

**SAFETY DATA SHEET**

# 2318

**1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER****1.1 Product identifier**

**Product name** OXYGEN, NITROUS OXIDE, CARBON DIOXIDE AND CARBON MONOXIDE IN NITROGEN  
**Synonym(s)** 2318 - SDS NUMBER • PRODUCT CODES: 288 • SPECIAL GAS MIXTURE

**1.2 Uses and uses advised against**

**Use(s)** CALIBRATION • INDUSTRIAL APPLICATIONS

**1.3 Details of the supplier of the product**

**Supplier name** BOC LIMITED (AUSTRALIA)  
**Address** 10 Julius Avenue, North Ryde, NSW, 2113, AUSTRALIA  
**Telephone** 131 262, (02) 8874 4400  
**Fax** 132 427 (24 hours)  
**Website** <http://www.boc.com.au>

**1.4 Emergency telephone number(s)**

**Emergency** 1800 653 572 (24/7) (Australia only)

**2. HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture**

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

**GHS classification(s)** Gases Under Pressure: Compressed gas

**2.2 Label elements**

**Signal word** WARNING

**Pictogram(s)**

**Hazard statement(s)**

H280 Contains gas under pressure; may explode if heated.

**Prevention statement(s)**

None allocated.

**Response statement(s)**

None allocated.

**Storage statement(s)**

P410 + P403 Protect from sunlight. Store in a well-ventilated place.

**Disposal statement(s)**

None allocated.

**2.3 Other hazards**

No information provided.

### 3. COMPOSITION/ INFORMATION ON INGREDIENTS

#### 3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content (v/v)
OXYGEN	7782-44-7	231-956-9	5%
NITROUS OXIDE	10024-97-2	233-032-0	<0.04%
CARBON MONOXIDE	630-08-0	211-128-3	<0.02%
NITROGEN	7727-37-9	231-783-9	Remainder
CARBON DIOXIDE	124-38-9	204-696-9	14%

### 4. FIRST AID MEASURES

#### 4.1 Description of first aid measures

Eye	None required.
Inhalation	If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Be aware of possible explosive atmospheres. Apply artificial respiration if not breathing. Give oxygen if available.
Skin	None required.
Ingestion	Due to product form and application, ingestion is considered unlikely.
First aid facilities	No information provided.

#### 4.2 Most important symptoms and effects, both acute and delayed

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility / consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.

#### 4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

### 5. FIRE FIGHTING MEASURES

#### 5.1 Extinguishing media

Use water fog to cool containers from protected area.

#### 5.2 Special hazards arising from the substance or mixture

Non flammable.

#### 5.3 Advice for firefighters

Temperatures in a fire may cause cylinders to rupture. Cool cylinders or containers exposed to fire by applying water from a protected location. Remove cool cylinders from the path of the fire. Evacuate the area if unable to keep cylinders cool. Do not approach cylinders or containers suspected of being hot.

#### 5.4 Hazchem code

2TE

2      Fine Water Spray.

T      Wear full fire kit and breathing apparatus. Dilute spill and run-off.

E      Evacuation of people in and around the immediate vicinity of the incident should be considered.

### 6. ACCIDENTAL RELEASE MEASURES

#### 6.1 Personal precautions, protective equipment and emergency procedures

If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Use Personal Protective Equipment (PPE) as detailed in Section 8 of the SDS.

#### 6.2 Environmental precautions

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

### 6.3 Methods of cleaning up

Carefully move material to a well ventilated remote area, then allow to discharge if safe to do so. Do not attempt to repair leaking valve or cylinder safety devices.

### 6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Use of safe work practices are recommended to avoid 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.

### 7.2 Conditions for safe storage, including any incompatibilities

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.

### 7.3 Specific end use(s)

No information provided.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### 8.1 Control parameters

#### 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
Carbon monoxide	SWA (AUS)	30	34	--	--
Nitrogen	SWA (AUS)			Asphyxiant	
Nitrous oxide	SWA (AUS)	25	45	--	--

#### Biological limits

Ingredient	Determinant	Sampling Time	BEI
CARBON MONOXIDE	Carboxyhemoglobin in blood	End of shift	3.5% of hemoglobin
	Carbon monoxide in end-exhaled air	End of shift	20 ppm

Reference: ACGIH Biological Exposure Indices

### 8.2 Exposure controls

**Engineering controls** Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical explosion proof extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

#### PPE

<b>Eye / Face</b>	Wear safety glasses.
<b>Hands</b>	Wear leather 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

**9.1 Information on basic physical and chemical properties**

<b>Appearance</b>	COLOURLESS GAS
<b>Odour</b>	ODOURLESS
<b>Flammability</b>	NON FLAMMABLE
<b>Flash point</b>	NOT APPLICABLE
<b>Boiling point</b>	NOT RELEVANT
<b>Melting point</b>	NOT RELEVANT
<b>Evaporation rate</b>	NOT APPLICABLE
<b>pH</b>	NOT APPLICABLE
<b>Vapour density</b>	1.06 (Air = 1)
<b>Specific gravity</b>	NOT APPLICABLE
<b>Solubility (water)</b>	NOT SOLUBLE
<b>Vapour pressure</b>	NOT AVAILABLE
<b>Upper explosion limit</b>	NOT AVAILABLE
<b>Lower explosion limit</b>	NOT AVAILABLE
<b>Partition coefficient</b>	NOT AVAILABLE
<b>Autoignition temperature</b>	NOT AVAILABLE
<b>Decomposition temperature</b>	NOT AVAILABLE
<b>Viscosity</b>	NOT AVAILABLE
<b>Explosive properties</b>	NOT AVAILABLE
<b>Oxidising properties</b>	NOT AVAILABLE
<b>Odour threshold</b>	NOT AVAILABLE

**9.2 Other information**

<b>% Volatiles</b>	100 %
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## **10. STABILITY AND REACTIVITY**

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**10.1 Reactivity**

Carefully review all information provided in sections 10.2 to 10.6.

