BOC
A Member of The Linde Group

# SAFETY DATA SHEET

**# 2252**

**Product Name** **12 COMPONENT MIXTURE (BALANCE ARGON)**

## 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)** | 2252 - MSDS NUMBER • PRODUCT CODE: 2883444 • SPECIAL GAS MIXTURE |
| **Use(s)** | CALIBRATION • INDUSTRIAL APPLICATIONS |
| **SDS date** | 01 February 2013 |

## 2. HAZARDS IDENTIFICATION

**CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA**

**RISK PHRASES**

| | |
|---|---|
| R12 | Extremely Flammable. |
| R23 | Toxic by inhalation. |
| R48/23 | Toxic: danger of serious damage to health by prolonged exposure through inhalation. |
| R61 | May cause harm to the unborn child. |

**SAFETY PHRASES**

| | |
|---|---|
| S9 | Keep container in a well ventilated place. |
| S16 | Keep away from sources of ignition - No smoking. |
| S33 | Take precautionary measures against static discharges. |
| S45 | In case of accident or if you feel unwell seek medical advice immediately (show the label where possible). |
| S53 | Avoid exposure - obtain special instructions before use. |

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

| | | | |
|---|---|---|---|
| **UN number** | 1954 | **DG division** | 2.1 |
| **Packing group** | None Allocated | **Subsidiary risk(s)** | None Allocated |
| **Hazchem code** | 2SE | | |

## 3. COMPOSITION/ INFORMATION ON INGREDIENTS

| Ingredient | Identification | Classification | Content |
|---|---|---|---|
| ACETYLENE | CAS: 74-86-2<br>EC: 200-816-9 | E;R5 E;R6 F+;R12 | 5% |
| CARBON MONOXIDE | CAS: 630-08-0<br>EC: 211-128-3 | T;R23 Repr.;R61<br>T;R48/23 F+;R12 | 5% |
| HYDROGEN | CAS: 1333-74-0<br>EC: 215-605-7 | F+;R12 | 5% |
| METHANE | CAS: 74-82-8<br>EC: 200-812-7 | F+;R12 | 5% |

| | | | |
|---|---|---|---|
| PROPANE | CAS: 74-98-6<br>EC: 200-827-9 | F+;R12 | 5% |
| PROPYLENE | CAS: 115-07-1<br>EC: 204-062-1 | F+;R12 | 5% |
| ETHANE | CAS: 74-84-0<br>EC: 200-814-8 | F+;R12 | 1% |
| ETHYLENE | CAS: 74-85-1<br>EC: 200-815-3 | F+;R12 Xn;R67 | 1% |
| CARBON DIOXIDE | CAS: 124-38-9<br>EC: 204-696-9 | Not Available | 5% |
| HELIUM | CAS: 7440-59-7<br>EC: 231-168-5 | Not Available | 5% |
| NITROGEN | CAS: 7727-37-9<br>EC: 231-783-9 | Not Available | 5% |
| ARGON | CAS: 7440-37-1<br>EC: 231-147-0 | Not Available | Remainder |

## 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). Be aware of possible explosive atmospheres. 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.

**Ingestion** Ingestion is not considered a potential route of exposure.

**Advice to doctor** Treat symptomatically.

## 5. FIRE FIGHTING MEASURES

**Flammability** Highly flammable. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights, mobile phones etc. when handling.

**Fire and explosion** Temperatures in a fire may cause cylinders to rupture and internal pressure relief devices to be activated. This product will add fuel to a fire. Cool cylinders exposed to fire by applying water from a protected location. Do not approach cylinders suspected of being hot.

**Extinguishing** Stop flow of gas if safe to do so, such as by slowly closing the cylinder valve.

**Hazchem code** 2SE

- 2 Water Fog (or fine water spray if fog unavailable)
- S Self Contained Breathing apparatus and protective gloves.
- E Evacuation of people in the vicinity of the incident should be considered.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions** If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Eliminate ignition sources. Consider the risk of potentially explosive atmospheres.

