification

2.1 Classification of the substance or mixture

Hazard Class and Category Code Regulation EC 1272/2008 (CLP)

| | |
|------------------|--|
| Physical hazards | Gases under pressure – Liquefied gas – Warning – (CLP: Press. Gas) - H280/H281 |
|------------------|--|

Classification EC 67/548 or EC 1999/45

| | |
|--|--|
| | Not classified as dangerous substance/mixture. |
|--|--|

2.2 Label elements

Labelling Regulation EC 1272/2008 (CLP)

| | |
|--------------------------|--|
| Hazard Pictogram | |
| Hazard pictogram code | GHS04 |
| Signal word | Warning |
| Hazard statement | H281 - Contains refrigerated gas; may cause cryogenic burns of injury H280 - Contains gas under pressure; may explode if heated |
| Precautionary statements | |
| Prevention | P202 - Do not handle until all safety precautions have been read and understood P261 - Avoid breathing gas |



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| | |
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| | P262 - Do not get in eyes, on skin, or on clothing |
| Response | P336+P315 - Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice / attention. |
| Storage | P403 - Use and store in a well-ventilated place Keep container below 50°C |

2.3 Other Hazards

Other hazards not contributing to the classification

Asphyxiant in high concentrations
Contact with liquid may cause cold burns/frostbite

2.4 Unknown acute toxicity

No data available

Section: 3. Composition/Information on ingredients

3.1 Substance

| Name | | Carbon dioxide | | | |
|----------------|---------|---|-----------|----------|--|
| Name | Content | CAS No | EC No | Annex No | Classification |
| Carbon Dioxide | 100% | 124-38-9 | 204-696-9 | ----- *1 | Not classified (DSD/DPD) Liq. Gas (H280/H281) |
| | | Contains no other components or impurities which will influence the classification of the product. * 1: Listed in Annex IV / V REACH, exempted from registration. * 2: Registration deadline not expired. * 3: Registration not required: Substance manufactured or imported < 1t/y Full text of R-phrases see chapter 16. Full text of H-statements see chapter 16 | | | |

3.2 Mixture

N/A

Section: 4. First aid measures

4.1 Description of first aid measures

| | |
|---------------------|--|
| Inhalation | In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Low concentrations of CO ₂ cause increased respiration and headache. Remove victim to uncontaminated area wearing self-contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped. |
| Eye contact | Immediately flush eyes thoroughly with water for at least 15 minutes. In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance. |
| Skin contact | MAY CAUSE FROSTBITE. For exposure to liquid, cold vapour, or solid carbon dioxide (dry ice), immediately warm frostbite area with warm water not to exceed 41°C. Water temperature should be tolerable to normal skin. Maintain skin warming for at least 15 minutes or until normal colouring and sensations have returned to the affected area. In case of massive exposure, remove clothing while showering with warm water. Seek medical evaluation and treatment as soon as possible. |



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| | |
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| Ingestion | Ingestion is not considered a potential route of exposure |
| 4.2 Most important symptoms and effects, both acute and delayed | |
| | No additional information available |
| 4.3 Indication of any immediate attention and special treatment needed | |
| | None |
| Section: 5. Firefighting measures | |
| 5.1 Extinguisher media | |
| Suitable extinguishing media | Use extinguishing media appropriate for surrounding fire. |
| 5.2 Special hazard arising from the substance or mixture | |
| Explosion hazard | Heat of fire can build pressure in container and cause it to rupture. Containers are equipped with a pressure relief device. No part of the container should be subjected to a temperature higher than 50°C. |
| Reactivity | No reactivity hazard other than the effects described in sub-sections below. |
| 5.1 Advice for firefighters | |
| Specific methods | If possible, stop flow of product. Coordinate fire measure to the surrounding fire. Cool endangered containers with water spray jet from a protected position. Do not empty contaminated fire water into drains. Move away from the container and cool with water from a protected position. If leaking do not spray water onto container. Water surrounding area (from protected position) to contain fire. |
| Special protective equipment for firefighters | In confined space use self-contained breathing apparatus. |
| Flammable class | Non-flammable. |
| Section: 6. Accidental release measures | |
| 6.1 Personal precautions, protective equipment and emergency procedures | |
| Personal precautions | WARNING! Liquid and gas under pressure. Rapid release of gaseous carbon dioxide through a valve can result in the formation of dry ice, which is very cold and can cause frostbite. Evacuate area. Use protective clothing. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. |
| 6.2 Environmental precautions | |
| | Try to stop release. Prevent from entering sewers, basements and work pits, or any place where its accumulation can be dangerous. |
| 6.3 Methods and material for containment and cleaning up | |
| Clean up methods | Ventilate area. Prevent waste from contaminating the surrounding environment. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If |



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necessary, call your local supplier for assistance.

