



# Material Safety Data Sheet

## CARBON DIOXIDE, Refrigerated Liquid (CO2)

Infosafe™ 8AEFE Issue Date May 2009 Status ISSUED by BS: 1.9.21  
 No. AIRLIQUI

**Not classified as hazardous**

### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

**Product Name** CARBON DIOXIDE, Refrigerated Liquid (CO2)  
**Product Use** Food freezing, refrigerated transport.  
**Company Name** Air Liquide Australia Limited (ABN 57 004 385 782)  
**Address** Level 9, 380 St. Kilda Road Melbourne  
 Victoria 3004  
**Emergency Tel.** 1800 812588 (24hr)  
**Telephone Number/Fax** Tel: (03) 9697 9888  
 Fax: (03) 9690 7107  
**Other Names** Not Available

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Name	CAS	Proportion
	Carbon Dioxide	124-38-9	99.8 %

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### 3. HAZARDS IDENTIFICATION

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<b>Chronic Effects</b>	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.
<b>Inhalation</b>	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.
<b>Ingestion</b>	Not applicable to gases.
<b>Skin</b>	Can cause frostburn if brought into contact with the skin.
<b>Eye</b>	Can cause frostburn if brought into contact with the eye.

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### 4. FIRST AID MEASURES

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<b>Inhalation</b>	If inhaled, remove affected person from contaminated area. Keep at rest until recovered. If symptoms persist seek medical attention.
<b>Ingestion</b>	Not applicable to gases.
<b>Skin</b>	Liquid carbon dioxide can cause severe frostburn upon contact with skin. Flood with cool water. Apply cold compress.
<b>Eye</b>	Wash affected area thoroughly with soap and water. If symptoms develop seek medical attention.
<b>First Aid Facilities</b>	Eyewash and normal washroom facilities. A safety shower is strongly recommended.
<b>Advice to Doctor</b>	Treat symptomatically.
<b>Other Information</b>	Specialist advice for treatment of cryogenic burns is available at State Burns Unit, Capital Cities.

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### 5. FIRE FIGHTING MEASURES

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<b>Extinguishing Media</b>	Use extinguishing media suitable for surrounding environment.
<b>Specific Hazards</b>	Vessels involved in a fire should be sprayed with water to avoid heat damage and excessive pressure rise. Low air temperature due to close proximity of liquefied gases can cause hypothermia and all persons at risk should be warmly clad.

Avoid liquid spillage as very cold liquids embrittle many materials on contact.

<b>Hazardous Combustion Products</b>	Carbon dioxide is non-flammable, but container may release large quantities of carbon dioxide if ruptured. Carbon dioxide may serve to extinguish fire. Low air temperature due to close proximity of liquefied gases can cause hypothermia. Avoid liquid spillage as cryogenic liquids embrittle many materials on contact.
<b>Precautions in connection with Fire</b>	Fire fighters should wear Self-Contained Breathing Apparatus (SCBA) operated in positive pressure mode and full protective clothing to prevent exposure to vapours or fumes. Water spray may be used to cool down heat-exposed containers.
<b>Flash Point</b>	Not applicable
<b>Ignition Temperature</b>	Not available
<b>Flammable Limits UEL</b>	Not applicable
<b>Flammable Limits LEL</b>	Not applicable
<b>Flammability</b>	Non-flammable

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## 6. ACCIDENTAL RELEASE MEASURES

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Carbon Dioxide is heavier than air and will accumulate in low points. Remove all sources of ignition. Increase ventilation. Evacuate all unnecessary personnel. Use self-contained breathing apparatus (S.C.B.A) and full protective clothing to minimise exposure. Allow gas to vent safely to atmosphere, preferably in well ventilated, remote location. Monitor oxygen concentration in confined spaces. Wear air-supplied mask. Check for leaks using pressure drop test or soapy water on joints and outlets. Shut cylinder valve to stop leak if possible and safe to do so. Cold vapours are heavier than air.

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## 7. HANDLING AND STORAGE

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<b>Handling</b>	Use away from all sources of heat and ignition. Avoid skin and eye contact and breathing of gas. Avoid release of gas into workplace air. Use smallest possible amounts in designated areas with adequate ventilation. Have emergency equipment (for fires, leaks, etc.) readily available.
<b>Storage</b>	Supplied in portable cryogenic liquid containers or by bulk road tanker to cryogenic storage vessels installed at users' premises. Containers shall be stored in a cool, dry, well ventilated area out of direct sunlight and away from heat and ignition sources. Outside or detached storage is preferred. Containers shall be stored upright on a level, fireproof floor, secure in position and protected from damage. Label empty containers and store full

containers separately from empty ones. Limit quantity in storage. Restrict access to storage area and post warning signs. Inspect periodically for deficiencies such as damage or leaks.

**Packaging**

Portable liquid vessels:

COLOUR: Metallic silver on white with AS 2700 N32 green grey band.

OUTLET: Liquid CGA 320.

Gas AS2743 Type 30.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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**National  
Exposure  
Standards**

No exposure value assigned for this specific material by the National Occupational Health and Safety Commission (NOHSC), Australia. However, the available exposure limits for ingredients are listed below:

National Occupational Health And Safety Commission (NOHSC),  
Australia Exposure Standards:

Substance TWA STEL NOTICES

ppm mg/m<sup>3</sup> ppm mg/m<sup>3</sup>

Carbon dioxide 5000 9000 30000 54000 -

TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.

STEL (Short Term Exposure Limit): The average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday.

**Respiratory  
Protection**

If engineering controls are not effective in controlling airborne exposure then self-contained breathing apparatus (S.C.B.A) should be used.