**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/m³ | ppm | mg/m³ |
| Acetylene | SWA (AUS) | Asphyxiant | | | |
| Argon | SWA (AUS) | Asphyxiant | | | |
| 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 | -- | -- |
| Ethane | SWA (AUS) | Asphyxiant | | | |
| Ethylene | SWA (AUS) | Asphyxiant | | | |
| Helium | SWA (AUS) | Asphyxiant | | | |
| Hydrogen | 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 |
|---|---|---|---|---|
| CARBON MONOXIDE | ACGIH BEI | Carboxyhemoglobin in blood | End of shift | 3.5% of hemoglobin |
| | ACGIH BEI | Carbon monoxide in end-exhaled air | End of shift | 20 ppm |

**Engineering controls** Provide suitable ventilation to minimise or eliminate exposure. Confined areas (eg. tanks) should be adequately ventilated or gas tested. Flammable/explosive vapours may accumulate in poorly ventilated areas. Maintain vapour levels below the recommended exposure standard.

**PPE**

**Eye / Face** Wear safety glasses.

**Hands** Wear leather gloves.

**Body** Wear safety boots.

**Respiratory** 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** SLIGHT PROPANE ODOUR
**Flammability** HIGHLY FLAMMABLE
**Flash point** NOT APPLICABLE
**Boiling point** NOT AVAILABLE

| | |
|---|---|
| **Melting point** | NOT RELEVANT |
| **Evaporation rate** | NOT APPLICABLE |
| **pH** | NOT APPLICABLE |
| **Vapour density** | NOT AVAILABLE |
| **Specific gravity** | NOT APPLICABLE |
| **Solubility (water)** | NOT AVAILABLE |
| **Vapour pressure** | NOT APPLICABLE |
| **Upper explosion limit** | NOT AVAILABLE |
| **Lower explosion limit** | NOT AVAILABLE |
| **Autoignition temperature** | NOT AVAILABLE |
| **Decomposition temperature** | NOT AVAILABLE |
| **Viscosity** | NOT AVAILABLE |
| **Partition coefficient** | NOT AVAILABLE |
| **% Volatiles** | 100 % |
| **Density** | 1.15 (Air = 1) |

## 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** | Carbon monoxide can react with iron, nickel and other metals. Below 3,500 kPa corrosion is negligible and common materials can be used. Incompatible with acrylaldehyde, aziridine, sodium peroxide. Corrosive when moist. Ethylene explodes spontaneously when mixed with chlorine in sunlight or UV irradiation. Phytotoxic. Incompatible with acrylaldehyde, aziridine, metal acetylides, sodium peroxide. Carbon monoxide can cause stress corrosion cracking in steels especially if other acid gases (e.g. carbon dioxide, sulphur compounds) are present. Below 3,500 kPa corrosion is negligible and normal materials can be used. Carbon dioxide is corrosive when moist. Most rubbers and plastics may be affected. |
| **Hazardous Decomposition Products** | May evolve toxic gases if heated to decomposition. |
| **Hazardous Reactions** | Polymerization will not occur. |

## 11. TOXICOLOGICAL INFORMATION

| | |
|---|---|
| **Health Hazard Summary** | TOXIC. 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 irritant. |
| **Inhalation** | Toxic. 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 irritant. |
| **Ingestion** | Due to product form, ingestion is not considered a potential exposure route. |
| **Toxicity data** | ACETYLENE (74-86-2)<br>LCLo (inhalation) 50pph/5M (human)<br>TCLo (inhalation) 20 pph (human)<br><br>CARBON MONOXIDE (630-08-0)<br>LC50 (inhalation) 1807 ppm/4H (rat)<br>LCLo (inhalation) 5000 ppm/5M (human)<br><br>METHANE (74-82-8)<br>LC50 (inhalation) 326 gm/m3/2h (mouse)<br><br>PROPANE (74-98-6)<br>LC50 (inhalation) > 800000 ppm/15M (rat) |

CARBON DIOXIDE (124-38-9)

| | |
|---|---|
| LC50 (inhalation) | 470000 ppm/30M (rat) |
| LCLo (inhalation) | 9 pph/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** Toxic to animals as per man. When discharged into the atmosphere, methane and carbon dioxide may contribute to the greenhouse effect. Methane has a global warming potential of 21 ($CO_2$ = 1).

## 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) | SEA TRANSPORT (IMDG / IMO) | AIR TRANSPORT (IATA / ICAO) |
|---|---|---|---|
| **UN number** | 1954 | - | - |
| **Proper shipping name** | COMPRESSED GAS, FLAMMABLE, N.O.S. | - | - |
| **DG class/ Division** | 2.1 | - | - |
| **Subsidiary risk(s)** | None Allocated | - | - |
| **Packing group** | None Allocated | - | - |
| **GTEPG** | 2A1 | | |

**Hazchem code** 2SE

**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)** **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.

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 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 |
| 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 |
|---|---|
| 2.0 | 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