6.4 Reference to other sections

See also sections 8 and 13.

Section: 7. Handling and Storage

7.1 Precautions for safe handling

Safe use of product

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
 Only experienced and properly instructed persons should handle gases under pressure.
 The product must be handled in accordance with good industrial hygiene and safety procedures.
 Do not smoke while handling product.
 Ensure the complete gas system was (or is regularly) checked for leaks before use.

Safe handling of gas receptacle

Refer to supplier's container handling instructions.
 Do not allow back feed into the container.
 Protect cylinders from physical damage; do not drag, roll, slide or drop.
 When moving bulk cylinders/containers, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport bulk cylinders/containers.
 Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
 If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
 Never attempt to repair or modify container valves or safety relief devices.
 Damaged valves should be reported immediately to the supplier.
 Keep container valve outlets clean and free from contaminates particularly oil and water.
 Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
 Close container valve after each use and when empty, even if still connected to equipment.
 Never attempt to transfer gases from one cylinder/container to another.
 Never use direct flame or electrical heating devices to raise the pressure of a container.
 Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

General

Containers, which contain or have contained flammable or explosive substances, must not be inerted with liquid carbon dioxide. Potential production of solid CO₂ particles must be ruled out. In order to rule out potential electrostatic discharge production, the system must be adequately grounded.

Handling

Suck back of water into the container must be prevented.
 Do not allow backfeed into the container.
 Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.



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Refer to supplier's container handling instructions.

7.2 Conditions for safe storage, including any incompatibilities

Keep away from combustible materials.
 Keep container below 50°C in a well ventilated place.
 Observe all regulations and local requirements regarding storage of containers.
 Containers should not be stored in conditions likely to encourage corrosion.
 Containers should be stored in the vertical position and properly secured to prevent toppling.
 Stored containers should be periodically checked for general condition and leakage.
 Container valve guards or caps should be in place.
 Store containers in location free from fire risk and away from sources of heat and ignition.

Storage

Keep container below 50°C in a well ventilated place.

7.3 Specific end use

None

Section: 8. Exposure control/personal protection

8.1 Control parameters

Occupational Exposure Limits Carbon dioxide

- Value 8h (CZ) [mg/m³] : 9000
- ILV (EU) - 8 H - [mg/m³] : 9000
- ILV (EU) - 8 H - [ppm] : 5000
- TLV[®] -TWA [ppm] : 5000
- TLV[®] -STEL [ppm] : 30000
- AGW (8h) - Germany [mg/m³] TRGS 900 : 9100
- AGW (8h) - Germany [ppm] TRGS 900 : 5000
- MAK (AU) Tagesmittelwert (ml/m³) : 5000
- MAK (AU) Tagesmittelwert (mg/m³) : 9000
- MAK (AU) Kurzzeitwerte (ml/m³) : 10000
- MAK (AU) Kurzzeitwerte (mg/m³) : 18000
- VLA-ED - Spain [ppm] : 5000
- VLA-ED - Spain [mg/m³] : 9150
- VLA-EC - Spain [ppm] : 15000
- VLA-EC - Spain [mg/m³] : 27400
- NGV - [ppm] : 5000
- NGV - [mg/m³] : 9000
- KTV - [ppm] : 10
- KTV - [mg/m³] : 10
- HTP-värden (FI) - 8 H - [ppm] : 5000
- HTP-värden (FI) - 8 H - [mg/m³] : 9100
- Grænserværdier (DK) (ppm) : 5000
- Grænserværdier (DK) (ppm) : 9000
- Grænserværdier (DK) : 9000
- GV Value Limit (Norway) [ppm] : 5000
- GV Value Limit (Norway) [mg/m³] : 9000
- 8-Hour TWA (PL) (NDS) (mg/m³) : 9000
- 15-Minute STEL (PL)(NDSCh) (mg/m³) : 27000
- Valori Limite di Soglia (IT) 8 ore [ppm] : 5000
- Valori Limite di Soglia (IT) 8 ore [mg/m³] : 9000



