

SAFETY DATA SHEET

2672

Product Name **12 COMPONENT MIXTURE, BALANCE OXYGEN (2672)****1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER**

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)
Emergency	1800 653 572 (24/7) (Australia only)
Web site	http://www.boc.com.au/
Synonym(s)	2672 - SDS NUMBER • PRODUCT CODES: 285, 288 • SPECIAL GAS MIXTURE
Use(s)	CALIBRATION • INDUSTRIAL APPLICATIONS
SDS date	28 August 2013

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

RISK PHRASES

R8 Contact with combustible material may cause fire.

SAFETY PHRASES

S2 Keep out of reach of children.

S17 Keep away from combustible material.

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

UN number	3156	DG division	2.2
Packing group	None Allocated	Subsidiary risk(s)	5.1
Hazchem code	2S		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Identification	Classification	Content (v/v)
1,3-BUTADIENE	CAS: 106-99-0 EC: 203-450-8	F+;R12 Carc.;R45 Muta.;R46	<0.1%
ACETONE	CAS: 67-64-1 EC: 200-662-2	F;R11 Xi;R36 Xi;R66 Xn;R67	<0.1%
ACETYLENE	CAS: 74-86-2 EC: 200-816-9	F+;R12 E;R5 E;R6	<0.1%
ETHANE	CAS: 74-84-0 EC: 200-814-8	F+;R12	<0.1%
ETHYLENE	CAS: 74-85-1 EC: 200-815-3	F+;R12 Xn;R67	<0.1%
METHANE	CAS: 74-82-8 EC: 200-812-7	F+;R12	<0.1%
PROPANE	CAS: 74-98-6 EC: 200-827-9	F+;R12	<0.1%

PROPYLENE	CAS: 115-07-1 EC: 204-062-1	F+;R12	<0.1%
OXYGEN	CAS: 7782-44-7 EC: 231-956-9	O;R8	Remainder
NITROGEN	CAS: 7727-37-9 EC: 231-783-9	Not Available	9%
CARBON DIOXIDE	CAS: 124-38-9 EC: 204-696-9	Not Available	<0.1%
N-BUTANE	Not Available	Not Available	<0.1%

4. FIRST AID MEASURES

Eye	None required.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing. For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor.
Skin	None required.
Ingestion	Due to product form and application, ingestion is considered unlikely.
Advice to doctor	Treatment for hyperoxia.

5. FIRE FIGHTING MEASURES

Flammability	Non flammable - oxidising agent. May increase fire intensity. Do not expose to heat and ignition sources. May ignite in contact with incompatible materials.
Fire and explosion	Temperatures in a fire may cause cylinders to rupture and internal pressure relief devices to be activated. 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 if safe to do so. Ensure working area is well ventilated before re-use. Notify the manufacturer that you will be returning a faulty cylinder. Residual product will be disposed of when the cylinder is returned.
Extinguishing	Use water fog to cool containers from protected area.
Hazchem code	2S 2 Water Fog (or fine water spray if fog unavailable) S Self Contained Breathing apparatus and protective gloves.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Use personal protective equipment as detailed in Section 8 of this SDS.
Environmental precautions	Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
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.
References	See Sections 8 and 13 for exposure controls and disposal.

7. STORAGE AND HANDLING

Storage	Do not store near sources of ignition or 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.
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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
1,3-Butadiene	SWA (AUS)	10	22	--	--
Acetone	SWA (AUS)	500	1185	1000	2375
Acetylene	SWA (AUS)			Asphyxiant	
Carbon dioxide	SWA (AUS)	5000	9000	30000	54000
Carbon dioxide in coal mines	SWA (AUS)	12500	22500	30000	54000
Ethane	SWA (AUS)			Asphyxiant	
Ethylene	SWA (AUS)			Asphyxiant	
Methane	SWA (AUS)			Asphyxiant	
Nitrogen	SWA (AUS)			Asphyxiant	
Propane	SWA (AUS)			Asphyxiant	
Propylene	SWA (AUS)			Asphyxiant	

Biological limits

Ingredient	Reference	Determinant	Sampling Time	BEI
1,3-BUTADIENE	ACGIH BEI	1,2-Dihydroxy-4-(N-acetylcy steinyl)-butane in urine	End of shift	25 mg/g creatinine
	ACGIH BEI	Mixture of N-1 and N-2-(hydroxybutenyl)valine hemoglobin (Hb) adducts in blood	Not critical	2.5 pmol/g Hb
ACETONE	ACGIH BEI	Acetone in urine	End of shift	-
	ACGIH BEI	Aniline released from haemoglobin in blood	End of shift	-
	ACGIH BEI	p-Aminophenol in urine	End of shift	50 mg/L

Engineering controls

No special precautions are normally required when handling this product. Maintain vapour levels below the recommended exposure standard.

PPE

Eye / Face	Wear safety glasses.
Hands	Wear leather gloves.
Body	Wear safety boots.
Respiratory	Not required under normal conditions of use.



