SAFETY DATA SHEET (SDS)

Carbon Dioxide (CO_2) Cylinder

Section 1: Identification

Product Name: Carbon Dioxide (CO_2)

Synonyms: Carbonic acid gas, Refrigerated liquid carbon dioxide, Compressed carbon dioxide

Chemical Formula: CO_2

Recommended Use: Beverage carbonation, welding, fire suppression, laboratory use, industrial processes, refrigeration

Restrictions on Use: Use only in accordance with supplier instructions and applicable regulations.

Supplier Information:

- Company Name: _____
- Address: _____
- Telephone: _____
- Emergency Contact Number: _____

Section 2: Hazard Identification

Classification

- Gas under pressure – Liquefied gas
- Simple asphyxiant

Signal Word

WARNING

Hazard Statements

- Contains gas under pressure; may explode if heated.
- May displace oxygen and cause rapid suffocation.
- Contact with refrigerated liquid may cause frostbite or cold burns.

Precautionary Statements

- Store in a well-ventilated place.
- Protect from sunlight.
- Use only with appropriate pressure-reducing equipment.
- Avoid breathing gas.
- Wear insulated gloves and eye protection when handling cylinders.

Symptoms of Exposure

- Headache
- Dizziness
- Increased heart rate
- Shortness of breath
- Unconsciousness at high concentrations

Section 3: Composition / Information on Ingredients

Component	CAS Number	Concentration
Carbon Dioxide (CO_2)	124-38-9	100%

Section 4: First Aid Measures

Inhalation

Move the affected person to fresh air immediately. Keep warm and at rest. If breathing has stopped, provide artificial respiration by trained personnel. Seek medical attention immediately.

Skin Contact

For cold burns or frostbite, flush affected area with lukewarm water. Do not rub affected area. Seek medical attention.

Eye Contact

Flush eyes with lukewarm water for at least 15 minutes. Remove contact lenses if present and easy to do. Seek medical attention.

Ingestion

Not considered a likely route of exposure.

Most Important Symptoms

Asphyxiation due to oxygen displacement. Frostbite from contact with liquefied gas.

Section 5: Fire Fighting Measures

Suitable Extinguishing Media

Use extinguishing media appropriate for surrounding materials.

Specific Hazards

- Cylinders may rupture or explode under fire conditions.
- Heated cylinders can build pressure rapidly.

Protective Equipment for Firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

Firefighting Instructions

Cool cylinders with water spray from a safe distance.

Section 6: Accidental Release Measures

Personal Precautions

- Evacuate area.
- Ensure adequate ventilation.
- Avoid confined spaces.
- Wear appropriate PPE.

Environmental Precautions

Prevent gas accumulation in low-lying areas.

Methods for Cleanup

Stop leak if safe to do so. Ventilate area until gas has dispersed.

Section 7: Handling and Storage

Handling

- Secure cylinders upright at all times.
- Use approved regulators and fittings.
- Do not drag, drop, or roll cylinders.
- Open valves slowly.
- Never use oil or grease on valves or regulators.

Storage

- Store in cool, dry, well-ventilated areas.
- Keep away from heat sources and direct sunlight.
- Store below 50°C (122°F).
- Protect cylinders from physical damage.
- Keep valve protection caps in place when not in use.

Section 8: Exposure Controls / Personal Protection

Exposure Limits

Substance	Exposure Limit
Carbon Dioxide	5,000 ppm TWA (8 hr)
Carbon Dioxide	30,000 ppm STEL

Engineering Controls

Provide adequate ventilation, especially in enclosed areas.

Personal Protective Equipment (PPE)

- Safety glasses or goggles
- Insulated gloves
- Safety footwear
- Respiratory protection if ventilation is inadequate

Section 9: Physical and Chemical Properties

Property	Value
Appearance	Colorless gas
Odor	Odorless
Molecular Weight	44.01 g/mol

Property	Value
Boiling Point	-78.5°C (sublimes)
Density	Heavier than air
Solubility in Water	Slightly soluble
Vapor Pressure	High
Flammability	Non-flammable

Section 10: Stability and Reactivity

Reactivity

Non-reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Conditions to Avoid

- Excessive heat
- Confined spaces
- Physical damage to cylinders

Incompatible Materials

Strong reducing agents, reactive metals.

Hazardous Decomposition Products

Carbon monoxide may form under extreme heat conditions.

Section 11: Toxicological Information

Likely Routes of Exposure

- Inhalation
- Skin or eye contact with refrigerated liquid

Acute Effects

High concentrations may cause:

- Headache
- Dizziness

- Drowsiness
- Loss of consciousness
- Asphyxiation

Chronic Effects

No known significant chronic effects under normal industrial use.

Section 12: Ecological Information

Ecotoxicity

No known adverse ecological effects at normal atmospheric concentrations.

Persistence and Degradability

Not applicable for inorganic gas.

Bioaccumulative Potential

Not expected to bioaccumulate.

Section 13: Disposal Considerations

Dispose of contents and cylinders in accordance with local, regional, national, and international regulations.

Do not puncture or incinerate cylinders.

Return empty cylinders to supplier where applicable.

Section 14: Transport Information

Transport Mode	UN Number	Proper Shipping Name	Hazard Class
ADR/RID	UN1013	Carbon dioxide	2.2
IMDG	UN1013	Carbon dioxide	2.2
IATA	UN1013	Carbon dioxide	2.2

Transport Hazard Label

Non-flammable gas.

Section 15: Regulatory Information

This product should be handled in accordance with applicable local and national regulations relating to compressed gases and workplace safety.

Examples may include:

- UK COSHH Regulations
- Pressure Systems Safety Regulations
- OSHA standards (US)
- WHMIS (Canada)

Section 16: Other Information

Preparation Date

Revision Number

Disclaimer

The information contained in this Safety Data Sheet is believed to be accurate and is provided in good faith for guidance purposes only. Users are responsible for ensuring compliance with applicable laws and regulations and determining the suitability of this information for their specific use.

Cylinder Safety Checklist

- Inspect cylinder for damage before use.
- Ensure regulator compatibility.
- Secure cylinder during storage and transport.
- Never expose cylinders to excessive heat.
- Keep away from confined or poorly ventilated areas.
- Close valve when not in use.
- Use proper lifting and handling techniques.