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- TLV-TWA (Belgium) (ppm) : 5000
 - TLV-STEL (Belgium) (ppm) : 30000
 - Value 15min. (CZ) [mg/m³] : 45000
- In Australia, the recognised exposure limits for CO₂ reference an 8-hour Time Weighted Average (TWA) of 5,000 ppm and a 15 minute Short Term Exposure Limit (STEL) of 30,000 ppm. CO₂ at 40,000 ppm is considered Immediately Dangerous to Life or Health (IDLH).*

DNEL: Derived no effect level

None available

PNEC: Predicted no effect concentration

None available

8.2 Exposure control

8.2.1 Appropriate engineering control

Systems under pressure should be regularly checked for leakages.
Provide adequate general and local exhaust ventilation.
Consider work permit system e.g. for maintenance activities.

8.2.2 Individual protection measures, e.g. personal protective equipment

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk.

The following recommendations should be considered.

Wear safety glasses with side shields

Wear leather safety gloves and safety shoes when handling cylinders.

Personal protection

Ensure adequate ventilation.

Protect eyes, face and skin from liquid splashes.

8.2.3 Appropriate engineering control

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

Section: 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance - Physical state at 20°C / 101.3kPa

Liquefied gas

Colour

Colourless.

Odour

No odour warning properties.

Odour threshold

Odour threshold is subjective and inadequate to warn for overexposure.

pH value

Not applicable for gas-mixtures

Molar mass [g/mol]

Not applicable for gases and gas-mixtures.

Melting point [°C]

-56.6

Boiling point [°C]

-78.5 (s)

Critical temperature [°C]

30

Flash point [°C]

Not applicable for gas-mixtures.

Evaporation rate (ether=1)

Not applicable for gas-mixtures.

Flammability range [vol% in air]

Non-flammable

Vapour pressure [20°C]

57.3 bar

Not applicable



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| Relative density, gas (air=1) | 1.52 |
| Relative density, liquid (water=1) | 1.03 |
| Solubility in water [mg/l] | 2000 |
| Partition coefficient n-octanol/water | Not applicable for gas-mixtures. |
| Viscosity at 20°C [mPa.s] | Not applicable. |
| Explosive Properties | Not applicable. |
| 9.2 Other information | |
| Gas group | Liquefied gas |
| Additional information | Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level. |
| Molecular weight | 44 |
| Section: 10. Stability and reactivity | |
| 10.1 Reactivity | |
| Stability and reactivity | No reactivity hazard other than the effects described in sub-sections below. Stable under normal conditions. Liquid spillages can cause embrittlement of structural materials. |
| 10.2 Chemical stability | |
| | Stable under normal conditions |
| 10.3 Possibility of hazardous reactions | |
| | None |
| 10.4 Conditions to avoid | |
| | None |
| 10.5 Incompatible materials | |
| | None |
| 10.6 Hazardous decomposition products | |
| | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
| Section: 11. Toxicological information | |
| 11.1 Information on toxicological effects | |
| Toxicity information | In high concentrations cause rapid circulatory insufficiency even at normal levels of oxygen concentration. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness and death |
| Acute toxicity | No known toxicological effects from this product. |
| Rat inhalation LC50 [ppm/4h] | No data available. |
| Skin corrosion/irritation | No known effects from this product. |
| Serious eye damage/irritation | No known effects from this product. |
| Respiratory or skin sensitisation | No known effects from this product. |
| STOT-single exposure | No known effects from this product. |
| STOT-repeated exposure | No known effects from this product. |



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| Aspiration hazard | Not applicable for gases and gas-mixtures |
| Section: 12. Ecological information | |
| 12.1 Toxicity | |
| | No data available |
| 12.2 Persistence – degradability | |
| | No data available |
| 12.3 Bioaccumulative potential | |
| | No data available |
| 12.4 Mobility in soil | |
| | No data available |
| 12.5 Results of PBT and vPvB assessment | |
| | No data available |
| 12.6 Other adverse effects | |
| Ecological effects information | When discharged in large quantities may contribute to the greenhouse effect. Can cause frost damage to vegetation. |
| Effect on global warming | Contains greenhouse gas(es) not covered by 842/2006/EC |
| Global warming potential [CO ₂ =1] | 1 |
| Section: 13. Disposal consideration | |
| 13.1 Waste treatment methods | |
| | May be vented to atmosphere in a well ventilated place. Do not discharge into any place where its accumulation could be dangerous. Refer to the code of practice of EIGA (Doc. 30/10 "Disposal of Gases, downloadable at http://www.eiga.org) for more guidance on suitable disposal methods. Contact supplier if guidance is required. |
| General | Do not discharge into any place where its accumulation could be dangerous. Discharge to atmosphere in large quantities should be avoided. Contact supplier if guidance is required. |
| 13.2 Additional information | |
| | None |
| Section: 14. Transport information | |
| UN Number | 1013 |
| Labelling ADR, IMDG, IATA |  2.2: Non-flammable, non-toxic gas |
| Land transport (ADR/RID) | |
| H.I. nr | 20 |



