

## SAFETY DATA SHEET

# 2568

Product Name      **4 COMPONENT MIXTURE (H<sub>2</sub>, CO<sub>2</sub>, N<sub>2</sub>, BALANCE HE)**

### 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)**                            2568 - SDS NUMBER · SPECIAL GAS MIXTURE  
**Use(s)**                                    CALIBRATION · INDUSTRIAL APPLICATIONS  
**SDS Date**                                08 June 2012

### 2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS (GHS) 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>     | 1956           | <b>DG Division</b>        | 2.2            |
| <b>Packing Group</b> | None Allocated | <b>Subsidiary Risk(s)</b> | None Allocated |
| <b>Hazchem Code</b>  | 2TE            |                           |                |

### 3. COMPOSITION/ INFORMATION ON INGREDIENTS

| Ingredient     | Identification                  | Classification | Content |
|----------------|---------------------------------|----------------|---------|
| HYDROGEN       | CAS: 1333-74-0<br>EC: 215-605-7 | F+;R12         | <10%    |
| HELIUM         | CAS: 7440-59-7<br>EC: 231-168-5 | Not Available  | >60%    |
| NITROGEN       | CAS: 7727-37-9<br>EC: 231-783-9 | Not Available  | <30%    |
| CARBON DIOXIDE | CAS: 124-38-9<br>EC: 204-696-9  | Not Available  | <10%    |

### 4. 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). 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**                                        None required.

|                         |                                                                        |
|-------------------------|------------------------------------------------------------------------|
| <b>Ingestion</b>        | Due to product form and application, ingestion is considered unlikely. |
| <b>Advice to Doctor</b> | Treat symptomatically.                                                 |

|                           |                                                                                                                                                                                                                                                                                                                       |                                                                            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| <b>Flammability</b>       | Non flammable.                                                                                                                                                                                                                                                                                                        |                                                                            |
| <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. 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. |                                                                            |
| <b>Extinguishing</b>      | Use water fog to cool containers from protected area.                                                                                                                                                                                                                                                                 |                                                                            |
| <b>Hazchem Code</b>       | 2TE                                                                                                                                                                                                                                                                                                                   |                                                                            |
|                           | 2                                                                                                                                                                                                                                                                                                                     | Water Fog (or fine water spray if fog unavailable)                         |
|                           | T                                                                                                                                                                                                                                                                                                                     | Self Contained Breathing apparatus and protective gloves.                  |
|                           | E                                                                                                                                                                                                                                                                                                                     | Evacuation of people in the vicinity of the incident should be considered. |

|                 |                                                                                                                                                                                                                                                                                        |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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. |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                 |                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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 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.                                                                                                                                |

## Exposure Standards

| Ingredient                   | Reference | TWA        |       | STEL  |       |
|------------------------------|-----------|------------|-------|-------|-------|
|                              |           | ppm        | mg/m³ | ppm   | mg/m³ |
| Carbon dioxide               | SWA (AUS) | 5000       | 9000  | 30000 | 54000 |
| Carbon dioxide in coal mines | SWA (AUS) | 12500      | 22500 | 30000 | 54000 |
| Helium                       | SWA (AUS) | Asphyxiant |       |       |       |
| Hydrogen                     | SWA (AUS) | Asphyxiant |       |       |       |
| Nitrogen                     | SWA (AUS) | Asphyxiant |       |       |       |

|                          |                                |
|--------------------------|--------------------------------|
| <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. |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**PPE**

|                   |                      |
|-------------------|----------------------|
| <b>Eye / Face</b> | Wear safety glasses. |
|-------------------|----------------------|

**Hands** 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

|                               |                                                        |
|-------------------------------|--------------------------------------------------------|
| 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)            | 0.759cm <sup>3</sup> /cm <sup>3</sup> (Carbon dioxide) |
| Vapour pressure               | NOT AVAILABLE                                          |
| 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 %                                                  |
| Cylinder pressure (when full) | 13000 kPa @ 15°C                                       |

## 10. STABILITY AND REACTIVITY

|                                  |                                                                                                                                                                                                                                        |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chemical Stability               | Stable under recommended conditions of storage.                                                                                                                                                                                        |
| Conditions to Avoid              | Avoid contact with incompatible substances.                                                                                                                                                                                            |
| 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. |
| Hazardous Decomposition Products | May evolve toxic gases if heated to decomposition.                                                                                                                                                                                     |
| Hazardous Reactions              | Polymerization will not occur.                                                                                                                                                                                                         |

## 11. TOXICOLOGICAL INFORMATION

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Health Hazard Summary | Asphyxiant gas - non irritant. When released into air the concentration of carbon dioxide is diluted. 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 affects 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. Carbon dioxide is the body's regulator of the breathing function. It is normally present in the air at a concentration of 340 ppm by volume. An increase above this level may result in accelerated breathing and heart rate. Adverse health affects of 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                   | Non irritant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                      |
| 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                  | Non irritant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                      |
| Ingestion             | Ingestion is considered unlikely due to product form.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |
| Toxicity Data         | CARBON DIOXIDE (124-38-9)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                      |
|                       | LC50 (inhalation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 470000 ppm/30M (rat) |
|                       | LCLo (inhalation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9 pph/5M (human)     |

## 12. ECOLOGICAL INFORMATION

|             |                                                                                            |
|-------------|--------------------------------------------------------------------------------------------|
| Environment | When discharged to the atmosphere, carbon dioxide may contribute to the greenhouse effect. |
|-------------|--------------------------------------------------------------------------------------------|

### 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<br>(ADG)                                                                                                                                                                                                                | SEA TRANSPORT<br>(IMDG / IMO) | AIR TRANSPORT<br>(IATA / ICAO) |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------|
| UN Number            | 1956                                                                                                                                                                                                                                   | -                             | -                              |
| Proper Shipping Name | COMPRESSED GAS, N.O.S.                                                                                                                                                                                                                 | -                             | -                              |
| DG Class/ Division   | 2.2                                                                                                                                                                                                                                    | -                             | -                              |
| Subsidiary Risk(s)   | None Allocated                                                                                                                                                                                                                         | -                             | -                              |
| Packing Group        | None Allocated                                                                                                                                                                                                                         | -                             | -                              |
| GTEPG                | 2C1                                                                                                                                                                                                                                    |                               |                                |
| Hazchem Code         | 2TE                                                                                                                                                                                                                                    |                               |                                |
| 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) | <b>AUSTRALIA: AICS (Australian Inventory of Chemical Substances)</b><br>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 regulator of suitable pressure and flow rating fitted to cylinder or manifold with low pressure gas distribution to equipment.

#### 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.

**Product Name**      **4 COMPONENT MIXTURE (H2, CO2, N2, BALANCE HE)**

|                      |                   |                                                                                                 |
|----------------------|-------------------|-------------------------------------------------------------------------------------------------|
| <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                                                               |
|                      | 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           |
|----------|-----------------------|
| 1.0      | Initial SDS Creation. |

**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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**Revision:** 1  
**SDS Date:** 08 June 2012

**End of SDS**