

Air Liquide New Zealand Limited  
19 Maurice Road  
Penrose  
Auckland 1061

Phone: (09) 622 3880  
Fax: (09) 622 3881  
Emergency: 0800 156 516

## MATERIAL SAFETY DATA SHEET

Product Name:

CARBON DIOXIDE,  
Refrigerated Liquid (CO<sub>2</sub>)

Issued: May 2014

Revision: 9

Page: 1 of 6



Label 2.2 : Non  
flammable, non toxic  
gas.

### IDENTIFICATION

**Chemical Name:** Carbon Dioxide, Refrigerated Liquid  
**Synonyms:** LCO, LCO2  
**UN Number:** 2187  
**Poisons Schedule Number:** None allocated  
**G.T. EPG. (Group Text. Emergency Procedure Guide):** AS 1678 2C2

**Use:** Food Freezing Refrigerated Transport.

### HAZARDS IDENTIFICATION

**Dangerous Goods Class and Subsidiary Risk:** 2.2

**HSNO Classification:** Not Hazardous

**Hazard Statement:** Contains refrigerated gas; may cause cryogenic burns or injury.

**Precautionary Statements:** Read label before use.  
Read Material Safety Data Sheets.  
Wear cold insulating gloves, face shield and eye protection.  
Thaw frosted parts with lukewarm water. Do not rub affected area.  
Get immediate medical advice/attention.  
Store in a well ventilated place.

### COMPOSITION

Ingredients	CAS Number	Proportion
Chemical Entity Carbon Dioxide	124-38-9	99.8%

### FIRST AID MEASURES

#### Health Effects

##### Acute

Swallowed: Not applicable to gases.  
Eye: Can cause severe frostburn if brought in contact with eye.  
Skin: Can cause severe frostburn if brought in contact with skin.

**Issued: May 2014**

**Revision: 10**

**Page 2 of 6**

**Inhaled:** Carbon Dioxide is non-toxic at normal temperature and pressure. By diluting the oxygen concentration in air below the level necessary to support life, it can act as an asphyxiant. Effects of oxygen deficiency are: 12-16%: breathing and pulse rate increased, muscular coordination slightly disturbed; 10-14%: emotional upset, abnormal fatigue, disturbed respiration; 6-10%: nausea and vomiting, collapse or loss of consciousness; below 6%: convulsive movements, possible respiratory collapse and death.

### **Chronic**

Long term exposure to carbon dioxide has no known health effects. Prolonged exposure to an oxygen deficient atmosphere (below 18% oxygen in air) may affect the heart and nervous system.

### **First Aid**

#### Inhalation:

Call doctor. Prompt medical attention is mandatory in all cases of overexposure to Carbon Dioxide. If victim conscious: Move to uncontaminated area to breathe fresh air. Keep warm and quiet. If victim is unconscious: Move to uncontaminated area and give assisted respiration. When normal breathing is restored, treatment as above. Continued treatment should be symptomatic and supportive.

#### Eye Contact

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

#### Skin Contact

Liquid Carbon Dioxide can cause severe frostburn upon contact with skin. In case of frostburn spray with water for at least 15 minutes. Apply sterile dressing. Obtain medical assistance.

### **Advice to Doctor**

Advise doctor that victim is experiencing (has experienced) hyperoxia. Specialist advice for treatment of cryogenic burns is available at a Burns Unit.

### **General:**

Low air temperature due to close proximity of liquefied atmosphere gases can cause hypothermia and all persons at risk should be warmly clad. Avoid liquid spillage as cryogenic liquids embrittle many materials on contact.

## **FIRE FIGHTING MEASURES**

### **Flammability:**

Non Flammable.

### **Fire/Explosion Hazard:**

Carbon Dioxide is non-flammable, but container may release large quantities of Carbon Dioxide if ruptured. Carbon Dioxide may serve to extinguish fire.

### **Extinguishing Media:**

Water fog or fine water spray. If possible, stop flow of product. Move away from the container and cool with water from a protected position. If leaking do not spray water onto container. Water surrounding area (from protected position) to contain fire. Persons in the immediate area of the incident should be evacuated.

### **Hazchem Code:**

2T

### **Recommended Protective Clothing:**

A full chemical protection suit and breathing apparatus should be worn.

**ACCIDENTAL RELEASE MEASURES**

**Personal Protection:**

Personnel handling liquid carbon dioxide must be provided with safety footwear and leather or PVC gloves. Full cover overalls and safety glasses recommended. In areas where equipment failure may cause an immediate high concentration of carbon dioxide, approved self-contained full face respiratory equipment should be readily available.

**Spills and Disposal:**

Stop leak if it can be done without risk. Allow gas to dissipate to atmosphere. Ventilate area. Cold vapours are heavier than air. In case of large spillage evacuate nearby trenches, excavations, pits and the like.

**Reference Guide:**

Standard SNZ HB 76:2008 Dangerous Goods – Initial Emergency Response Guide.

**General:**

Low air temperature due to close proximity of liquefied atmosphere gases can cause hypothermia and all persons at risk should be warmly clad. Avoid liquid spillage as cryogenic liquids embrittle many materials on contact.