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| UN proper shipping name | CARBON DIOXIDE |
| Transport hazard class(es) | 2 |
| Classification code | 2 A |
| Packing Instruction(s) | P200 |
| Tunnel Restriction | C/E Tank carriage: Passage forbidden through tunnels of category C, D and E; Other carriage: Passage forbidden through tunnels of category E |
| HAZCHEM - Emergency Action Code | 2T 2 = Fine water spray. T = Recommended personal protective equipment: Full fire kit and breathing apparatus. Appropriate measures: dilute. |
| Sea transport (IMDG) | |
| Proper shipping name | CARBON DIOXIDE |
| Class | 2.2 |
| Emergency Schedule (EmS) - Fire | F-C |
| Emergency Schedule (EmS) - Spillage | S-V |
| Packing instruction | P200 |
| Air transport (ICAO-TI/IATA-DGR) | |
| Proper shipping name (IATA) | CARBON DIOXIDE |
| Class | 2.2 |
| Passenger and Cargo Aircraft | Allowed. |
| Packing instruction - Passenger and Cargo Aircraft | 200 |
| Packing instruction - Cargo Aircraft only | 200 |
| Special precaution for user | |
| | <ul style="list-style-type: none"> • Avoid transport on vehicles where the load space is not separated from the driver's compartment. • Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. • Before transporting product containers : <ul style="list-style-type: none"> ○ Ensure there is adequate ventilation. ○ Ensure that containers are firmly secured. ○ Ensure cylinder valve is closed and not leaking. ○ Ensure valve outlet cap nut or plug (where provided) is correctly fitted. ○ Ensure valve protection device (where provided) is correctly fitted. |
| Labelling ADR | 2.2: Non-flammable, non-toxic gas. |
| In case of spillage and/or leakage | Clean up even minor leaks or spills if possible without unnecessary risk |



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| Other transport information | <ul style="list-style-type: none"> • Avoid transport on vehicles where the load space is not separated from the driver's compartment. • Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. • Before transporting product containers : <ul style="list-style-type: none"> ○ Ensure that containers are firmly secured. ○ Ensure there is adequate ventilation. ○ Compliance with applicable regulations. |
| Personal precautions | The driver shall not attempt to deal with any fire of the load. |
| Emergency action in case of accident | <p>Stop the engine. No naked lights. No smoking. Mark roads and warns other road users. Keep public away from danger area. NOTIFY POLICE AND FIRE BRIGADE IMMEDIATELY.</p> |
| Additional information | None |
| Section: 15. Regulatory information | |
| 15.1 Safety, health and environmental regulations/legislation specific for substance or mixture | |
| EU legislation | |
| Seveso directive 96/82/EC | Not covered. |
| National legislation | |
| | Ensure all national/local regulations are observed |
| 15.2 Chemical Safety Assessment | |
| | A CSA does not need to be carried out for this product |
| Section: 16. Other information | |
| Indication of changes | Revised safety data sheet in accordance with commission regulation (EU) No 453/2010 |
| Training advice | <p>Asphyxiant in high concentrations. Receptacle under pressure. May cause frostbite. Keep container in a well-ventilated place. Do not breathe the gas. Ensure all national/local regulations are observed. The hazard of asphyxiation is often overlooked and must be stressed during operator training.</p> |
| List of full text of H-statements in section 3 | H280 - Contains gas under pressure; may explode if heated. |
| Further information | <p>Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD. This Safety Data Sheet has been established in accordance with the applicable European Union legislation.</p> |
| Note | This Safety Data Sheet has been established in accordance with the applicable European Union legislation. |



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DISCLAIMER OF LIABILITY

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

The contents and format of this SDS are in accordance with EC Commission Directive 2001/58/EC.

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

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