**Eye Protection**

Safety glasses with side shields or chemical goggles should be worn. Final choice of appropriate eye/face protection will vary according to individual circumstances. Eye protection devices should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.

**Hand Protection**

Wear gloves of impervious material. Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.

**Footwear**

Personnel engaged in the movement of gas cylinders shall be provided with safety footwear.

**Body Protection**

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled. Industrial clothing should conform to the specifications detailed in AS/NZS 2919: Industrial clothing.

**Eng. Controls**

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

**Biological Limit Values** No biological limits allocated.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Appearance** Colourless gas

**Odour** Sharp odour

**Melting Point** Not available

**Boiling Point** Not available

**Solubility in Water** 1.716 m<sup>3</sup>/kg at 0°C

**Specific Gravity (H<sub>2</sub>O=1)** Not available

**pH Value** Not applicable

**Vapour Pressure** 5090 kPa at 15°C

**Vapour Density (Air=1)** 1.53 at 15°C (Air=1)

**Density** 1.873 kg/m<sup>3</sup> (101.3 kPa) at 15°C

**Flash Point** Not applicable

**Flammability** Non-flammable

**Ignition Temperature** Not available

**Flammable Limits LEL** Not applicable

**Flammable Limits UEL** Not applicable

**Molecular Weight** 44.01

**Other Information** Critical Temperature: 31.06°C

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## 10. STABILITY AND REACTIVITY

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**Stability** Stable under normal conditions of storage and handling.

**Hazardous Decomposition Products** Not applicable

**Hazardous** Will not occur

**Reaction**

**Conditions to Avoid**

Extremes of temperature and direct sunlight.

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11. TOXICOLOGICAL INFORMATION

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**Toxicology Information**

Not available

**Inhalation**

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.

**Ingestion**

Not applicable to gases.

**Skin**

Can cause frostburn if brought into contact with the skin.

**Eye**

Can cause frostburn if brought into contact with the eye.

**Chronic Effects**

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.

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12. ECOLOGICAL INFORMATION

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**Environment Protection**

Not applicable

**Mobility**

Not available

**Persistence / Degradability**

Not available

**Ecotoxicity**

Not available

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13. DISPOSAL CONSIDERATIONS

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Dispose of waste according to applicable local and national regulations.

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14. TRANSPORT INFORMATION

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This material is classified as a Class 2.2 (Non-flammable Non-toxic Gases) Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

Class 2.2 Dangerous Goods are incompatible in a placard load with any of the following:

- Class 1, Explosives
- Class 4.2, Spontaneously Combustible Substances
- Class 5.2, Organic Peroxides

**U.N. Number** 2187

**Proper Shipping Name** CARBON DIOXIDE, REFRIGERATED LIQUID

**DG Class** 2.2

**Hazchem Code** 2T

**Packaging Method** P203

**Packing Group**

**EPG Number** 2C2

**IERG Number** 09

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## 15. REGULATORY INFORMATION

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Not classified as Hazardous according to criteria of National Occupational Health & Safety Commission (NOHSC), Australia.  
Not classified as a Scheduled Poison according to the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

### Risk Phrase

**Poisons Schedule** Not Scheduled

**Packaging & Labelling** Portable liquid vessels:  
COLOUR: Metallic silver on white with AS 2700 N32 green grey band.  
OUTLET: Liquid CGA 320.  
Gas AS2743 Type 30.

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## 16. OTHER INFORMATION

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**Contact Person/Point** 24 HOUR EMERGENCY CONTACT: The Operator: 1800 812 588

Regional Offices:  
Victoria

40 Bunnett Street, North Sunshine 3020. Tel. (03) 9290 1100 Fax (03) 9290 1199

New South Wales

43-47 Pine Road, Fairfield 2165. Tel. (02) 9892 9777 Fax (02) 9892 1454

4 Kullara Close, Beresfield. 2322. Tel (02) 4949 1700 Fax (02) 4949 1750

Lot 5, Shellharbour Road, Port Kembla 2505. Tel. (02) 4274 4044 Fax (02) 4276 3879

South Australia

164 Philip Highway, Elizabeth 5112. Tel. (08) 8209 3600 Fax (08) 8255 9885  
Queensland  
759 Progress Road, Wacol 4076. Tel. (07) 3246 6363 Fax (07) 3271 2589  
Ingham Road, Cnr. Dundee Street,  
Bohle, Townsville, 4818  
Tel. (07) 4774 8276 Fax (07) 4774 8313  
Featherstone Street, Parkhurst  
Rockhampton, 4702. Tel. (07) 4936 1066 Fax (07) 4936 1024  
68 Bunda Street, Cairns 4870. Tel. (07) 4031 1566 Fax (07) 4051 4293  
Tasmania  
11 Windsor Street, Invermay 7248. Tel. (03) 6334 9666 Fax (03) 6334 9600  
Air Liquide W.A. Pty Ltd  
A.B.N. 52 008 694 166  
Wesfarmers Energy Building, Campus Drive (off Murdoch Drive),  
Murdoch, WA 6150  
Tel. (08) 9312 9111 Fax (08) 9313 8108  
AIR LIQUIDE AUSTRALIA LIMITED  
A.B.N. 57 004 385 782  
Head Office:  
380 St. Kilda Road, Melbourne, Victoria 3004, Australia. Tel. (03) 9697 9888 Fax (03) 9690 7107  
www.airliquide.com.au

**SDS History** Date Reviewed: May 2009  
Supersedes: July 2004

**Poisons Schedule** Not Scheduled

**Molecular Weight** 44.01

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End of MSDS

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