

**BOC Limited**  
ABN 95 000 029 729  
10 Julius Avenue  
NORTH RYDE NSW 2113  
Tel + 61 131 262  
Fax + 61 132 427

**Product Name** 4 COMPONENT MIXTURE (CO, H2O, O2, BALANCE N2)

**1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER**

**Supplier Name** BOC LIMITED (AUSTRALIA)  
**Address** 10 Julius Avenue, North Ryde NSW, 2113, AUSTRALIA  
**Telephone** +61 131 262, (02) 8874 4400  
**Fax** +61 132 427 (24 hours)  
**Emergency** 1800 658 278 (A/H) (Australia only)  
**Synonyms** PRODUCT CODE: 292, SPECIAL GAS MIXTURE.  
**Uses** CALIBRATION, INDUSTRIAL APPLICATIONS.

**2. HAZARDS IDENTIFICATION**

**NOT CLASSIFIED AS HAZARDOUS ACCORDING TO NOHSC CRITERIA**  
**CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE**

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

<b>Ingredient</b>	<b>Formula</b>	<b>Conc.</b>	<b>CAS No.</b>
CARBON MONOXIDE	C-O	<0.003%	630-08-0
WATER	H2O	<0.005%	7732-18-5
OXYGEN	O2	<0.005%	7782-44-7
NITROGEN	N2	Remainder	7727-37-9

**4. FIRST AID MEASURES**

- Eye** Not applicable.
- Inhalation** Remove from area of exposure immediately. If assisting a victim avoid becoming a casualty, wear an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Be aware of possible explosive atmospheres. If victim is not breathing apply artificial respiration and seek urgent medical attention. Give oxygen if available. Keep warm and rested.
- Skin** Not applicable.
- Ingestion** For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor. Due to product form and application, ingestion is considered unlikely.
- Advice To Doctor** Hyperbaric oxygen treatment at 2 to 2.5 atmospheres reduces the biological half life of carboxyhaemoglobin to 24 minutes. Avoid stimulant drugs including carbon dioxide. Do not inject methylene blue. Absolute bed rest for at least 48 hours should be ensured. After recovery observe for late neurological and or cardiac complaints. Carboxyhaemoglobin levels in blood used as biological monitoring index.

**5. FIRE FIGHTING MEASURES**

**Flammability** Non flammable.

**Colour**  
**Rating**  
**AMBER**

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**5. FIRE FIGHTING MEASURES cont.**

**Fire and Explosion** Non flammable. Temperatures in a fire may cause cylinders to rupture. Call fire brigade. Cool cylinders exposed to fire by applying water from a protected location. Do not approach cylinders suspected of being hot.

**Extinguishing** Non flammable. Use water fog to cool containers from protected area.

**Hazchem Code** 2T

**6. ACCIDENTAL RELEASE MEASURES**

**Spillage** GAS CYLINDERS: If the cylinder is leaking, eliminate all potential ignition sources and evacuate area of personnel. Inform manufacturer/supplier of leak. Wear appropriate PPE and carefully move it to a well ventilated remote area, then allow to discharge. Do not attempt to repair leaking valve or cylinder safety devices.

**7. HANDLING AND STORAGE**

**Handling** Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas (eg. if container is damaged).

**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.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Ventilation** Maintain adequate ventilation. Confined areas (eg. tanks) should be adequately ventilated or gas tested. Maintain vapour levels below the recommended exposure standard.

**Exposure Standards** CARBON MONOXIDE (630-08-0)  
ES-TWA : 30 ppm (34 mg/m3)  
WES-TWA : 25 ppm  
  
NITROGEN (7727-37-9)  
ES-TWA : 19.5% (ACGIH)  
ES-TWA# : Asphyxiant - No values assigned (NOHSC)  
WES-TWA : Asphyxiant

**PPE** Wear safety glasses and leather gloves. Where an inhalation risk exists, wear Self Contained Breathing Apparatus (SCBA) or an Air-line respirator.



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**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance:** COLOURLESS GAS  
**Odour:** ODOURLESS  
**pH:** NOT AVAILABLE  
**Vapour Pressure:** NOT AVAILABLE  
**Vapour Density:** NOT AVAILABLE  
**Boiling Point:** NOT AVAILABLE  
**Melting Point:** NOT AVAILABLE  
**Evaporation Rate:** NOT AVAILABLE  
**Solubility (water):** NOT AVAILABLE  
**Specific Gravity:** NOT AVAILABLE  
**% Volatiles:** NOT AVAILABLE  
**Flammability:** NON FLAMMABLE  
**Flash Point:** NOT RELEVANT  
**Upper Explosion Limit:** NOT RELEVANT  
**Lower Explosion Limit:** NOT RELEVANT  
**Autoignition Temperature:** NOT AVAILABLE  
**Cylinder pressure (when full):** 13,000 kPa @ 15 C

