

## SAFETY DATA SHEET

# 1451

**Product Name**     **6 COMPONENT MIXTURE (CH<sub>4</sub>, C<sub>4</sub>H<sub>8</sub>, H<sub>2</sub>, C<sub>2</sub>H<sub>6</sub>, N<sub>2</sub>, BALANCE C<sub>2</sub>H<sub>4</sub>)**

### 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)**        1451 - SDS NUMBER • PRODUCT CODES: 177, 288 • SPECIAL GAS MIXTURE  
**Use(s)**             CALIBRATION  
**SDS Date**          09 Jul 2010

### 2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

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

**UN No.**            1954                      **DG Class**            2.1                      **Subsidiary Risk(s)**   None Allocated  
**Packing Group**   None Allocated                      **Hazchem Code**    2SE

### 3. COMPOSITION/ INFORMATION ON INGREDIENTS

| Ingredient | Formula                        | CAS No.   | Content    |
|------------|--------------------------------|-----------|------------|
| ETHYLENE   | C <sub>2</sub> -H <sub>4</sub> | 74-85-1   | 50.5-60.3% |
| ETHANE     | C <sub>2</sub> -H <sub>6</sub> | 74-84-0   | 5.5%       |
| HYDROGEN   | H <sub>2</sub>                 | 1333-74-0 | 5%         |
| 1-BUTENE   | C <sub>4</sub> -H <sub>8</sub> | 106-98-9  | 2%         |
| METHANE    | C-H <sub>4</sub>               | 74-82-8   | 0.5%       |
| NITROGEN   | N <sub>2</sub>                 | 7727-37-9 | 27-37%     |

### 4. FIRST AID MEASURES

**Eye**                    Cold burns: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek medical attention.

**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**                    Cold burns: Remove contaminated clothing and gently flush affected areas with warm water (30°C) for 15 minutes. Apply sterile dressing and treat as for a thermal burn. For large burns, immerse in warm water for 15 minutes. DO NOT apply any form of direct heat. Seek immediate medical attention.

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

**Advice to Doctor** Treat for asphyxia and cold burns.

**First Aid Facilities** Eye wash facilities should be available.

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Flammability</b>       | Highly flammable. Heating to decomposition produces acrid smoke and irritating fumes. Product will add fuel to a fire. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights etc. when handling.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Fire and Explosion</b> | Temperatures in a fire may cause cylinders to rupture and internal pressure relief devices to be activated. Heating to decomposition produces acrid smoke and irritating fumes. Product will add fuel to a fire. To fight fire stop flow of gas, if safe to do so, and use carbon dioxide, dry chemical extinguisher or fine water spray. Cool cylinders exposed to fire by applying water from protected location. Do not approach cylinders suspected of being hot. Remove cool cylinders from the path of the fire. Evacuate area if unable to keep cylinders cool. If flame from cylinder is impinging on flammable materials or other cylinders evacuate the area. If the cylinder is standing alone then let the flame continue until all gas has been consumed. Ensure working area is well ventilated before re-entry. This material is capable of forming explosive mixtures in air. |
| <b>Extinguishing</b>      | Dry agent, carbon dioxide, foam or water fog. Prevent contamination of drains or waterways.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hazchem Code</b>       | 2SE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Spillage</b> | If the cylinder is leaking, eliminate all potential ignition sources and evacuate area of personnel. Prevent spreading of vapours through drains and ventilation systems. 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 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 eye or skin contact and 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.                                                                                                                               |

| <b>Ingredient</b> | <b>Reference</b> | <b>TWA</b> | <b>STEL</b> |
|-------------------|------------------|------------|-------------|
| Ethane            | ASCC (AUS)       |            | Asphyxiant  |
| Ethylene          | ASCC (AUS)       |            | Asphyxiant  |
| Hydrogen          | ASCC (AUS)       |            | Asphyxiant  |
| Methane           | ASCC (AUS)       |            | Asphyxiant  |
| Nitrogen          | ASCC (AUS)       |            | Asphyxiant  |

**PPE** Wear safety boots, cotton or leather gloves and safety glasses. If spraying, wear: self Contained Breathing Apparatus (SCBA) or an Air-line respirator.



|                   |                |                           |                                                  |
|-------------------|----------------|---------------------------|--------------------------------------------------|
| <b>Appearance</b> | COLOURLESS GAS | <b>Solubility (water)</b> | 0.23 cm <sup>3</sup> /cm <sup>3</sup> (Ethylene) |
|-------------------|----------------|---------------------------|--------------------------------------------------|

