

## SAFETY DATA SHEET

# 2664

Product Name **12 COMPONENT MIXTURE, BALANCE OXYGEN (16071)**

### 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)** 16071 - MATERIAL CODE • 2664 - MSDS NUMBER • PRODUCT CODES: 285, 288 • SPECIAL GAS MIXTURE  
**Use(s)** CALIBRATION • INDUSTRIAL APPLICATIONS  
**SDS date** 24 July 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

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<br>EC: 203-450-8 | F+;R12 Carc.;R45<br>Muta.;R46 | <0.01%        |
| ACETONE       | CAS: 67-64-1<br>EC: 200-662-2  | F;R11 Xi;R36 Xi;R66<br>Xn;R67 | <0.01%        |
| ACETYLENE     | CAS: 74-86-2<br>EC: 200-816-9  | F+;R12 E;R5 E;R6              | <0.01%        |
| ETHANE        | CAS: 74-84-0<br>EC: 200-814-8  | F+;R12                        | <0.01%        |
| ETHYLENE      | CAS: 74-85-1<br>EC: 200-815-3  | F+;R12 Xn;R67                 | <0.01%        |
| METHANE       | CAS: 74-82-8<br>EC: 200-812-7  | F+;R12                        | <0.01%        |
| PROPANE       | CAS: 74-98-6<br>EC: 200-827-9  | F+;R12                        | <0.01%        |

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|                |                                 |               |           |
|----------------|---------------------------------|---------------|-----------|
| PROPYLENE      | CAS: 115-07-1<br>EC: 204-062-1  | F+;R12        | <0.01%    |
| OXYGEN         | CAS: 7782-44-7<br>EC: 231-956-9 | O;R8          | Remainder |
| NITROGEN       | CAS: 7727-37-9<br>EC: 231-783-9 | Not Available | 9%        |
| CARBON DIOXIDE | CAS: 124-38-9<br>EC: 204-696-9  | Not Available | <0.01%    |
| N-BUTANE       | Not Available                   | Not Available | <0.01%    |

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**4. FIRST AID MEASURES**

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|                         |   |
|-------------------------|---|
| <b>Eye</b>              | None required.  |
| <b>Inhalation</b>       | 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. |
| <b>Skin</b>             | None required.  |
| <b>Ingestion</b>        | Ingestion is not considered a potential route of exposure.  |
| <b>Advice to doctor</b> | Treatment for hyperoxia.  |

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**5. FIRE FIGHTING MEASURES**

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|                           |   |
|---------------------------|---|
| <b>Flammability</b>       | Non flammable - oxidising agent. May increase fire intensity. Do not expose to heat and ignition sources. May ignite in contact with incompatible materials.  |
| <b>Fire and explosion</b> | 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. |
| <b>Extinguishing</b>      | Use water fog to cool containers from protected area.   |
| <b>Hazchem code</b>       | 2S<br>2 Water Fog (or fine water spray if fog unavailable)<br>S Self Contained Breathing apparatus and protective gloves.   |

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**6. ACCIDENTAL RELEASE MEASURES**

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|                                  |  |
|----------------------------------|--|
| <b>Personal precautions</b>      | 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.  |
| <b>Environmental precautions</b> | Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.  |
| <b>Methods of cleaning up</b>    | 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. |
| <b>References</b>                | See Sections 8 and 13 for exposure controls and disposal.  |

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**7. STORAGE AND HANDLING**

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|-----------------|--|
| <b>Storage</b>  | 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. |
| <b>Handling</b> | 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 <sup>3</sup> | ppm   | mg/m <sup>3</sup> |
| 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.

