

SAFETY DATA SHEET

2142

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name 4 COMPONENT MIXTURE (CH₄, H₂S, CO, BALANCE AIR)
Synonym(s) 2142 - SDS NUMBER • PRODUCT CODE: 0294 • SPECIAL GAS MIXTURE

1.2 Uses and uses advised against

Use(s) CALIBRATION • INDUSTRIAL APPLICATIONS

1.3 Details of the supplier of the product

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)
Website <http://www.boc.com.au>

1.4 Emergency telephone number(s)

Emergency 1800 653 572 (24/7) (Australia only)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Toxic to Reproduction: Category 1A
Gases Under Pressure: Compressed gas

2.2 Label elements

Signal word DANGER

Pictogram(s)



Hazard statement(s)

H280 Contains gas under pressure; may explode if heated.
H360 May damage fertility or the unborn child.

Prevention statement(s)

P202 Do not handle until all safety precautions have been read and understood.
P281 Use personal protective equipment as required.

Response statement(s)

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage statement(s)

P405 Store locked up.
P410 + P403 Protect from sunlight. Store in a well-ventilated place.

Disposal statement(s)

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content (v/v)
METHANE	74-82-8	200-812-7	<2.5%
CARBON MONOXIDE	630-08-0	211-128-3	<1%
HYDROGEN SULPHIDE	7783-06-4	231-977-3	<0.025%
AIR	-	-	>96.5%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until 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). 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	Due to product form and application, ingestion is considered unlikely.
First aid facilities	No information provided.

4.2 Most important symptoms and effects, both acute and delayed

Over exposure to carbon monoxide may result in rapid breathing, nausea, lack of coordination, unconsciousness and coma. Carbon monoxide reacts with haemoglobin in the blood to prevent oxygen uptake and release. Inhalation of high levels of hydrogen sulphide may be fatal. Chronic exposure may result in nerve paralysis/damage, heart damage and neurological effects.

4.3 Immediate medical attention and special treatment needed

Hyperbaric oxygen treatment at 2 to 2.5 atmospheres reduces the biological half life of carboxyhaemoglobin to 24 minutes. Avoid stimulant drugs including carbon dioxide. Do not inject methylene blue. Absolute bed rest for at least 48 hours should be ensured. After recovery observe for late neurological and or cardiac complaints. Carboxyhaemoglobin levels in blood used as biological monitoring index. Observe for premonitory signs of pulmonary oedema.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use water fog to cool containers from protected area.

5.2 Special hazards arising from the substance or mixture

Non flammable.

5.3 Advice for firefighters

Temperatures in a fire may cause cylinders to rupture. Cool cylinders or containers exposed to fire by applying water from a protected location. Remove cool cylinders from the path of the fire. Evacuate the area if unable to keep cylinders cool. Do not approach cylinders or containers suspected of being hot.

5.4 Hazchem code

2TE	
2	Fine Water Spray.
T	Wear full fire kit and breathing apparatus. Dilute spill and run-off.
E	Evacuation of people in and around the immediate vicinity of the incident should be considered.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Use Personal Protective Equipment (PPE) as detailed in Section 8 of the SDS.

6.2 Environmental precautions

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.3 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.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe 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.

7.2 Conditions for safe storage, including any incompatibilities

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.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Carbon monoxide	SWA (AUS)	30	34	--	--
Hydrogen sulfide	SWA (AUS)	10	14	15	21
Methane	SWA (AUS)	Asphyxiant			

Biological limits

Ingredient	Determinant	Sampling Time	BEI
CARBON MONOXIDE	Carboxyhemoglobin in blood	End of shift	3.5% of hemoglobin
	Carbon monoxide in end-exhaled air	End of shift	20 ppm

Reference: ACGIH Biological Exposure Indices

8.2 Exposure controls

Engineering controls Provide suitable ventilation to minimise or eliminate exposure. Confined areas (e.g. tanks) should be adequately ventilated or gas tested. Maintain vapour levels below the recommended exposure standard.

PPE

Eye / Face	Wear safety glasses.
Hands	Wear leather or cotton gloves.
Body	Wear coveralls and safety boots.
Respiratory	Where an inhalation risk exists, wear Self Contained Breathing Apparatus (SCBA) or an Air-line respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	COLOURLESS GAS
Odour	ROTTEN EGG ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	-216.2°C
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	NOT AVAILABLE
Specific gravity	NOT APPLICABLE
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

Density	1.2 kg/m ³ @ 0°C
% Volatiles	100 %

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

No information provided.

10.5 Incompatible materials

Carbon monoxide can react with iron, nickel and other metals. Titanium will burn in nitrogen and lithium reacts slowly with nitrogen at ambient temperatures. Also incompatible with oxidising agents (e.g. hypochlorites). Hydrogen sulphide is corrosive to most metals and reacts with these substances to form metal sulphides.

10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	May be harmful if inhaled. Exposure may cause irritation to respiratory tract, runny nose, cough, hoarseness and shortness of breath, followed by severe irritation, headache, nausea, vomiting and dizziness. CARBON MONOXIDE LC50 (Inhalation): 1807 ppm / 4 hours (rat) HYDROGEN SULPHIDE LC50 (Inhalation): 444 ppm / 4 hours (rat)
Skin	Not classified as a skin irritant.
Eye	Not classified as an eye irritant. However, contact may result in mild irritation, lacrimation, pain and redness.
Sensitization	Not classified as causing skin or respiratory sensitisation.

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Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Not classified as a carcinogen.
Reproductive	May cause harm to the unborn child.
STOT – single exposure	Not classified as causing organ effects from single exposure.
STOT – repeated exposure	Not classified as causing organ effects from repeated exposure. Increased evidence of cardiovascular problems, such as coronary artery disease, have been demonstrated upon chronic exposure to carbon monoxide.
Aspiration	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

Natural sources of carbon monoxide (CO) such as atmospheric oxidation of methane, forest fires and product from living organisms account for about 90 % of the atmosphere's carbon monoxide content. Human activity produces about 10%. Motor vehicles account for about 55 to 65 % of global man made emissions of carbon monoxide.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

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)
14.1 UN Number	1956	1956	1956
14.2 Proper Shipping Name	COMPRESSED GAS, N.O.S. (Contains air)	COMPRESSED GAS, N.O.S. (Contains air)	COMPRESSED GAS, N.O.S. (Contains air)
14.3 Transport hazard class	2.2	2.2	2.2
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards No information provided

14.6 Special precautions for user

Hazchem code	2TE
GTEPG	2C1
EMS	F-C, S-V

Other information Ensure cylinder is separated from driver and foodstuffs.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule	Classified as a Schedule 7 (S7) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).	
Classifications	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].	
Hazard codes	Repr.	Reproductive toxin
Risk phrases	R61	May cause harm to the unborn child.
Safety phrases	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.
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 valve.

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

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.

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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
	EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
	GHS	Globally Harmonized System
	GTEPG	Group Text Emergency Procedure Guide
	IARC	International Agency for Research on Cancer
	LC50	Lethal Concentration, 50% / Median Lethal Concentration
	LD50	Lethal Dose, 50% / Median Lethal Dose
	mg/m ³	Milligrams per Cubic Metre
	OEL	Occupational Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	STEL	Short-Term Exposure Limit
	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
	SWA	Safe Work Australia
	TLV	Threshold Limit Value
	TWA	Time Weighted Average

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.

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