BOC
A Member of The Linde Group

SAFETY DATA SHEET

 # 2654

Product Name **6 COMPONENT MIXTURE (ETHANE, BENZENE, ETHYL BENZENE, XYLENE, TOLUENE, BALANCE METHANE)**

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)	2654 - SDS NUMBER • PRODUCT CODES: 285, 288 • SPECIAL GAS MIXTURE
Use(s)	CALIBRATION • INDUSTRIAL APPLICATIONS
SDS date	10 September 2014

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Risk Phrases

R12	Extremely Flammable.

Safety Phrases

S2	Keep out of reach of children.
S9	Keep container in a well ventilated place.
S16	Keep away from sources of ignition - No smoking.
S33	Take precautionary measures against static discharges.

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

UN Number	1954	**Transport Hazard Class**	2.1
Packing Group	None Allocated	**Hazchem Code**	2SE

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Identification	Classification	Content (v/v)
ETHANE	CAS: 74-84-0 EC: 200-814-8	F+;R12	5%
BENZENE	CAS: 71-43-2 EC: 200-753-7	F;R11, Xi;R36/38, Carc.;R45, Muta.;R46, T;R48/23/24/25, Xn;R65	<0.01%
ETHYLBENZENE	CAS: 100-41-4 EC: 202-849-4	F;R11, Xn;R20	<0.01%
TOLUENE	CAS: 108-88-3 EC: 203-625-9	F;R11, Xi;R38, Xn;R48/20, Repr.;R63, Xn;R65, Xn;R67	<0.01%
XYLENE	CAS: 1330-20-7 EC: 215-535-7	F;R10, Xn;R20/21, Xi;R38	<0.01%
METHANE	CAS: 74-82-8 EC: 200-812-7	F+;R12	Remainder

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 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 with air.

Extinguishing Stop flow of gas if safe to do so, such as by slowly closing the cylinder valve. If the gas source cannot be isolated, do not extinguish the flame, since re-ignition and explosion could occur. Await arrival of emergency services or manufacturer's advisor. Drench and cool cylinders with water spray from protected area at a safe distance. If it is absolutely necessary to extinguish the flame, use only a dry chemical powder extinguisher. Do not move cylinders for at least 24 hours. Avoid shock and bumps to cylinders.

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 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/m³	ppm	mg/m³
Benzene	SWA (AUS)	1	3.2	--	--
Ethane	SWA (AUS)	Asphyxiant			
Ethyl benzene	SWA (AUS)	100	434	125	543
Methane	SWA (AUS)	Asphyxiant			
Toluene	SWA (AUS)	50	191	150	574
Xylene	SWA (AUS)	80	--	150	--

Biological limits

Ingredient	Determinant	Sampling Time	BEI
BENZENE	S-Phenylmercapturic acid in urine	End of shift	25 ug/g creatinine
	t,t-Muconic acid in urine	End of shift	500 ug/g creatine
ETHYLBENZENE	Sum of mandelic acid and phenylglyoxylic acid in urine	End of shift at end of workweek	0.7 g/g creatinine
	Ethyl benzene in end-exhaled air	Not critical	-
TOLUENE	o-Cresol in urine	End of shift	0.02 mg/L
	Toluene in urine	End of shift	0.03 mg/L
	Toluene in blood	Prior to last shift of workweek	0.02 mg/L
XYLENE	Methylhippuric acids in urine	End of shift	1.5 g/g creatinine

Reference: ACGIH Biological Exposure Indices

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 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	-233°C (methane)
Boiling point	-161.5°C (methane)
Melting point	NOT AVAILABLE
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	NOT AVAILABLE
Specific gravity	NOT APPLICABLE
Solubility (water)	0.033 cm^3/cm^3 (methane)
Vapour pressure	NOT AVAILABLE
Upper explosion limit	15.0 % (methane)
Lower explosion limit	5.3 % (methane)
Partition coefficient	NOT AVAILABLE
Autoignition temperature	537°C (methane)
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
% Volatiles	100 %
Cylinder pressure (when full)	< 15.600 kPa @ 15°C (methane)