**10.2 Chemical stability**

Stable under recommended conditions of storage.

**10.3 Possibility of hazardous reactions**

Polymerization will not occur.

**10.4 Conditions to avoid**

Avoid heat, sparks, open flames and other ignition sources.

**10.5 Incompatible materials**

Compatible with most commonly used materials.

**10.6 Hazardous decomposition products**

This material will not decompose to form hazardous products other than that already present.

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## **11. TOXICOLOGICAL INFORMATION**

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**11.1 Information on toxicological effects**

<b>Acute toxicity</b>	Based on available data, the classification criteria are not met. Contains a low concentration of carbon monoxide, at levels unlikely to cause acute toxicity effects.
<b>Skin</b>	Not classified as a skin irritant.
<b>Eye</b>	Not classified as an eye irritant.
<b>Sensitization</b>	Not classified as causing skin or respiratory sensitisation.
<b>Mutagenicity</b>	Not classified as a mutagen.
<b>Carcinogenicity</b>	Not classified as a carcinogen.
<b>Reproductive</b>	Exposure to carbon monoxide can result in developmental defects on foetuses without maternal symptoms. Due to the low levels present, the risk of adverse effects is reduced.
<b>STOT – single exposure</b>	Asphyxiant. Effects are proportional to oxygen displacement. Over exposure may result in dizziness, drowsiness, weakness, fatigue, breathing difficulties and unconsciousness.

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<b>STOT – repeated exposure</b>	Not classified as causing organ effects from repeated exposure.
<b>Aspiration</b>	Not classified as causing aspiration.

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## 12. ECOLOGICAL INFORMATION

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### **12.1 Toxicity**

No information provided.

### **12.2 Persistence and degradability**

No information provided.

### **12.3 Bioaccumulative potential**

No information provided.

### **12.4 Mobility in soil**

No information provided.

### **12.5 Other adverse effects**

No known ecological damage is caused by this product.

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## 13. DISPOSAL CONSIDERATIONS

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### **13.1 Waste treatment methods**

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

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

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## 14. TRANSPORT INFORMATION

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



	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
<b>14.1 UN Number</b>	1956	1956	1956
<b>14.2 Proper Shipping Name</b>	COMPRESSED GAS, N.O.S. (Contains nitrogen)	COMPRESSED GAS, N.O.S. (Contains nitrogen)	COMPRESSED GAS, N.O.S. (Contains nitrogen)
<b>14.3 Transport hazard class</b>	2.2	2.2	2.2
<b>14.4 Packing Group</b>	None Allocated	None Allocated	None Allocated

**14.5 Environmental hazards**      No information provided

### **14.6 Special precautions for user**

**Hazchem code**      2TE

**GTEPG**      2C1

**EMS**      F-C, S-V

**Other information**      Ensure cylinder is separated from driver and that outlet of relief device is not obstructed.

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## 15. REGULATORY INFORMATION

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### **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**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).

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<b>Classifications</b>	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.  The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].
<b>Hazard codes</b>	None allocated.
<b>Risk phrases</b>	None allocated.
<b>Safety phrases</b>	None allocated.
<b>Inventory listing(s)</b>	<b>AUSTRALIA: AICS (Australian Inventory of Chemical Substances)</b> All components are listed on AICS, or are exempt.

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## 16. OTHER INFORMATION

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<b>Additional information</b>	<p>The storage of significant quantities of gas cylinders must comply with AS4332 The storage and handling of gases in cylinders.</p> <p><b>ASPHYXIANTS (1):</b> When present in the atmospheres in high concentrations, asphyxiants reduce the oxygen concentration by displacement. Atmospheres deficient in oxygen do not provide adequate sensory warning of danger and most simple asphyxiants are odourless. Therefore it is not appropriate to recommend an exposure standard for each asphyxiant, but to maintain oxygen concentrations. However, some asphyxiants may be given an exposure standard due to the potential for narcotic effects at high concentrations or an explosion hazard.</p> <p><b>ASPHYXIANTS (2):</b> There is a significant hazard associated with workers entering poorly ventilated areas (e.g. tanks) where oxygen may be deficient. An air supplied breathing apparatus may be required if adequate ventilation is not ensured.</p> <p><b>ASPHYXANT GASES:</b> Asphyxiant gases may displace oxygen leading to oxygen deficiency. Where oxygen content is low effects may include: 12-16% - increased breathing/ pulse rate, lack of coordination; 10-14% - mental disturbance, fatigue, breathing stress; 6-10% - vomiting, collapse and possible unconsciousness; 0-6% - convulsions, respiratory collapse and death.</p> <p><b>PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:</b> The recommendation for protective equipment contained within this 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.</p> <p><b>HEALTH EFFECTS FROM EXPOSURE:</b> 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.</p>
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<b>Abbreviations</b>	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
	EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
	GHS	Globally Harmonized System
	GTEPG	Group Text Emergency Procedure Guide
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m <sup>3</sup>	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	STEL	Short-Term Exposure Limit
	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
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
	TWA	Time Weighted Average

**Report status**

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

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier 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, importer or supplier.

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