

SAFETY DATA SHEET

1670

Product Name **9 COMPONENT MIXTURE (C₂H₆, C₂H₄, HE, CO, H₂, O₂, CH₄, CO₂, 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) 1670 - SDS NUMBER • PRODUCT CODES: 285, 288 • SPECIAL GAS MIXTURE
Use(s) CALIBRATION • INDUSTRIAL APPLICATIONS
SDS Date 19 Apr 2010

2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO ASCC CRITERIA

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

UN No.	1956	DG Class	2.2	Subsidiary Risk(s)	None Allocated
Packing Group	None Allocated	Hazchem Code	2TE	EPG	2C1

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	CAS No.	Content
METHANE	C-H ₄	74-82-8	15%
OXYGEN	O ₂	7782-44-7	5%
CARBON MONOXIDE	C-O	630-08-0	0.1%
HYDROGEN	H ₂	1333-74-0	0.1%
ETHANE	C ₂ -H ₆	74-84-0	0.05%
ETHYLENE	C ₂ -H ₄	74-85-1	0.05%
CARBON DIOXIDE	CO ₂	124-38-9	30%
HELIUM	He	7440-59-7	0.05%
NITROGEN	N ₂	7727-37-9	remainder

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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 Poisons 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 Non flammable.

Fire and Explosion Temperatures in a fire may cause cylinders to rupture. Cool cylinders or containers exposed to fire by applying water from a protected location. Do not approach cylinders or containers suspected of being hot.

Extinguishing Use water fog to cool containers from protected area.

Hazchem Code 2TE

6. ACCIDENTAL RELEASE MEASURES

Spillage 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.

7. STORAGE AND HANDLING

Storage 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.

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

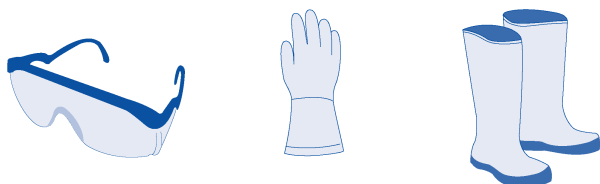
Exposure Stds	Ingredient	Reference	TWA		STEL	
			ppm	mg/m ³	ppm	mg/m ³
	Carbon dioxide	ASCC (AUS)	5000	9000	30000	54000
	Carbon dioxide in coal mines	ASCC (AUS)	12500	22500	30000	54000
	Carbon monoxide	ASCC (AUS)	30	34	--	--
	Ethane	ASCC (AUS)	Asphyxiant			
	Ethylene	ASCC (AUS)	Asphyxiant			
	Helium	ASCC (AUS)	Asphyxiant			
	Hydrogen	ASCC (AUS)	Asphyxiant			
	Methane	ASCC (AUS)	Asphyxiant			
	Nitrogen	ASCC (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

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Engineering Controls 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 Wear safety boots, leather gloves and safety glasses. Where an inhalation risk exists, wear: an Air-line respirator or self Contained Breathing Apparatus (SCBA).



9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	COLOURLESS GAS	Solubility (Water)	0.0149 L/L (Nitrogen)
Odour	SWEET ODOUR	Specific Gravity	NOT APPLICABLE
pH	NOT APPLICABLE	% Volatiles	100 %
Vapour Pressure	NOT AVAILABLE	Flammability	NON FLAMMABLE
Vapour Density	NOT AVAILABLE	Flash Point	NOT RELEVANT
Boiling Point	NOT AVAILABLE	Upper Explosion Limit	NOT RELEVANT
Melting Point	NOT AVAILABLE	Lower Explosion Limit	NOT RELEVANT
Evaporation Rate	NOT APPLICABLE		
Cylinder Pressure	13,000 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. Dust of aluminium, chrome, manganese may ignite then explode when heated in carbon dioxide. Incompatible with acrylaldehyde, aziridine, metal acetylides, sodium peroxide. Ethylene explodes spontaneously when mixed with chlorine in sunlight, reacts violently with oxidising agents and is phytotoxic. Carbon monoxide reacts violently with oxygen difluoride, chlorine, barium peroxide. Can react with iron, nickel and other metals to form highly toxic carbonyls. Carbon monoxide can cause stress corrosion cracking in steels especially if other acid gases (e.g. carbon dioxide, sulphur compounds), are present. Below 3500 kPa corrosion is negligible and normal materials can be used.

Decomposition 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 monoxide can be fatal at low levels. Over exposure may result in permanent CNS/brain damage with numerous side effects. Chronic exposure may result in heart damage. Over exposure may result in birth defects. Those who smoke, have heart disease, brain disease or anaemia are at an increased risk of adverse health effects.

Eye Non irritant.

Inhalation Non irritant - Asphyxiant. Effects are proportional to oxygen displacement.

Skin Non irritant.

Ingestion Ingestion is considered unlikely due to product form.

Toxicity Data CARBON MONOXIDE (630-08-0)
LC50 (Inhalation): 1807 ppm/4H (rat)
LCLo (Inhalation): 5000 ppm/5M (human)

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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

Transport Ensure cylinder is separated from driver and that outlet of relief device is not obstructed.



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

Shipping Name	COMPRESSED GAS, N.O.S.				
UN No.	1956	DG Class	2.2	Subsidiary Risk(s)	None Allocated
Packing Group	None Allocated	Hazchem Code	2TE	EPG	2C1

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.

EINECS - European INventory of Existing Commercial chemical Substances.

IARC - International Agency for Research on Cancer.

M - moles per litre, a unit of concentration.

mg/m³ - 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.

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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.

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End of Report