

## SAFETY DATA SHEET

# 030

Product Name **CARBON DIOXIDE CYLINDER, GAS AND LIQUID WITHDRAWAL**

### 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Supplier Name** BOC LIMITED (AUSTRALIA)  
**Address** 10 Julius Avenue, North Ryde, NSW, AUSTRALIA, 2113  
**Telephone** 131 262, (02) 8874 4400  
**Fax** 132 427 (24 hours)  
**Emergency** 1800 653 572 (24/7) (Australia only)  
**Web Site** <http://www.boc.com.au/>  
**Synonym(s)** 030 - SDS NUMBER · 206, 207, 261 · CARBON DIOXIDE, COMPRESSED · FOGG GAS ·  
PRODUCT CODES: 080, 081, 082, 083, 084, 086, 131, 176, 200 · REFRIGERANT 744  
**Use(s)** DISPENSING GAS · INERT GAS · SHIELDING GAS  
**SDS Date** 09 March 2012

### 2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

**RISK PHRASES**

None allocated

**SAFETY PHRASES**

None allocated

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

<b>UN Number</b>	1013	<b>DG Division</b>	2.2
<b>Packing Group</b>	None Allocated	<b>Subsidiary Risk(s)</b>	None Allocated
<b>Hazchem Code</b>	2T		

### 3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	Cas No.	Content (v/v)
CARBON DIOXIDE	C-O2	124-38-9	99.9%

### 4. FIRST AID MEASURES

**Eye** Cold burns: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek medical attention.

**Inhalation** If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Apply artificial respiration if not breathing. Give oxygen if available. For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor.

**Skin** Cold burns: Remove contaminated clothing and gently flush affected areas with warm water (30°C) for 15 minutes. Apply sterile dressing and treat as for a thermal burn. For large burns, immerse in warm water for 15 minutes. DO NOT apply any form of direct heat. Seek immediate medical attention.

**Ingestion** Due to product form and application, ingestion is considered unlikely.

**Advice to Doctor** Treat for asphyxia and cold burns.

## 5. FIRE FIGHTING MEASURES

<b>Flammability</b>	Non flammable. Exposure to fire may cause containers to rupture/explode.
<b>Fire and Explosion</b>	Temperatures in a fire may cause cylinders to rupture. Cool cylinders or containers exposed to fire by applying water from a protected location. Do not approach cylinders or containers suspected of being hot. Remove cool cylinders from the path of the fire. Evacuate the area if unable to keep cylinders cool. Ensure work area is thoroughly ventilated before re-entry.
<b>Extinguishing</b>	Stop flow of gas if safe to do so, such as by slowly closing the cylinder valve.
<b>Hazchem Code</b>	2T <div> <div>2</div> <div>Water Fog (or fine water spray if fog unavailable)</div> </div> <div> <div>T</div> <div>Self Contained Breathing apparatus and protective gloves.</div> </div>

## 6. ACCIDENTAL RELEASE MEASURES

<b>Spillage</b>	If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Use personal protective equipment. Carefully move material to a well ventilated remote area, then allow to discharge. Do not attempt to repair leaking valve or cylinder safety devices.
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## 7. STORAGE AND HANDLING

<b>Storage</b>	Do not store near incompatible materials. Cylinders should be stored below 45°C in a secure area, upright and restrained to prevent cylinders from falling. Cylinders should also be stored in a dry, well ventilated area constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits.
<b>Handling</b>	Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Do not drag, drop, slide or roll cylinders. The uncontrolled release of a gas under pressure may cause physical harm. Use a suitable hand truck for cylinder movement.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Exposure Standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Carbon dioxide	SWA (AUS)	5000	9000	30000	54000
Carbon dioxide in coal mines	SWA (AUS)	12500	22500	30000	54000

<b>Biological Limits</b>	No biological limit allocated.
<b>Engineering Controls</b>	Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.
<b>PPE</b>	
<b>Eye / Face</b>	Wear safety glasses.
<b>Hands</b>	Wear leather or cotton gloves.
<b>Body</b>	Wear safety boots.
<b>Respiratory</b>	Where an inhalation risk exists, wear Self Contained Breathing Apparatus (SCBA) or an Air-line respirator.



## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	COLOURLESS GAS
<b>Odour</b>	ODOURLESS
<b>Flammability</b>	NON FLAMMABLE
<b>Flash point</b>	NOT RELEVANT

**Product Name** CARBON DIOXIDE CYLINDER, GAS AND LIQUID WITHDRAWAL

Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	NOT AVAILABLE
Specific gravity	NOT APPLICABLE
Solubility (water)	0.759 cm <sup>3</sup> /cm <sup>3</sup>
Vapour pressure	6300 kPa @ 25°C (Approximately)
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
% Volatiles	100 %
Critical pressure	7,380 kPa (Approximately)
Critical temperature	31°C (Approximately)
Sublimation temperature	-78°C (Approximately)
Cylinder pressure (when full)	6300 kPa @ 25°C (Approximately)
Density	1.53 (Air = 1)

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## 10. STABILITY AND REACTIVITY

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Chemical Stability	Stable under recommended conditions of storage.
Conditions to Avoid	Avoid shock, friction, heavy impact, heat, sparks, open flames and other ignition sources.
Material to Avoid	Moist carbon dioxide is corrosive, hence acid resistant materials are required (stainless steel). Certain properties of some plastics and rubbers may be affected by carbon dioxide, ie. embrittlement, leaching of plasticisers, etc. Dust of aluminium, chrome and manganese ignite and explode when heated in carbon dioxide. Incompatible with acrylaldehyde, aziridine, metal acetylides, sodium peroxide. Corrosive when moist.
Hazardous Decomposition Products	May evolve toxic gases if heated to decomposition.
Hazardous Reactions	Polymerization will not occur.

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## 11. TOXICOLOGICAL INFORMATION

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Health Hazard Summary	Asphyxiant gas. Severe frost-bite burns may result from exposure to cold vapour or liquid. Carbon dioxide concentrations of 3-5 % in air cause increased respiration and headache. Concentrations of 8-15% cause headache, nausea and vomiting which may lead to unconsciousness if not moved to open air and given oxygen. Inhalation of a mixture containing no oxygen may result in unconsciousness from the first breath and death may follow in minutes. Adverse health effects to long term exposure to carbon dioxide have not been reported. However, in environments such as submarines where exposure to levels of 0.5-1.0% may occur, specialist medical opinion should be sought on the effects of long term exposure.
Eye	Direct contact with evaporating liquid may result in cold burns, similar to frostbite injury, with possible permanent damage. Contact with dry ice powder could result in frostbite or cold burns.
Inhalation	Asphyxiant. Effects are proportional to oxygen displacement. Acts as a simple asphyxiant by displacing oxygen in the lungs thereby diminishing the supply of oxygen to the blood and tissues.
Skin	Direct contact with the liquefied material or escaping compressed gas may cause cold burns similar to frostbite injury. Skin contact with dry ice powder could result in frostbite or cold burns.
Ingestion	Ingestion is considered unlikely due to product form. Ingestion will cause severe cold burns to mouth and throat.
Toxicity Data	CARBON DIOXIDE (124-38-9) LC50 (inhalation) 470000 ppm/30M (rat) LCLo (inhalation) 9 pph/5M (human)

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## 12. ECOLOGICAL INFORMATION

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Environment	When discharged to the atmosphere, carbon dioxide may contribute to the greenhouse effect.
Ecotoxicity	When discharged to the atmosphere in large quantities, carbon dioxide may contribute to the greenhouse effect.

Product Name **CARBON DIOXIDE CYLINDER, GAS AND LIQUID WITHDRAWAL**

Persistence/Degradability Not applicable.

Mobility Not applicable.

### 13. DISPOSAL CONSIDERATIONS

**Waste Disposal** Cylinders should be returned to the manufacturer or supplier for disposal of contents.

**Legislation** Dispose of in accordance with relevant local legislation.

### 14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE



	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
UN Number	1013	-	-
Proper Shipping Name	CARBON DIOXIDE	-	-
DG Class/ Division	2.2	-	-
Subsidiary Risk(s)	None Allocated	-	-
Packing Group	None Allocated	-	-
GTEPG	2C1		
Hazchem Code	2T		
Other Information	Ensure cylinder is separated from driver and that outlet of relief device is not obstructed. Refer to Commonwealth, State and Territory Dangerous Goods Legislation which contain requirements which affect gas storage and transport.		

### 15. REGULATORY INFORMATION

**Poison Schedule** A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)

**Inventory Listing(s)** **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**  
All components are listed on AICS, or are exempt.

### 16. OTHER INFORMATION

**Additional Information** The storage of significant quantities of gas cylinders must comply with AS4332 The storage and handling of gases in cylinders.

APPLICATION METHOD: Gas withdrawal: gas regulator of suitable pressure and flow rating fitted to cylinder or manifold with low pressure gas distribution to equipment. Liquid withdrawal: may be used as liquid or vapourised for pressure regulated gas distribution.

**PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:**

The recommendation for protective equipment contained within this ChemAlert report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

## HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

## Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
mg/m <sup>3</sup>	Milligrams per Cubic Metre
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
TLV	Threshold Limit Value
TWA/OEL	Time Weighted Average or Occupational Exposure Limit

## Revision History

Revision	Description
1.0	Standard SDS Review

## Report Status

This document has been compiled by RMT on behalf of the manufacturer of the product and serves as the manufacturer's Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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**End of SDS**