

SAFETY DATA SHEET

#2668

Product Name **13 COMPONENT MIXTURE (BALANCE BUTANE)**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

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)
Emergency 1800 653 572 (24/7) (Australia only)
Web site <http://www.boc.com.au/>
Synonym(s) 2668 - SDS NUMBER • SPECIAL GAS MIXTURE
Use(s) CALIBRATION • INDUSTRIAL APPLICATIONS
SDS date 06 August 2013

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

RISK PHRASES

R12 Extremely Flammable.
R45 May cause cancer.
R46 May cause heritable genetic damage.

SAFETY PHRASES

S9 Keep container in a well ventilated place.
S16 Keep away from sources of ignition - No smoking.
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.

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

UN number	1965	DG division	2.1
Packing group	None Allocated	Subsidiary risk(s)	None Allocated
Hazchem code	2YE		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Identification	Classification	Content
1,3-BUTADIENE	CAS: 106-99-0 EC: 203-450-8	F+;R12 Carc.;R45 Muta.;R46	<10%
1-BUTENE	CAS: 106-98-9 EC: 203-449-2	F+;R12	<10%
ETHANE	CAS: 74-84-0 EC: 200-814-8	F+;R12	<10%
ISOBUTANE	CAS: 75-28-5 EC: 200-857-2	F+;R12	<10%
ISOBUTENE	CAS: 115-11-7 EC: 204-066-3	F+;R12	<10%

Product Name 13 COMPONENT MIXTURE (BALANCE BUTANE)

ISOPENTANE	CAS: 78-78-4 EC: 201-142-8	F+;R12 N;R51/53 Xn;R65 Xi;R66 Xn;R67	<10%
PENTANE	CAS: 109-66-0 EC: 203-692-4	F+;R12 N;R51/53 Xn;R65 Xi;R66 Xn;R67	<10%
PROPANE	CAS: 74-98-6 EC: 200-827-9	F+;R12	<10%
PROPYLENE	CAS: 115-07-1 EC: 204-062-1	F+;R12	<10%
TRANS-2-BUTENE	CAS: 624-64-6 EC: 210-855-3	F+;R12	<10%
N-HEXANE	CAS: 110-54-3 EC: 203-777-6	F;R11 Xi;R38 Xn;R48/20 N;R51/53 Repr.;R62 Xn;R65 Xn;R67	<5%
BUTANE	CAS: 106-97-8 EC: 203-448-7	F+;R12	Remainder
CIS-2-BUTENE	CAS: 590-18-1 EC: 209-673-7	Not Available	<10%

4. FIRST AID MEASURES

Eye	Cold burns: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek medical attention.
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. For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor.
Skin	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.
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	2YE 2 Water Fog (or fine water spray if fog unavailable) Y Self Contained Breathing apparatus and protective gloves. E Evacuation of people in the vicinity of the incident should be considered.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Eliminate ignition sources. Consider the risk of potentially explosive atmospheres.
Environmental precautions	Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
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.

References See Sections 8 and 13 for exposure controls and disposal.

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. Do not drop, roll or drag cylinders. The uncontrolled release of any 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
1,3-Butadiene	SWA (AUS)	10	22	--	--
Butane	SWA (AUS)	800	1900	--	--
Ethane	SWA (AUS)	Asphyxiant			
Isobutane	SWA (AUS)	1000	--	--	--
Pentane	SWA (AUS)	600	1770	750	2210
Propane	SWA (AUS)	Asphyxiant			
Propylene	SWA (AUS)	Asphyxiant			
n-Hexane	SWA (AUS)	20	72	--	--

Biological limits

Ingredient	Reference	Determinant	Sampling Time	BEI
1,3-BUTADIENE	ACGIH BEI	1,2-Dihydroxy-4-(N-acetylcy steinyl)-butane in urine	End of shift	25 mg/g creatinine
	ACGIH BEI	Mixture of N-1 and N-2-(hydroxybutenyl)valine hemoglobin (Hb) adducts in blood	Not critical	2.5 pmol/g Hb
N-HEXANE	ACGIH BEI	2,5-Hexanedione in urine (without hydrolysis)	End of shift at end of workweek	0.4 mg/L

Engineering controls Provide suitable ventilation to minimise or eliminate exposure. Confined areas (eg. 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 insulated 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

Product Name 13 COMPONENT MIXTURE (BALANCE BUTANE)

Odour	ODOURLESS
Flammability	HIGHLY FLAMMABLE
Flash point	< 0°C
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)	NOT AVAILABLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	8.5 % (Isobutane)
Lower explosion limit	1.9 % (Isobutane)
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
% Volatiles	100 %

10. STABILITY AND REACTIVITY

Chemical stability	Stable under recommended conditions of storage.
Conditions to avoid	Avoid shock, friction, heavy impact, heat, sparks, open flames and other ignition sources.
Material to avoid	Incompatible with oxidising agents (eg. hypochlorites), acids (eg. nitric acid), heat and ignition sources. Do not use natural rubber flexible hoses. Also incompatible (potentially violently) with oxygen, halogens and metal halides.
Hazardous Decomposition Products	May evolve toxic gases if heated to decomposition.
Hazardous Reactions	Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary	Asphyxiant gas - irritant. Irritates the mucous membranes, which may result in a prickling feeling and dryness in throat, blurring of vision and nausea. Acts as an asphyxiant. At high levels anaesthetic effects may result in respiratory paralysis and death. 1,3-Butadiene is classified as carcinogenic to humans (IARC Group 1).	
Eye	Irritant vapour. Low temperature evaporating liquid can cause cold burns.	
Inhalation	Irritant - asphyxiant. Effects are proportional to oxygen displacement with symptoms of air hunger, rapid breathing, elevated heart rate, drowsiness and loss of mental alertness. High level exposure may result in incoordination, vomiting, mental instability, lung damage, convulsions, coma and death.	
Skin	Irritating vapour. Direct contact with the liquefied material or escaping compressed gas may cause frost-bite injury.	
Ingestion	Ingestion is considered unlikely due to product form.	
Toxicity data	<div>1,3-BUTADIENE (106-99-0)<div>LC50 (inhalation)270 g/m³/2 hours (mouse)</div></div> <div>PENTANE (109-66-0)<div>LC50 (inhalation)364 g/m³/4 hours (rat)<div>LCLo (inhalation)325 g/m³/2 hours (mouse)<div>LD50 (intravenous)446 mg/kg (mouse)</div></div></div></div> <div>PROPANE (74-98-6)<div>LC50 (inhalation)> 800000 ppm/15M (rat)</div></div> <div>N-HEXANE (110-54-3)<div>LC50 (inhalation)48000 ppm/4 hours (rat)<div>LD50 (ingestion)25 g/kg (rat)<div>LD50 (skin)3000 mg/kg (rabbit)</div></div></div><div>BUTANE (106-97-8)</div></div>	

Product Name 13 COMPONENT MIXTURE (BALANCE BUTANE)BUTANE (106-97-8)
LC50 (inhalation)

658000 mg/m3/4H (rat)

12. ECOLOGICAL INFORMATION

Toxicity	No information provided.
Persistence and degradability	No information provided.
Bioaccumulative potential	No information provided.
Mobility in soil	No information provided.
Other adverse effects	No information provided.

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	1965	1965	1965
Proper shipping name	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S.		
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
Hazchem code	2YE		
EMS	F-D, S-U		
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. NEW ZEALAND: NZIoC (New Zealand Inventory of Chemicals) All components are listed on the NZIoC inventory, 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 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
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
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
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

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