

MATERIAL SAFETY DATA SHEET

CARBON DIOXIDE

Section 1: Identification

Product Name:
CARBON DIOXIDE
Chemical Name:
CO₂, CARBON DIOXIDE
Company:
A1FIRE PTE LTD



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In case of emergencies contact local health department.

Section 2: Hazard(s) Identification

Hazard Classification:
Classified as Hazardous under OSHA Hazard Communication Standard
GHS Classification : Gases under pressure – Liquefied gas.

Signal Word(s):

Warning

Hazard Statements:

H280 Contains gas under pressure; may explode if heated.

H281 Contains refrigerated gas; may cause cryogenic burns or injury.

OSHA-H01 May displace oxygen and cause rapid suffocation.

Hazard Pictograms:



Precautionary Statements:

P202 - Do not handle until all safety precautions have been read and understood.

P271 - Use only outdoors or in a well-ventilated area.

P403 - Store in a well-ventilated area.

P410 - Protect from sunlight.

CGA-PG06 - Close valve after each use and when empty.

CGA-PG10 - Use only equipment rated for cylinder pressure.

Description of other hazards:

Asphyxiant in high concentrations.
Contact with liquid may cause cold burns/frostbite.
In high concentrations CO₂ causes rapid circulatory insufficiency even at normal levels of oxygen concentration. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness and death.

Section 3: Composition/ Information on Ingredients

Chemical Name	CAS#	Conc.
CARBON DIOXIDE	124-38-9	100%

Section 4: First-Aid Measures

General information:

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility / consciousness. Persons may not be aware of asphyxiation. Low concentrations of CO₂ cause increased respiration and headache.

After skin contact:

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

After eye contact:

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

After inhalation:

Remove person to uncontaminated area wearing self contained breathing apparatus. Keep person warm and rested. Consult a physician. Perform cardiopulmonary resuscitation if breathing stopped.

After swallowing:

Ingestion is not considered a potential route of exposure.

Section 5: Fire-Fighting Measures

Suitable extinguishing agents:

Use fire extinguishing methods suitable to surrounding conditions.

Special hazards arising from the substance or mixture

Cylinders contain gas under pressure. In a fire or if heated, a pressure increase will occur and may cause cylinder to burst or explode.

Special protective equipment for firefighters:

In confined space use self-contained breathing apparatus.

Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

Standard EN 469 - Protective clothing for firefighters.

Standard - EN 659: Protective gloves for firefighters.

Section 6: Accidental Release Measures

Personal precautions:

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation.

Use respiratory protective device against the effects of fumes/dust/aerosol.

Remove persons from danger area.

Keep people at a distance and stay on the windward side

Measures for environmental protection:

Try to stop release. Do not allow product to reach sewage system or any water course.

Section 7: Handling and Storage

Precautions for safe handling:

Avoid breathing gas. Avoid contact liquid with eyes, skin and clothing. Contain under pressure. Do not drag, roll, drop or slide cylinder. Do not puncture or incinerate cylinder. Open valve slowly and close after use. Use equipment rated for cylinder pressure. Keep cylinders in well ventilated place.

Conditions for safe storage, including any incompatibilities

Information about fire and explosion protection:

The product is not flammable.

Storage:

Gas can cause rapid suffocation due to oxygen deficiency. Store and use with adequate ventilation. Store in accordance with local regulations. Cylinders should be stored in the vertical position and secured from falling over. Keep cylinder tightly closed until ready for use. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. Keep container below 50°C in a well ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.

Section 8: Exposure Controls/Personal Protection

Control parameters:

OEL: Occupational Exposure Limits		
ACGIH	ACGIH TWA (ppm)	5000 ppm
	ACGIH STEL (ppm)	30000 ppm
	Remark (ACGIH)	Asphyxia
	Regulatory reference	ACGIH 2017

DNEL (Derived-No Effect Level):

None available

PNEC (Predicted No-Effect Concentration):

None available

Exposure controls

Appropriate engineering controls:

Provide adequate general and local exhaust ventilation.

Systems under pressure should be regularly checked for leakages.

Ensure exposure is below occupational exposure limits (where available).

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

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

CO2 detectors should be used when CO2 may be released.

General protective and hygienic measures:

The usual precautionary measures are to be adhered to when handling chemicals.

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Breathing equipment:

When a risk assessment indicates respirator use, use a properly fitted, air-purifying or air-fed respirator complying with an approved standard.

Protection of hands:

Protective gloves

Check the permeability prior to each use of the glove.

Eye protection:

Wear goggles when transfilling or breaking transfer connections.

Other:

Wear safety shoes while handling containers.

Section 9: Physical and Chemical Properties

Form:

Gas. (Liquefied compressed gas)

Odor:

Odorless

Odor threshold:

Not determined
pH:
Not applicable
Melting point/melting range:
-78.5 °C At atmospheric pressure dry ice sublimates into gaseous carbon dioxide.
Boiling point/boiling range:
-56.6 °C
Flash point:
Not applicable for gases and gas mixtures.
Evaporation rate:
Not applicable for gases and gas mixtures.
Flammability:
Non flammable.
Upper/lower flammability or explosive limits:
Non flammable
Auto ignition temperature:
Non flammable
Danger of explosion:
Not applicable
Vapor pressure:
57.3 Bar
Vapor density:
1.52 (Air = 1)
Relative density:
1.03 (Water = 1)
Solubility in/Miscibility with water:
2.000 g/L

Section 10: Stability and Reactivity

Reactivity:
No reactivity hazard other than the effects described in sub-sections below.
Chemical stability:
Stable under normal conditions.
Conditions to avoid:
Temperatures above 52°C.
Incompatible materials:
Increase risk of fire and explosion on contact with metal powder or dusts.
Not corrosive to metals.
Hazardous decomposition products:
None.

Section 11: Toxicological Information

Acute toxicity:
No known effects from this product.
Potential routes of exposure/potential health effects

Skin:

No known effects from this product.

Eye:

No known effects from this product.

Inhalation:

No known effects from this product.

Ingestion:

No known effects from this product.

Carcinogenic effects:

No known effects from this product.

Mutagenic effects:

No known effects from this product.

Reproductive toxicity:

No known effects from this product.

Sensitization:

No known effects from this product.

Target organs:

No known effects from this product.

Section 12: Ecological Information

Aqua Ecotoxicity:

No ecological damage caused by this product.

Mobility in soil:

Because of its high volatility, the product is unlikely to cause ground or water pollution.

Partition into soil is unlikely..

Biodegradation:

No ecological damage caused by this product.

Bioaccumulation potential:

No ecological damage caused by this product.

Section 13: Disposal Considerations

Waste Disposal:

May be vented to atmosphere in a well ventilated place.

Discharge to atmosphere in large quantities should be avoided.

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

Return unused product in original cylinder to supplier.

Section 14: Transport Information

UN Number: UN1013

UN proper shipping name: CARBON DIOXIDE

Transport hazard classes(es): Void

Packing group: 2.2: Non-flammable, non-toxic gases

Class: 2

Classification code: 2A

Environmental hazards: Not Applicable

Special precautions for user:

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 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.

Section 15: Regulatory Information

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

Directive 2012/18/EU

Not covered

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

Section 16: Other Information

This product is a fire extinguishing agent. It shall not be used for other purposes.

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.