1 Identification of the substance/mixture and of the company/undertaking

Product identifier

Trade name : Carbon dioxide in non-refillable gas cylinders

Safety data sheet no. : ICO.SD.001.e.03

Chemical description of gas : Carbon dioxide
CAS-No.: 000124-38-9
EC no. : 204-696-9
Index no.: --

Chemical formula : CO_2

UN number : UN 1013

REACH registration number : CO_2 is listed in Annex IV/V of regulation no. EC 1907/2006 (REACH).
Exempted from registration.

Usage : For various industrial applications
Perform risk assessment prior to use.

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2 Hazards identification

Classification of the substance or mixture

Classification according to EC 1272/2008 (CLP, GHS) : Gases under pressure - Liquefied gas
Contains gas under pressure; may explode if heated.

Classification according to EC 67/548 and EC 1999/45 : Not classified as hazardous to health.
No EC labeling required.

Label elements

Labelling regulation EC 1272/2008 (CLP):

- **Hazard pictograms**

- **Signal word** : Warning
- **Hazard statements** : H280: Contains gas under pressure; may explode if heated.
- **Precautionary statements** : P102: Keep out of reach of children.
  P403: Keep in a well-ventilated place.
  P410: Protect from direct sunlight.

Other hazards

Other hazards : May cause asphyxiation in high concentrations.
Contact with solid CO_2 (dry ice) or liquid CO_2 may cause cold burns/ frost bite.

3 Composition/information on ingredients

Substance/Preparation : **Substance**

Substance name	CAS no.	EC no.	Index no.	Registration no.	Classification
Carbon dioxide	124-38-9	204-696-9	-----	**See NOTE**	**Liq. gas (H280)**

Does not contain any other components or impurities which could affect the classification of this product.

Note: Listed in Appendix IV/V REACH, exempt from registration.
For full text of R-sets, see Section 16.

4 First-aid measures

Inhalation : High concentrations can cause asphyxiation. Symptoms can include loss of mobility/ consciousness. Victim may not be aware of asphyxiation. Low concentrations of CO_2 cause accelerated breathing and headaches. Immediately remove victim to uncontaminated area. The victim should be made to wear respiratory equipment. Keep victim warm and rested. Call a doctor. Attempt artificial respiration if the victim stops breathing.

Contact with skin/eye : Immediately flush eyes thoroughly with water for at least 15 minutes. Spray any cold burns immediately with water for at least 15 minutes. Cover with a sterile dressing. Consult a doctor.

Ingestion : Ingestion is not seen as a possible method of exposure.

5 Fire-fighting measures

Specific risks : Non flammable
Exposure to fire may cause cylinder to burst/explode.

Hazardous combustion Products : None.

Extinguishing media
- **Suitable extinguishing agent** : All known extinguishants can be used.

Specific methods : Move away from cylinder and cool with water from a safe position.

Special protective equipment for fire fighters : In confined spaces use self-contained breathing apparatus.

6 Accidental release measures

Personnel-related precautions : Ensure adequate ventilation.

Environmental precautions : Attempt to stop gas release.
Prevent from entering sewer systems, basements, work pits or any other areas where accumulation could be hazardous.

Cleaning up methods : Ventilate area.

7 Handling and storage

Handling : Only use equipment suitable for this product and its pressure and temperature specified. If in doubt, consult iSi Components GmbH.
Never use direct flame or electrical heating devices to raise the pressure of a cylinder.
Never attempt to refill an empty cylinder.
Emerging gas will cause the cylinder to freeze.
Do not touch a discharging or recently discharged cylinder with bare hands.
Never attempt to transfer gases from one cylinder to another.
Do not use cylinder as roller or support, or for any other purpose than to contain the gas as supplied.
Do not subject cylinder to mechanical shocks which may cause damage to their integrity.

Storage : Keep out of reach of children.
Store cylinder in a well-ventilated place at less than 50°C.
Store cylinder in a location free from risk of fire and away from sources of heat and ignition.
Periodically check cylinder for general conditions and leakage.
Do not store cylinder in conditions likely to encourage corrosion.

8 Exposure controls/personal protection

Personal protection : Ensure adequate ventilation.
Protect eyes, face and skin from liquid splashes.
Wearing of protective gloves is recommended.

Occupational exposure limits :

Carbon dioxide: ILV (EC) - 8 H - [mg/m³]	:	9.000
Carbon dioxide: ILV (EC) - 8 H - [ppm]	:	5.000
Carbon dioxide: TLV© -TWA [ppm]	:	5.000
Carbon dioxide: TLV© -STEL [ppm]	:	30.000

9 Physical and chemical characteristics

Physical state at 20°C	: Gaseous.
Colour	: Colourless.
Odour	: Odourless.
Molecular weight	: 44
Melting point [°C]	: -56.6
Boiling point [°C]	: -78.5
Critical temperature [°C]	: 31.0
Vapour pressure at 20°C	: 57.3 bar
Relative density, gas (air=1)	: 1.52
Relative density, liquid (water=1)	: 0.82
Solubility in water [mg/l]	: 2000
Flash point [vol.% in air]	: Non-flammable.

Other information : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

10 Stability and reactivity

Hazardous decomposition products : None.

Chemical stability : Stable under normal conditions.

11 Toxicological information

Toxicological information : There are no toxic effects known for this product.

12 Ecological information

Ecological effects information : May contribute to the greenhouse effect when discharged in large quantities.
Depending on the technical specification the chromate layer which protects the cylinder's zinc-plating, may contain chromium in the oxidation state of VI.

Global warming potential [CO_2 = 1] : 1

13 Disposable considerations

General : Do not discharge into any place where its accumulation could be dangerous.
Release into the atmosphere in a well-ventilated place.
Avoid releasing large quantities into the atmosphere.
Consult your supplier if you require advice.

Disposal methods : Dispose of emptied cylinders only.
Cylinders are made of recyclable steel and hence a valuable resource.
Emptied cylinders should therefore always be recycled.
Adhere to local waste regulations when disposing of emptied cylinders.
Never dispose of cylinders in an uncontrolled manner (e.g. dumping at sea).

14 Transport information

Land transport : In accordance with the requirements set out in the current issue of the ADR

Sea transport : In accordance with the requirements set out in the current issue of the IMO-IMDG code

Air transport : In accordance with the requirements set out in the current issue of the IATA, Dangerous Goods Regulations.

15 Regulatory information

Safety, health and environmental regulations/ legislation specific for the substance or the mixture : All national/local regulations apply.

Seveso regulations 96/82/EC : Not covered.

16 Other information

Can cause asphyxiation in high concentrations.
Keep cylinder in a well-ventilated place.
Do not inhale the gas.
Contact with liquid may cause cold burns/frost bite.
The hazard of asphyxiation is often overlooked and must be stressed during operator training.

This safety data sheet has been produced in accordance with the applicable European directives.
It applies to all countries which have adopted these directives as part of their national legislation.

DISCLAIMER OF LIABILITY

The information contained in this document is based on the latest knowledge and does not constitute a contractual assurance of product qualities. Before the product can be used in any new process or trial, careful tests of the material compliance and safety should be carried out.

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