

SAFETY DATA SHEET

2169

Product Name **12 COMPONENT MIXTURE (BALANCE CH₄) (# 2169)**

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) 2169 - MSDS NUMBER · BOC COMPONENT 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
ETHANE	CAS: 74-84-0 EC: 200-814-8	F+;R12	9.8%
PROPANE	CAS: 74-98-6 EC: 200-827-9	F+;R12	1.8%
BUTANE	CAS: 106-97-8 EC: 203-448-7	F+;R12	0.1%
ISOBUTANE	CAS: 75-28-5 EC: 200-857-2	F+;R12	0.1%
2,2-DIMETHYLPROPANE (NEOPENTANE)	CAS: 463-82-1 EC: 207-343-7	F+;R12 N;R51/53	0.05%
ISOPENTANE	CAS: 78-78-4 EC: 201-142-8	F+;R12 N;R51/53 Xn;R65 Xi;R66 Xn;R67	0.05%
N-HEXANE	CAS: 110-54-3 EC: 203-777-6	F;R11 Xi;R38 Xn;R48/20 N;R51/53 Xn;R62 Xn;R65 Xn;R67	0.05%
OXYGEN	CAS: 7782-44-7 EC: 231-956-9	O;R8	0.05%

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PENTANE	CAS: 109-66-0 EC: 203-692-4	F+;R12 N;R51/53 Xn;R65 Xi;R66 Xn;R67	0.05%
METHANE	CAS: 74-82-8 EC: 200-812-7	F+;R12	Remainder
NITROGEN	CAS: 7727-37-9 EC: 231-783-9	Not Available	0.12%
CARBON DIOXIDE	CAS: 124-38-9 EC: 204-696-9	Not Available	0.02%

4. 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). 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.
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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
Ethane	SWA (AUS)	Asphyxiant			
Isobutane	SWA (AUS)	1000	--	--	--
Methane	SWA (AUS)	Asphyxiant			
Nitrogen	SWA (AUS)	Asphyxiant			
Pentane	SWA (AUS)	600	1770	750	2210
Propane	SWA (AUS)	Asphyxiant			
n-Hexane	SWA (AUS)	20	72	--	--

Biological Limits

Ingredient	Reference	Determinant	Sampling Time	BEI
N-HEXANE	ACGIH BEI	2,5-Hexanedione in urine (without hydrolysis)	End of shift at end of workweek	0.4 mg/L

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	ODOURLESS
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)	0.033 L/L (Methane)
Vapour pressure	NOT AVAILABLE
Upper explosion limit	15 % (Methane)
Lower explosion limit	5 % (Methane)
% Volatiles	100 %

10. STABILITY AND REACTIVITY

Stable under recommended conditions of storage.

Product Name 12 COMPONENT MIXTURE (BALANCE CH₄) (# 2169)**Chemical Stability****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. Dust of aluminium, chrome, manganese may ignite then explode when heated in carbon dioxide. Incompatible with acrylaldehyde, aziridine, metal acetylides, sodium peroxide.

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.

Eye

Non irritant.

Inhalation

Asphyxiant. Effects are proportional to oxygen displacement.

Skin

Non irritant.

Ingestion

Ingestion is considered unlikely due to product form.

Toxicity Data

PROPANE (74-98-6)		
LC50 (inhalation)	>	800000 ppm/15M (rat)
BUTANE (106-97-8)		
LC50 (inhalation)	658000	mg/m ³ /4H (rat)
2,2-DIMETHYLPROPANE (NEOPENTANE) (463-82-1)		
LCLo (inhalation)	1097	g/m ³ /2 hours (mouse)
LD50 (intraperitoneal)	100	mg/kg (mouse)
N-HEXANE (110-54-3)		
LC50 (inhalation)	48000	ppm/4 hours (rat)
LD50 (ingestion)	25	g/kg (rat)
LD50 (skin)	3000	mg/kg (rabbit)
PENTANE (109-66-0)		
LC50 (inhalation)	364	g/m ³ /4 hours (rat)
LCLo (inhalation)	325	g/m ³ /2 hours (mouse)
LD50 (intravenous)	446	mg/kg (mouse)
METHANE (74-82-8)		
LC50 (inhalation)	326	gm/m ³ /2h (mouse)
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.		

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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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

Product Name **12 COMPONENT MIXTURE (BALANCE CH4) (# 2169)**

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.

Prepared By

Risk Management Technologies
5 Ventnor Ave, West Perth
Western Australia 6005
Phone: +61 8 9322 1711
Fax: +61 8 9322 1794
Email: info@rmt.com.au
Web: www.rmt.com.au

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End of SDS