9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	COLOURLESS GAS
Odour	ODOURLESS
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
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)	INSOLUBLE

Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	OXIDISING GAS
Odour threshold	NOT AVAILABLE
% Volatiles	100 %
Cylinder pressure (when full)	13,000 kPa @ 15°C

10. STABILITY AND REACTIVITY

Chemical stability	Stable under recommended conditions of storage.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources.
Material to avoid	Combustible materials such as oil and grease can spontaneously ignite at low temperatures in oxygen enriched atmospheres. Materials which burn in air, will burn more vigorously in oxygen enriched atmospheres.
Hazardous Decomposition Products	This material will not decompose to form hazardous products other than that already present.
Hazardous Reactions	Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary	Non irritant - non toxic gas. The respiratory and central nervous systems are primarily affected by gaseous oxygen. No health effects have been observed in humans exposed to concentrations up to 80% oxygen for a few hours or up to 50% for 24 hours. At pressures above 1 atmosphere hyperoxia may appear after 2 to 6 hours. Chronic exposure at normal or elevated pressure may result in severe thickening and scarring of lung tissues. Not carcinogenic or mutagenic.																																						
Eye	Non irritant.																																						
Inhalation	Non irritant. As the amount of oxygen inhaled is increased chest tightness, burning pains and coughing spasms will occur. Other symptoms of hyperoxia include cramps, nausea, dizziness, hypothermia, amblyopia (loss of vision), bradycardia, fainting spells and convulsions capable of causing death.																																						
Skin	Non irritant.																																						
Ingestion	Ingestion is considered unlikely due to product form.																																						
Toxicity data	<p>1,3-BUTADIENE (106-99-0)</p> <table> <tr> <td>LC50 (inhalation)</td> <td>270 g/m³/2 hours (mouse)</td> </tr> <tr> <td>ACETONE (67-64-1)</td> <td></td> </tr> <tr> <td>LC50 (inhalation)</td> <td>44000 mg/m³/4 hours (mouse)</td> </tr> <tr> <td>LC50 (inhalation)</td> <td>1600 ppm/4 hours (rat)</td> </tr> <tr> <td>LD50 (ingestion)</td> <td>3000 mg/kg (mouse)</td> </tr> <tr> <td>LD50 (intraperitoneal)</td> <td>1297 mg/kg (mouse)</td> </tr> <tr> <td>LD50 (intravenous)</td> <td>5500 mg/kg (rat)</td> </tr> <tr> <td>LD50 (skin)</td> <td>> 9400 uL/kg (guinea pig)</td> </tr> <tr> <td>LDLo (ingestion)</td> <td>8000 mg/kg (dog)</td> </tr> <tr> <td>LDLo (intraperitoneal)</td> <td>500 mg/kg (rat)</td> </tr> <tr> <td>LDLo (intravenous)</td> <td>1576 mg/kg (rabbit)</td> </tr> <tr> <td>LDLo (skin)</td> <td>20 mL/kg (rabbit)</td> </tr> <tr> <td>LDLo (subcutaneous)</td> <td>5000 mg/kg (guinea pig/dog)</td> </tr> <tr> <td>TCLo (inhalation)</td> <td>500 ppm (human)</td> </tr> <tr> <td>TDLo (ingestion)</td> <td>2857 mg/kg (man)</td> </tr> <tr> <td>ACETYLENE (74-86-2)</td> <td></td> </tr> <tr> <td>LC50 (inhalation)</td> <td>50pph/5M (human)</td> </tr> <tr> <td>TCLo (inhalation)</td> <td>20 pph (human)</td> </tr> <tr> <td>METHANE (74-82-8)</td> <td></td> </tr> </table>	LC50 (inhalation)	270 g/m ³ /2 hours (mouse)	ACETONE (67-64-1)		LC50 (inhalation)	44000 mg/m ³ /4 hours (mouse)	LC50 (inhalation)	1600 ppm/4 hours (rat)	LD50 (ingestion)	3000 mg/kg (mouse)	LD50 (intraperitoneal)	1297 mg/kg (mouse)	LD50 (intravenous)	5500 mg/kg (rat)	LD50 (skin)	> 9400 uL/kg (guinea pig)	LDLo (ingestion)	8000 mg/kg (dog)	LDLo (intraperitoneal)	500 mg/kg (rat)	LDLo (intravenous)	1576 mg/kg (rabbit)	LDLo (skin)	20 mL/kg (rabbit)	LDLo (subcutaneous)	5000 mg/kg (guinea pig/dog)	TCLo (inhalation)	500 ppm (human)	TDLo (ingestion)	2857 mg/kg (man)	ACETYLENE (74-86-2)		LC50 (inhalation)	50pph/5M (human)	TCLo (inhalation)	20 pph (human)	METHANE (74-82-8)	
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METHANE (74-82-8)	LC50 (inhalation)	326 gm/m ³ /2h (mouse)
PROPANE (74-98-6)	LC50 (inhalation)	> 800000 ppm/15M (rat)
CARBON DIOXIDE (124-38-9)	LC50 (inhalation)	470000 ppm/30M (rat)
	LC50 (inhalation)	9 ppm/5M (human)

12. ECOLOGICAL INFORMATION

Toxicity	No information provided.
Persistence and degradability	No information provided.
Bioaccumulative potential	No information provided.
Mobility in soil	No information provided.
Other adverse effects	Not toxic to aquatic or terrestrial life.

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)

UN number	3156	3156	3156
Proper shipping name	COMPRESSED GAS, OXIDIZING, N.O.S.		
DG class/ Division	2.2	2.2	2.2
Subsidiary risk(s)	5.1	5.1	5.1
Packing group	None Allocated	None Allocated	None Allocated
Hazchem code	2S		
EMS	F-C, S-W		
Other information	Ensure cylinder is separated from driver and that outlet of relief device is not obstructed.		

SEA TRANSPORT (IMDG / IMO)

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.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

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.

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
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
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
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

Revision history

Revision	Description
1.1	Standard SDS Review
1.0	Initial SDS Creation

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.

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