### PPE

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



## 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   |
| <b>Boiling point</b>      | NOT AVAILABLE  |
| <b>Melting point</b>      | NOT AVAILABLE  |
| <b>Evaporation rate</b>   | NOT APPLICABLE |
| <b>pH</b>                 | NOT APPLICABLE |
| <b>Vapour density</b>     | NOT AVAILABLE  |
| <b>Specific gravity</b>   | NOT APPLICABLE |
| <b>Solubility (water)</b> | INSOLUBLE      |
| <b>Vapour pressure</b>    | NOT AVAILABLE  |

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|                               |                  |
|-------------------------------|------------------|
| 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) | 13000 kPa @ 15°C |

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**10. STABILITY AND REACTIVITY**

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|---|--|
| <b>Chemical stability</b>               | Stable under recommended conditions of storage.  |
| <b>Conditions to avoid</b>              | Avoid heat, sparks, open flames and other ignition sources.  |
| <b>Material to avoid</b>                | 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. |
| <b>Hazardous Decomposition Products</b> | May evolve toxic gases if heated to decomposition.   |
| <b>Hazardous Reactions</b>              | Polymerization will not occur.   |

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**11. TOXICOLOGICAL INFORMATION**

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|------------------------------|--|--|
| <b>Health Hazard Summary</b> | 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. |  |
| <b>Eye</b>                   | Non irritant.  |  |
| <b>Inhalation</b>            | 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.   |  |
| <b>Skin</b>                  | Non irritant.  |  |
| <b>Ingestion</b>             | Ingestion is considered unlikely due to product form.  |  |
| <b>Toxicity data</b>         | 1,3-BUTADIENE (106-99-0)   |  |
|                              | LC50 (inhalation)  | 270 g/m <sup>3</sup> /2 hours (mouse)    |
|                              | ACETONE (67-64-1)  |  |
|                              | LC50 (inhalation)  | 44000 mg/m <sup>3</sup> /4 hours (mouse) |
|                              | LCLo (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)  |  |
|                              | LCLo (inhalation)  | 50pph/5M (human)                         |
|                              | TCLo (inhalation)  | 20 pph (human)                           |
|                              | METHANE (74-82-8)  |  |
|                              | LC50 (inhalation)  | 326 gm/m <sup>3</sup> /2h (mouse)        |

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|                           |                        |
|---------------------------|------------------------|
| PROPANE (74-98-6)         |                        |
| LC50 (inhalation)         | > 800000 ppm/15M (rat) |
| 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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|                                      |   |
|--------------------------------------|---|
| <b>Toxicity</b>                      | No information provided.                  |
| <b>Persistence and degradability</b> | No information provided.                  |
| <b>Bioaccumulative potential</b>     | No information provided.                  |
| <b>Mobility in soil</b>              | No information provided.                  |
| <b>Other adverse effects</b>         | Not toxic to aquatic or terrestrial life. |

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**13. DISPOSAL CONSIDERATIONS**

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|-----------------------|--|
| <b>Waste disposal</b> | Cylinders should be returned to the manufacturer or supplier for disposal of contents. |
| <b>Legislation</b>    | 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**



|                             | <b>LAND TRANSPORT<br/>(ADG)</b>  | <b>SEA TRANSPORT<br/>(IMDG / IMO)</b> | <b>AIR TRANSPORT<br/>(IATA / ICAO)</b> |
|-----------------------------|--|---------------------------------------|--|
| <b>UN number</b>            | 3156   | 3156                                  | 3156                                   |
| <b>Proper shipping name</b> | COMPRESSED GAS, OXIDIZING, N.O.S.  |                                       |  |
| <b>DG class/ Division</b>   | 2.2  | 2.2                                   | 2.2                                    |
| <b>Subsidiary risk(s)</b>   | 5.1  | 5.1                                   | 5.1                                    |
| <b>Packing group</b>        | None Allocated   | None Allocated                        | None Allocated                         |
| <b>Hazchem code</b>         | 2S   |                                       |  |
| <b>EMS</b>                  | F-C, S-W   |                                       |  |
| <b>Other information</b>    | 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. |                                       |  |

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**15. REGULATORY INFORMATION**

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|-----------------------------|---|
| <b>Poison schedule</b>      | 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). |
| <b>Inventory Listing(s)</b> | <b>AUSTRALIA: AICS (Australian Inventory of Chemical Substances)</b><br>All components are listed on AICS, or are exempt.                                       |

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**16. OTHER INFORMATION**

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**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 <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          |
|----------|----------------------|
| 1.2      | Standard SDS Review  |
| 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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**Revision:** 1.2  
**SDS Date:** 24 July 2013

**End of SDS**