

SAFETY DATA SHEET

1993

Product Name **6 COMPONENT MIXTURE (CO₂, HE, C₄H₁₀, CH₄, BALANCE N₂)**

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) 1993 - MSDS NUMBER · PRODUCT CODES: 285, 288 · SPECIAL GAS MIXTURE
Use(s) CALIBRATION · INDUSTRIAL APPLICATIONS
SDS Date 26 April 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

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
METHANE	CAS: 74-82-8 EC: 200-812-7	F+;R12	30%
BUTANE	CAS: 106-97-8 EC: 203-448-7	F+;R12	12%
ISOBUTANE	CAS: 75-28-5 EC: 200-857-2	F+;R12	10%
CARBON DIOXIDE	CAS: 124-38-9 EC: 204-696-9	Not Available	4%
HELIUM	CAS: 7440-59-7 EC: 231-168-5	Not Available	4%
NITROGEN	CAS: 7727-37-9 EC: 231-783-9	Not Available	Remainder

4. FIRST AID MEASURES

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until

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advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

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. Contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor. For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor.

Skin

None required.

Ingestion

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

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. 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.

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

Spillage

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.

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 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 ³	ppm	mg/m ³
Butane	SWA (AUS)	800	1900	--	--
Carbon dioxide	SWA (AUS)	5000	9000	30000	54000
Carbon dioxide in coal mines	SWA (AUS)	12500	22500	30000	54000
Helium	SWA (AUS)	Asphyxiant			
Isobutane	SWA (AUS)	1000	--	--	--
Methane	SWA (AUS)	Asphyxiant			
Nitrogen	SWA (AUS)	Asphyxiant			

Biological Limits

No biological limit allocated.

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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

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 ODOUR
Flammability HIGHLY FLAMMABLE
Flash point NOT AVAILABLE
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) 0.0149 L/L (Nitrogen)
Vapour pressure NOT AVAILABLE
Upper explosion limit NOT AVAILABLE
Lower explosion limit NOT AVAILABLE
Cylinder pressure (when full) 600 kPa @ 15°C
% Volatiles 100 %

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 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. Corrosive when moist.
Hazardous Decomposition Products This material will not decompose to form hazardous products.
Hazardous Reactions Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Asphyxiant gas. 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. 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.

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Skin	Non irritant.	
Ingestion	Ingestion is considered unlikely due to product form.	
Toxicity Data	METHANE (74-82-8)	
	LC50 (inhalation)	326 gm/m ³ /2h (mouse)
	BUTANE (106-97-8)	
	LC50 (inhalation)	658000 mg/m ³ /4H (rat)
	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 (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.

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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.

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
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
1.0	Standard SDS Review.

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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End of SDS