

**SAFETY DATA SHEET**

# 2613

Product Name **8 COMPONENT MIXTURE (BALANCE ETHYLENE)****1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER**

Supplier Name	<b>BOC LIMITED (AUSTRALIA)</b>
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	<a href="http://www.boc.com.au/">http://www.boc.com.au/</a>
Synonym(s)	2613 - SDS NUMBER · SPECIAL GAS MIXTURE
Use(s)	CALIBRATION · INDUSTRIAL APPLICATIONS
SDS Date	14 November 2012

**2. HAZARDS IDENTIFICATION****CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA****RISK PHRASES**

R12	Extremely Flammable.
R67	Vapours may cause drowsiness and dizziness.

**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.

**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 (v/v)
ACETYLENE	CAS: 74-86-2 EC: 200-816-9	E;R5 E;R6 F+;R12	<1%
ETHANE	CAS: 74-84-0 EC: 200-814-8	F+;R12	<1%
METHANE	CAS: 74-82-8 EC: 200-812-7	F+;R12	<1%
PROPANE	CAS: 74-98-6 EC: 200-827-9	F+;R12	<1%
PROPYLENE	CAS: 115-07-1 EC: 204-062-1	F+;R12	<1%
CARBON MONOXIDE	CAS: 630-08-0 EC: 211-128-3	T;R23 Repr.;R61 T;R48/23 F+;R12	<0.2%

ETHYLENE	CAS: 74-85-1 EC: 200-815-3	F+;R12 Xn;R67	Remainder
CARBON DIOXIDE	CAS: 124-38-9 EC: 204-696-9	Not Available	<1%

#### 4. FIRST AID MEASURES

<b>Eye</b>	Cold burns: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek medical attention.
<b>Inhalation</b>	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.
<b>Skin</b>	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.
<b>Ingestion</b>	Ingestion is not considered a potential route of exposure. Due to product form and application, ingestion is considered unlikely.
<b>Advice to Doctor</b>	Treat for asphyxia and cold burns.

#### 5. FIRE FIGHTING MEASURES

<b>Flammability</b>	Highly flammable. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights, mobile phones 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. Cool cylinders or containers exposed to fire by applying water from a protected location. Do not approach cylinders or containers suspected of being hot. 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 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

<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.
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#### 7. STORAGE AND HANDLING

<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.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION****Exposure Standards**

Ingredient	Reference	TWA		STEL	
		ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Acetylene	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			
Methane	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**

Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical explosion proof extraction ventilation is recommended. Flammable/explosive vapours may accumulate in poorly ventilated areas. Maintain vapour levels below the recommended exposure standard.

**PPE**

<b>Eye / Face</b>	Wear safety glasses.
<b>Hands</b>	Wear leather or cotton gloves.
<b>Body</b>	Wear safety boots.
<b>Respiratory</b>	If spraying, wear Self Contained Breathing Apparatus (SCBA) or an Air-line respirator.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	COLOURLESS GAS
<b>Odour</b>	SLIGHT ODOUR
<b>Flammability</b>	HIGHLY FLAMMABLE
<b>Flash point</b>	< 23°C
<b>Boiling point</b>	-103.9°C (Ethylene)
<b>Melting point</b>	NOT AVAILABLE
<b>Evaporation rate</b>	NOT APPLICABLE
<b>pH</b>	NOT APPLICABLE
<b>Vapour density</b>	NOT AVAILABLE
<b>Specific gravity</b>	NOT APPLICABLE
<b>Solubility (water)</b>	NOT AVAILABLE
<b>Vapour pressure</b>	NOT AVAILABLE
<b>Upper explosion limit</b>	36 % (Ethylene)
<b>Lower explosion limit</b>	2.7 % (Ethylene)
<b>Autoignition temperature</b>	NOT AVAILABLE
<b>Decomposition temperature</b>	NOT AVAILABLE
<b>Viscosity</b>	NOT AVAILABLE
<b>Partition coefficient</b>	NOT AVAILABLE
<b>% Volatiles</b>	100%

**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>	May evolve toxic gases if heated to decomposition.
<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>	Direct contact with evaporating liquid may result in cold burns, similar to frostbite injury, with possible permanent damage.																
<b>Inhalation</b>	Asphyxiant. Effects are proportional to oxygen displacement. Vapours may cause dizziness or drowsiness.																
<b>Skin</b>	Direct contact with the liquefied material or escaping compressed gas may cause cold burns similar to frostbite injury.																
<b>Ingestion</b>	Ingestion is considered unlikely due to product form.																
<b>Toxicity Data</b>	<p>ACETYLENE (74-86-2)</p> <table> <tr> <td>LCLo (inhalation)</td> <td>50pph/5M (human)</td> </tr> <tr> <td>TCLo (inhalation)</td> <td>20 pph (human)</td> </tr> </table> <p>METHANE (74-82-8)</p> <table> <tr> <td>LC50 (inhalation)</td> <td>326 gm/m<sup>3</sup>/2h (mouse)</td> </tr> </table> <p>PROPANE (74-98-6)</p> <table> <tr> <td>LC50 (inhalation)</td> <td>&gt; 800000 ppm/15M (rat)</td> </tr> </table> <p>CARBON MONOXIDE (630-08-0)</p> <table> <tr> <td>LC50 (inhalation)</td> <td>1807 ppm/4H (rat)</td> </tr> <tr> <td>LCLo (inhalation)</td> <td>5000 ppm/5M (human)</td> </tr> </table> <p>CARBON DIOXIDE (124-38-9)</p> <table> <tr> <td>LC50 (inhalation)</td> <td>470000 ppm/30M (rat)</td> </tr> <tr> <td>LCLo (inhalation)</td> <td>9 pph/5M (human)</td> </tr> </table>	LCLo (inhalation)	50pph/5M (human)	TCLo (inhalation)	20 pph (human)	LC50 (inhalation)	326 gm/m <sup>3</sup> /2h (mouse)	LC50 (inhalation)	> 800000 ppm/15M (rat)	LC50 (inhalation)	1807 ppm/4H (rat)	LCLo (inhalation)	5000 ppm/5M (human)	LC50 (inhalation)	470000 ppm/30M (rat)	LCLo (inhalation)	9 pph/5M (human)
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**12. ECOLOGICAL INFORMATION**

<b>Environment</b>	When discharged into the atmosphere, methane may contribute to the greenhouse effect. Methane has a global warming potential of 21 (CO <sub>2</sub> = 1).
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**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**

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	1954	1954
Proper Shipping Name		COMPRESSED GAS, FLAMMABLE, N.O.S. (CONTAINS ETHYLENE)	
DG Class/ Division	2.1	2.1	2.1
Subsidiary Risk(s)	None Allocated	None Allocated	None Allocated
Packing Group	None Allocated	None Allocated	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)	<b>AUSTRALIA: AICS (Australian Inventory of Chemical Substances)</b> All components are listed on AICS, or are exempt.

## 16. OTHER INFORMATION

Additional Information	<p>APPLICATION METHOD: Gas regulator of suitable pressure and flow rating fitted to cylinder or manifold with low pressure gas distribution to equipment. The storage of significant quantities of gas cylinders must comply with AS4332 The storage and handling of gases in cylinders.</p> <p><b>PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:</b> 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.</p> <p><b>HEALTH EFFECTS FROM EXPOSURE:</b> 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.</p>
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## Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m <sup>3</sup>	Milligrams per Cubic Metre
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
TLV	Threshold Limit Value
TWA/OEL	Time Weighted Average or Occupational Exposure Limit

## Revision History

Revision	Description
1.0	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**