**Product Name**      **6 COMPONENT MIXTURE (CH<sub>4</sub>, C<sub>4</sub>H<sub>8</sub>, H<sub>2</sub>, C<sub>2</sub>H<sub>6</sub>, N<sub>2</sub>, BALANCE C<sub>2</sub>H<sub>4</sub>)**

|                                 |                  |                              |                  |
|---------------------------------|------------------|------------------------------|------------------|
| <b>Odour</b>                    | ODOURLESS        | <b>Specific Gravity</b>      | NOT APPLICABLE   |
| <b>pH</b>                       | NOT APPLICABLE   | <b>% Volatiles</b>           | 100 %            |
| <b>Vapour Pressure</b>          | NOT AVAILABLE    | <b>Flammability</b>          | HIGHLY FLAMMABLE |
| <b>Vapour Density</b>           | NOT AVAILABLE    | <b>Flash Point</b>           | NOT AVAILABLE    |
| <b>Boiling Point</b>            | NOT AVAILABLE    | <b>Upper Explosion Limit</b> | NOT AVAILABLE    |
| <b>Melting Point</b>            | NOT AVAILABLE    | <b>Lower Explosion Limit</b> | 1.6 % (1-Butene) |
| <b>Evaporation Rate</b>         | NOT APPLICABLE   |                              |                  |
| <b>Autoignition Temperature</b> | 490°C (Ethylene) | <b>Cylinder Pressure</b>     | 13000 kPa @ 15°C |

## 10. STABILITY AND REACTIVITY

|                                         |                                                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------|
| <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>                | Explodes spontaneously when mixed with chlorine in sunlight. Reacts vigorously with some oxidising agents. |
| <b>Hazardous Decomposition Products</b> | Heating to decomposition produces acrid smoke and irritating fumes.                                        |
| <b>Hazardous Reactions</b>              | Violent polymerisation catalysed by copper above 400°C and 5,400 kPa.                                      |

## 11. TOXICOLOGICAL INFORMATION

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Health Hazard Summary</b> | Asphyxiant. Also a weak anaesthetic. Symptoms of exposure are directly related to displacement of oxygen. As the amount of oxygen inhaled is reduced from 21-14% volume, the pulse rate may accelerate and the rate and volume of breathing may increase. The ability to maintain attention and think clearly is diminished, muscular co-ordination is somewhat disturbed. As oxygen decreases from 14-10% volume, judgement becomes faulty, severe injuries may result in no pain. Muscular effort may lead to rapid fatigue. Further reduction to 6% may result in nausea and vomiting. Ability to move may be lost. Permanent brain damage may result even after resuscitation from exposure to this low level of oxygen. Below 6% breathing is in gasps and convulsions may occur. Inhalation of a mixture containing no oxygen may result in unconsciousness from the first breath and death may follow in minutes. Ethylene is not classifiable as to its carcinogenicity (IARC Group 3). |
| <b>Eye</b>                   | Non irritant. However, direct contact with evaporating liquid may result in severe cold burns with possible permanent damage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Inhalation</b>            | Non irritant - Asphyxiant. Effects are proportional to oxygen displacement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Skin</b>                  | Non irritant. However, direct contact with the liquefied material or escaping compressed gas may cause frostbite injury.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Ingestion</b>             | Ingestion is considered unlikely due to product form.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Toxicity Data</b>         | No LD50 data available for this product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## 12. ECOLOGICAL INFORMATION

|                    |                                                                                                                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Environment</b> | Limited ecotoxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment. |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 13. DISPOSAL CONSIDERATIONS

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

## 14. TRANSPORT INFORMATION

|                  |                                                                                              |
|------------------|----------------------------------------------------------------------------------------------|
| <b>Transport</b> | Ensure cylinder is separated from driver and that outlet of relief device is not obstructed. |
|------------------|----------------------------------------------------------------------------------------------|



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

|                      |                                   |                     |     |                           |                |
|----------------------|-----------------------------------|---------------------|-----|---------------------------|----------------|
| <b>Shipping Name</b> | COMPRESSED GAS, FLAMMABLE, N.O.S. |                     |     |                           |                |
| <b>UN No.</b>        | 1954                              | <b>DG Class</b>     | 2.1 | <b>Subsidiary Risk(s)</b> | None Allocated |
| <b>Packing Group</b> | None Allocated                    | <b>Hazchem Code</b> | 2SE | <b>GTEPG</b>              | 2A1            |

## 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 Drugs and Poisons (SUSDP).

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

## 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.

### ABBREVIATIONS:

ADB - Air-Dry Basis.

BEI - Biological Exposure Indice(s)

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

CNS - Central Nervous System.

EC No - European Community Number.

IARC - International Agency for Research on Cancer.

M - moles per litre, a unit of concentration.

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

NOS - Not Otherwise Specified.

NTP - National Toxicology Program.

OSHA - Occupational Safety and Health Administration.

pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).

ppm - Parts Per Million.

RTECS - Registry of Toxic Effects of Chemical Substances.

TWA/ES - Time Weighted Average or Exposure Standard.

### 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.

### 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.

**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.

**Prepared By**              Risk Management Technologies  
5 Ventnor Ave, West Perth  
Western Australia 6005  
Phone: +61 8 9322 1711

**Product Name**     **6 COMPONENT MIXTURE (CH<sub>4</sub>, C<sub>4</sub>H<sub>8</sub>, H<sub>2</sub>, C<sub>2</sub>H<sub>6</sub>, N<sub>2</sub>, BALANCE C<sub>2</sub>H<sub>4</sub>)**

Fax: +61 8 9322 1794  
Email: [info@rmt.com.au](mailto:info@rmt.com.au)  
Web: [www.rmt.com.au](http://www.rmt.com.au)

**SDS Date** 09 Jul 2010

**End of Report**