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	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	This material will not decompose to form hazardous products other than that already present.
Hazardous Reactions	Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary

Asphyxiant gas. Symptoms of exposure are directly related to displacement of oxygen. As the amount of oxygen inhaled is reduced from 21-14% volume, the pulse rate may accelerate and the rate and volume of breathing may increase. The ability to maintain attention and think clearly is diminished, muscular co-ordination is somewhat disturbed. As oxygen decreases from 14-10% volume, judgement becomes faulty, severe injuries may result in no pain. Muscular effort may lead to rapid fatigue. Further reduction to 6% may result in nausea and vomiting. Ability to move may be lost. Permanent brain damage may result even after resuscitation from exposure to this low level of oxygen. Below 6% breathing is in gasps and convulsions may occur. Inhalation of a mixture containing no oxygen may result in unconsciousness from the first breath and death may follow in minutes.

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

BENZENE (71-43-2)

LC50 (inhalation)	9980 ppm (mouse)
LCLo (inhalation)	2 ppm/5 minutes (human)
LD50 (ingestion)	930 mg/kg (rat)
LD50 (intraperitoneal)	2890 µg/kg (rat)
LD50 (skin)	48 mg/kg (mouse)
LDLo (ingestion)	50 mg/kg (man)
LDLo (subcutaneous)	1400 mg/kg (frog)
TCLo (inhalation)	100 ppm (human)
TDLo (ingestion)	52000 mg/kg/52 weeks (rat)

ETHYLBENZENE (100-41-4)

LC50 (inhalation)	50 g/m³/2 hours (mouse)
LCLo (inhalation)	4000 ppm/4 hours (rat)
LD50 (ingestion)	3500 mg/kg (rat)
LD50 (skin)	17800 mg/kg (rabbit)
TCLo (inhalation)	100 ppm/7 hours (human)

TOLUENE (108-88-3)

LC50 (inhalation)	400 ppm/24 hours (mouse)
LCLo (inhalation)	1600 ppm (guinea pig)
LD50 (ingestion)	636 mg/kg (rat)
LD50 (skin)	14100 µL/kg (rabbit)
LDLo (ingestion)	50 mg/kg (human)
TCLo (inhalation)	50 ppm (man)
TDLo (ingestion)	400 mg/kg (rat)

XYLENE (1330-20-7)

LC50 (inhalation)	5000 ppm/4 hours (rat)
LCLo (inhalation)	10000 ppm/6 hours (man)
LD50 (ingestion)	4300 mg/kg (rat)
LD50 (intraperitoneal)	1548 mg/kg (mouse)
LD50 (skin)	> 1700 mg/kg (rabbit)
LD50 (subcutaneous)	1700 mg/kg (rat)
LDLo (ingestion)	50 mg/kg (human)
LDLo (intravenous)	129 mg/kg (rabbit)

XYLENE (1330-20-7)

TCLo (inhalation)	200 ppm (human - eye, respiratory)
TDLo (ingestion)	20600 ug/kg (6-15 days pregnant mouse - teratogenic)

METHANE (74-82-8)

LC50 (inhalation)	326 gm/m3/2h (mouse)

12. ECOLOGICAL INFORMATION

Toxicity When discharged into the atmosphere, Methane may contribute to the greenhouse effect. Methane has a global warming potential of 21 (CO2 = 1).

Persistence and degradability No information provided.

Bioaccumulative potential No information provided.

Mobility in soil No information provided.

Other adverse effects No known ecological damage is caused by this product.

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.	-	-
Transport Hazard Class	2.1	-	-
Packing Group	None Allocated	-	-

Environmental hazards No information provided

Special precautions for user

Hazchem code 2SE

GTEPG 2A1

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.

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 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
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
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
2.0	Standard SDS Review.
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.

Product Name **6 COMPONENT MIXTURE (ETHANE, BENZENE, ETHYL BENZENE, XYLENE, TOLUENE, BALANCE METHANE)**

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End of SDS