Carbon Dioxide

SAFETY DATA SHEET

Revision date: 01/07/25

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Name : Carbon Dioxide

Chemical Formula : CO_2

REACH Registration No. : Listed in Annex IV / V REACH, exempted from registration.

EC No. : 204-696-9

CAS No. : 124-38-9

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

Relevant identified uses

Industrial and professional. Perform risk assessment prior to use.

1.3. Details of the supplier of the SDS

Company Identification : Irish Oxygen Co Ltd, Waterfall Road, Cork

Email : sds@irishoxygen.com

1.4. Emergency telephone number

Emergency Telephone : 021-4541821 (Mon-Fri 08:30-17:30)

2. HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

(a) Classification according to Regulation (EC) No 1272/2008/EC [CLP/GHS]

Press. Gas (Compressed gas)

H280: Contains gas under pressure; may explode if heated

(b) Classification according to Directive 67/548/EEC & 1999/45/EC

Not classified as hazardous to health.

2.2. Label Elements

Hazard pictograms

GHS04

Signal word

WARNING

Hazard statements

H280: Contains gas under pressure; may explode if heated

EIGA0357: Asphyxiant in high concentrations.

Precautionary statements

Prevention

None

Response

None

Storage

P403: Store in a well-ventilated place.

Disposal

None

2.3. Other Hazards

Asphyxiant in high concentrations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture: Substance

3.1. Substances

Substance Name : Carbon Dioxide

CAS No. : 124-38-9

EC No. : 204-696-9

Index No. : -----

REACH Registration No. : Listed in Annex IV / V REACH, exempted from registration.

Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

Not applicable.

4. FIRST AID MEASURES

4.1. Description of first aid measures

Following inhalation

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

Following skin contact

In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

Following eye contact

Immediately flush eyes thoroughly with water for at least 15 minutes.

Following Ingestion

Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.

Low concentrations of CO2 cause increased respiration and headache.

4.3. Indication of any immediate medical attention and special treatment needed

None.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media

All known extinguishants can be used.

Unsuitable extinguishing media

None.

5.2. Special hazards arising from the substance or mixture

Specific hazards

Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products

None.

5.3. Advice for fire-fighters

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.

Special protective equipment for fire-fighters

In confined space use self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

Ensure adequate air ventilation.

Evacuate area.

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material for containment and cleaning up

Ventilate area.

6.4. Reference to other sections

See also sections 8 and 13.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Safe use of the product

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.

Do not allow backfeed into the container.

Do not smoke while handling product.

Avoid suckback of water, acid or alkalis.

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.

Only experienced and properly instructed persons should handle gases under pressure.

Ensure the complete gas system has been (or is regularly) checked for leaks before use.

The substance must be handled in accordance with good industrial hygiene and safety procedures.

Safe handling of the gas receptacle

Suck back of water into the container must be prevented.

Refer to supplier's container handling instructions.

Protect cylinders from physical damage; do not drag, roll, slide or drop.

Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.

If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.

Close container valve after each use and when empty, even if still connected to equipment.

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.

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 valve guard from cylinder.

7.2. Conditions for safe storage, including any incompatibilities

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

Stored containers should be periodically checked for general condition and leakage.

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.

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.

Keep away from combustible materials.

7.3. Specific end use(s)

None.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure controls

Appropriate engineering controls

Provide adequate general and local ventilation.

Systems under pressure should be regularly checked for leakages.

Consider the use of a work permit system, e.g. for maintenance activities.

Oxygen detectors should be used when asphixiating gases may be released.

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 gloves and safety shoes when handling cylinders.

Wear safety glasses with side shields.

Environmental exposure controls

None necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance

• **Physical state at 20°C / 101.3kPa**	:	Gas
• **Colour:**	:	Colourless
Odour	:	No odour warning properties.
Molar mass	:	44 g/mol
Melting point	:	-56.6°C
Boiling point	:	-78.5°C (subl)
Flash point	:	Not applicable for gases and gas mixtures.
Evaporation rate	:	Not applicable for gases and gas mixtures.
Upper/lower flammability or explosive limits	:	Non flammable.
Vapour pressure	:	57.3 bar
Relative density, gas (air=1)	:	1.52
Relative density, liquid (water=1)		0.82
Solubility(ies)	:	2000 mg/l
Solubility in water		
Auto-ignition temperature	:	Not applicable.

9.2. Other information

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

10. STABILITY AND REACTIVITY

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

None.

10.6. Hazardous decomposition products

None.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

In high concentrations may cause rapid circulatory insufficiency even at normal levels of oxygen concentration. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness and death.

12. ECOLOGICAL INFORMATION

Effects on global warming

When discharged in large quantities may contribute to the greenhouse effect.

Global warming potential (CO_2=1) : 1

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

May be vented to atmosphere in a well ventilated place.

Contact supplier if guidance is required.

Discharge to atmosphere in large quantities should be avoided.

Do not discharge into any place where its accumulation could be dangerous.

13.2. Additional information

None.

14. TRANSPORT INFORMATION

UN Number	: 1013
Proper shipping name	: CARBON DIOXIDE
Class	: 2
Classification code	: 2 A
Hazard labels	: 2.2 (Non flammable, non-toxic gases)
Packing instructions	: P200
Hazard identification number	: 20
Tunnel restriction code	: C/E
IMDG Emergency schedule-fire	: F-C
IMDG Emergency schedule-spillage	: S-V
Environmental hazards	: None
Special provisions	: None

Other transport information

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:

- 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.
- Ensure there is adequate ventilation.
- Ensure compliance with applicable regulations.

15. REGULATORY INFORMATION

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

Seveso Directive 96/82/EC	: Not covered
National legislation	: Ensure all national/local regulations are observed.

16. OTHER INFORMATION

16.1. Training advices

The hazard of asphyxiation is often overlooked and must be stressed during operator training.

16.2. Disclaimer

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.

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