**HANDLING AND STORAGE**

**Handling**

**Flammability:**

Non Flammable.

**General:**

Low air temperature due to close proximity of liquefied atmosphere gases can cause hypothermia and all persons at risk should be warmly clad. Avoid liquid spillage as cryogenic liquids embrittle many materials on contact.

**Approved Handlers:**

Approved handlers are not required, non hazardous gas (HSNO).

**Storage**

**Separation:**

Supplied in portable cryogenic liquid containers or by bulk road tanker to cryogenic storage vessels installed at users' premises.

**Spills and Disposal:**

Stop leak if it can be done without risk. Allow gas to dissipate to atmosphere. Ventilate area. Cold vapours are heavier than air. In case of large spillage evacuate nearby trenches, excavations, pits and the like.

**EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Exposure Standards:**

TLV 5,000 ppm v/v STEL 30,000 ppm v/v

**Engineering Controls:**

Provide adequate local exhaust and dilution (general) ventilation and supply sufficient replacement air to maintain oxygen concentration above 18%.

**Personal Protection:**

Personnel handling liquid carbon dioxide must be provided with safety footwear and leather or PVC gloves. Full cover overalls and safety glasses recommended. In areas where equipment failure may cause an immediate high concentration of carbon dioxide, approved self-contained full face respiratory equipment should be readily available.

**PHYSICAL AND CHEMICAL PROPERTIES****Physical Properties**

Appearance:	Colourless, Sharp Odour	Flashpoint:	Non Flammable
Sublimation Temp:	-78.5°C	Flammability Limits:	Non Flammable
Vapour Pressure:	(at 15°C) 5090 kPa	Solubility in Water (at 0°C):	1.716 m <sup>3</sup> /kg

**Other Properties**

Relative Density (at 15°C) (Air = 1):	1.53	Density of Gas (101.3 kPa, 15°C):	1.873 kg/m <sup>3</sup>
Molecular Weight:	44.01	Critical Temperature:	31.06°C

**STABILITY AND REACTIVITY****Flammability:**

Non Flammable. Contains refrigerated gas; may cause cryogenic burns or injury

**Materials Compatibility:**

Stable under normal conditions. Liquid spillages can cause embrittlement of structural materials.

**TOXICOLOGY INFORMATION**

In high concentrations cause rapid circulatory insufficiency. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness.

**ECOLOGICAL INFORMATION**

Can cause frost damage to vegetation.

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

Global warming factor (CO<sub>2</sub>=1): 1

**DISPOSAL CONSIDERATIONS**

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

**TRANSPORT INFORMATION**

<b>UN Number:</b>	2187
<b>Proper Shipping Name:</b>	CARBON DIOXIDE, REFRIGERATED LIQUID
<b>Dangerous Goods Class and Subsidiary Risk:</b>	2.2
<b>Packing Group:</b>	Not applicable
<b>Hazchem Code:</b>	2T

**Other Information:** Avoid transport on vehicles where the load 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 there is adequate ventilation.
- Compliance with applicable regulations.

**REGULATORY INFORMATION****ERMA Register Approval No:** HSR001018**HSNO Controls:** Hazardous Substances (Compressed Gases) Regulations 2004.  
Hazardous Substances (Tank Wagon and Transportable Containers) Regulations 2004.**Approved Handlers:**

Approved handlers are not required, non hazardous gas (HSNO).

**OTHER INFORMATION**Portable liquid vessels - Colour Metallic silver  
Outlet Liquid - CGA 320  
Gas - AS2743 Type 30

References:

- . L'Air Liquide Gas Encyclopaedia - Elsevier Scientific Publishing Co. Amsterdam
- . Cheminfo Database
- . New Zealand Code for the Transport of Dangerous Goods by Road and Rail
- . NHMRC Threshold Limit Values - Commonwealth Dept Health
- . SAA Safe Storage and Handling Information Cards
- . SAA Emergency Procedure Cards
- . Matheson Gas Data Book, 6th Edition, Matheson 1980
- . Canadian Liquid Air Montreal, Canada - Gas Products Safety Data Sheets
- . AS 1894 Code of Practice for Safe Handling of Cryogenic fluids
- . NZCIC Code of Practice – Preparation of Safety Data Sheets

**END MSDS**

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

This MSDS has been prepared in accordance with NZCIC Code of Practice – Preparation of Safety Data Sheets

**Air Liquide regional offices contact details on following page**

## Regional Offices

### Auckland

PO Box 12846  
19 Maurice Road  
Penrose  
Phone: 09 622 3888  
Fax: 09 622 3882

### Hamilton

PO Box 10 394  
2 Tawn Place, Pukete  
Phone: 07 849 2969  
Fax: 07 348 9063

### Mt Maunganui

89 Poturi Street, Tauriko  
Tauranga 3110  
Phone: 07 574 8475  
Fax: 07 574 8476

### Palmerston North

PO Box 10 010  
5 Connolly Place  
Palmerston North  
Phone: 06 355 5216  
Fax: 06 354 7104

### Christchurch

PO Box 16453  
7 Canterbury St  
Hornby  
Phone: 03 344 6033  
Fax: 03 344 6031

**Emergency 24hr Phone  
Number 0800 156 516**