**10. STABILITY AND REACTIVITY**

**Reactivity** At pressures above 7,000 kPa copper lining should be used to reduce corrosion. Stress corrosion cracking can occur in steels especially if other acid gases (eg. Carbon Dioxide, Sulphur compounds) are present. Can react with iron, nickel and other metals to form highly toxic carbonyls. Below 3,500 kPa corrosion is negligible and common materials can be used

**Decomposition Products** May evolve toxic gases if heated to decomposition.

**11. TOXICOLOGICAL INFORMATION**

**Health Hazard Summary** Asphyxiant gas - non irritant. Carbon monoxide effects depend on the percentage of carboxyhaemoglobin: 10-20% mild headache and breathlessness on mild exertion; 20-30% headache, irritability, rapid fatigue and impaired memory; 30-40% severe headache, weakness, nausea, vomiting, dizziness, visual impairment and confusion; 40-50% increasing confusion, ataxia and collapse; 50-60% coma; >80% rapid death. Chronic exposure to carbon monoxide may result in an increase in cardiovascular problems. Can aggravate some diseases of the cardiovascular system such as coronary artery disease. The effect is enhanced by cigarette smoking. Adverse behavioural effects have been noted including impairment of vigilance, co-ordination, timing, behaviour, visual perception and certain cognitive functions. Some adaptation occurs in individuals repeatedly exposed to moderate concentrations. Developmental defects on foetuses can occur without maternal symptoms.

**Eye** Non irritating.

**Inhalation** Irritant. Over exposure to carbon monoxide may result in rapid breathing, nausea, lack of coordination, unconsciousness & coma. Reacts with blood haemoglobin to prevent oxygen uptake.

**Skin** Non irritating.

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

**Toxicity Data** CARBON MONOXIDE (630-08-0)  
LC50 (Inhalation) : 1807 ppm/4 hours (rat)

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**11. TOXICOLOGICAL INFORMATION cont.****12. ECOLOGICAL INFORMATION**

**Environment** If released to the atmosphere this product will not contribute to ozone depletion or global warming. If released to soil or water this product will quickly evaporate to the atmosphere. Not toxic to plants or animals except at extremely high (asphyxiating) levels.

**13. DISPOSAL CONSIDERATIONS**

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

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

**14. TRANSPORT INFORMATION**

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

**UN Number** 1956  
**Shipping Name** COMPRESSED GAS, N.O.S.  
**DG Class** 2.2  
**Subsidiary Risk(s)** None Allocated  
**Packing Group** None Allocated  
**Hazchem Code** 2T

**IMDG**  
**UN Number** 1956  
**DG Class** 2.2  
**Subsidiary Risk(s)** None Allocated  
**Packing Group** None Allocated

**IATA**  
**UN Number** 1956  
**DG Class** 2.2  
**Subsidiary Risk(s)** None Allocated  
**Packing Group** None Allocated  
**Inhalation** None Allocated  
**Packing Group**

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### 15. REGULATORY INFORMATION

**AICS** All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

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

### 16. OTHER INFORMATION

**Additional Information** APPLICATION METHOD: Gas regulator of suitable pressure and flow rating fitted to cylinder or manifold with low pressure gas distribution to equipment.

COLOUR RATING SYSTEM: Chem Alert reports are assigned a colour rating of Green, Amber or Red for the purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all Chem Alert reports so as to clearly identify how users can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

#### PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this Chem Alert 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 Chem Alert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

#### ABBREVIATIONS:

mg/m<sup>3</sup> - Milligrams per cubic metre

ppm - Parts Per Million

TWA/ES - Time Weighted Average or Exposure Standard.

CNS - Central Nervous System

NOS - Not Otherwise Specified

pH - relates to hydrogen ion concentration - this value will relate to a scale of 0 - 14, where 0 is highly acidic and 14 is highly alkaline.

CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.

M - moles per litre, a unit of concentration.

IARC - International Agency for Research on Cancer.

**Report Reviewed** 18th February 2006

**Date Printed** 17th July 2006

**Report Status** Chem Alert reports are compiled as an independent source of information by RMT's scientific department. The information is based on the latest chemical and toxicological research, and in compliance with relevant standards, guidance notes and legislation (where applicable). The Chem Alert report is not intended as a replacement to the

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**16. OTHER INFORMATION cont.**

manufacturer's original MSDS that is provided to Chem Alert subscribers for convenience. In many instances, Chem Alert reports are compiled on behalf of manufacturers, in which case they serve as the "Manufacturer's MSDS" and are clearly identified as such on the relevant reports.

**Prepared By** Risk Management Technologies  
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