

MATERIAL SAFETY DATA SHEET Carbon Dioxide CO₂

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Product: Receptacles, small with gas (gas cartridges) without a release device, non refillable with a capacity not exceeding 50 ml (Carbon Dioxide)

Reference: Substance Identification (UN) No. 1013

Code: Hazchem Code 2XE

1. IDENTIFICATION OF THE PREPARATION AND THE COMPANY

Chemical Name: Carbon Dioxide (CO₂)

Applications: Inflation of Life Jackets

Supplier: iSi Components GmbH

Emergency Phone: + 43 1 250 99 700

2. COMPOSITION/ INFORMATION OF INGREDIENTS

Carbon Dioxide is supplied in cylinders as a liquid under its own vapour pressure which varies with temperature. It is non-toxic, non flammable and heavier than air.

3. HAZARDS IDENTIFICATION

Toxicity: occupational exposure standard. (OES) 5000 vpm. Asphyxiant vapour.
Danger to life at 10-20% v/v in air. Danger to persons lying on the floor as the vapour is heavier than air.
Liquefied gas in container under vapour pressure of about 56 bar (g).
Note: Carbon Dioxide cannot exist as a liquid at atmospheric pressure.
Large volume increase on phase change – one volume of liquid or solid will give about 500 or 900 volumes of gas, respectively, at ambient conditions.
Slightly corrosive in the presence of moisture.
Solid on skin may cause cold burns.

4. FIRST AID MEASURES

Eyes: If substance has got into the eyes, immediately wash out with plenty of water for several minutes.

Skin: Irrigate affected area with tepid water for five minutes. Apply a sterile dressing and treat as a thermal burn. Seek medical advice and ensure that the possibility of severe internal burns from exposure to very low temperature is clearly understood.

Inhalation: Minimising personal risk, immediately remove victim to uncontaminated area. Ensure there is no obstruction to the airways. If breathing is weak or stopped, apply artificial respiration with simultaneous administration of oxygen, preferably using oxygen resuscitator. Summon ambulance. Keep warm and rested.

Ingestion: No statement

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5. FIRE FIGHTING MEASURES

In general, vacate area, call emergency services. If unable to extinguish fire keep containers cool with water hosed from a safe distance. Inform the emergency services of the nature of the product and the possibility of rupture (the cylinder is fitted with a burst cap which will rupture and allow contents to completely discharge if heat causes the carbon dioxide pressure to exceed the maximum permissible service level). Severe danger of rocketing containers.

6. ACCIDENTAL RELEASE MEASURES

If container in enclosed area, evacuate the area. Arrange for area to be ventilated and check atmosphere before re-entry. Move container to safe area.

7. HANDLING AND STORAGE

Usage Precautions: Never lift a container by the cap. Use a trolley or other suitable device or technique for transporting heavy containers, even for a short distance.

Never use direct flame or electrical heating devices to raise the pressure of a container. Containers should not be subjected to temperatures above 50°C.

Never attempt to refill an empty container.

Never attempt to transfer gases from one container to another.

Do not use containers as rollers or supports, or for any other purpose than to contain the gas as supplied.

Do not subject containers to abnormal mechanical shocks which may cause damage to their integrity.

Storage Precautions: Containers should be stored in a well ventilated area.

Store containers in a location free from fire risk and away from sources of heat and ignition. Designation as a "No smoking area" is recommended.

The storage area should be kept clear and access should be restricted to authorised persons only. The area should be clearly marked as a store.

Containers in storage should be properly secured to prevent toppling or rolling.

Protect containers stored in the open against rusting and extremes of weather. Containers should not be stored in conditions likely to encourage corrosion.

Store full and empty containers separately and arrange full containers so that the oldest stock is used first.

Gas containers should be segregated in the storage area according to the various categories. Containers held in storage should be periodically checked for general condition and leakage.

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8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Protective Equipment: Ascertain that an adequate supply of water is available for first aid or fire fighting.

Protective Gloves: Recommended.

Eye Protection: Wear suitable eye protection

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Liquefied pressure gas, colourless, odourless, non-flammable

Molecular weight: 44.01

Vapour pressure (15°C): 50.85 bar

Density of gas (15°C, 1 bar): 1.8474 g/l

Specific gravity, gas (air = 1): 1.528

Critical temperature: 31.1°C

Critical pressure: 73.825 bar

Triple point (5.185 bar): -56.6°C

Solubility of gas in water (15°, 1 bar): 1.9786 g/l

Note: All pressures are absolute.

10. STABILITY AND REACTIVITY

Stability: No statement

11. TOXICOLOGICAL INFORMATION

Carbon dioxide (which is normally present in atmospheric air at the level of approximately 350 vpm (0.035%), regulates the breathing function and an increase in concentration will cause increased breathing rate. The occupational exposure standard (OES) is 5000 vpm (0.5%), but changes in the breathing rate may not be noticed until there is a concentration of 20.000 vpm (2%) when the rate will increase to about 50% above the normal level. Prolonged exposure at this level for several hours may cause a headache and a feeling of exhaustion.

At high concentrations carbon dioxide may cause asphyxiation and can paralyse the respiratory centre. Breathing an atmosphere rich in carbon dioxide can cause immediate loss of consciousness and rapid death. Symptoms of asphyxiation may include rapid and gasping respiration, rapid fatigue, nausea, vomiting, cyanosis and may lead to loss of consciousness or death from anoxia.

12. ECOLOGICAL INFORMATION

Degradability: The chromate layer which protects the zinc-plating, contains chromium in the oxidation state of VI

13. DISPOSAL CONSIDERATIONS

Disposal Methods: Never dump at sea.

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Inform waste disposal contractor of material to be disposed of zinc-plated and chrome stabilised steel.
Never dispose of a filled cylinder.

14. TRANSPORT INFORMATION

road transport: UN-no.: UN 2037
class: 2.2
classification code: 5A

RECEPTACLES; SMALL; WITH GAS (GAS CARTRIDGES)
without a release device, non refillable.
According to ADR 2007 chapter 3.2 schedule A column 6
special provisions 191 and 303 are valid (transported product is
not subject to the requirements of ADR).

air transport: UN-no.: UN 2037
class: 2.2

RECEPTACLES; SMALL; WITH GAS (GAS CARTRIDGES)
without a release device, non refillable.
Not restricted according to IATA 2007 Special Provision A98
(transported product is not subject to the requirements
of IATA).

sea transport: UN-no.: UN 2037
class: 2.2
EmS-Code: F-D, S-U

RECEPTACLES; SMALL; WITH GAS (GAS CARTRIDGES)
without a release device, non refillable.
According to the IMDG-code Special Provisions 191, 277 and
303 are valid (transported product is not subject to the
requirements of IMDG).

15. REGULATORY INFORMATION

Regulatory References: Gas cylinder designs are available which correspond to the requirements of EN3, Portable Fire Extinguishers, and DIN EN ISO 12402-7, Personal Flotation Devices – Part 7: Materials and components – safety requirements and test methods, and also with the requirements for inflation medium containers of UL1191, Components for Personal Flotation Devices, 3rd edition.

16. OTHER INFORMATION

No statement