BOC
A Member of The Linde Group

SAFETY DATA SHEET

 # 1617

Product Name **5 COMPONENT MIXTURE (C6H6, CO2, CCL2F2, CCHCLF2, 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)	1617 - MSDS NUMBER • PRODUCT CODE: 285, 288 • SPECIAL GAS MIXTURE
Use(s)	CALIBRATION • INDUSTRIAL APPLICATIONS
SDS Date	26 Mar 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
BENZENE	C6-H6	71-43-2	5.0E-4-0.0050%
CARBON DIOXIDE	CO2	124-38-9	<0.5%
CHLORODIFLUOROMETHANE (HCFC-22)	C-H-Cl-F2	75-45-6	<0.1%
DICHLORODIFLUOROMETHANE (CFC-12)	C-Cl2-F2	75-71-8	<0.1%
NITROGEN	N2	7727-37-9	remainder

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 Poisons 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 Non flammable. May evolve toxic gases (chlorides, phosgene, fluorides, carbon oxides) when heated to decomposition.

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 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 Stds

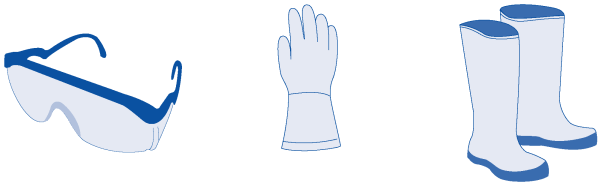
Ingredient	Reference	TWA		STEL	
		ppm	mg/m3	ppm	mg/m3
Benzene	ASCC (AUS)	1	3.2	--	--
Carbon dioxide	ASCC (AUS)	5000	9000	30000	54000
Carbon dioxide in coal mines	ASCC (AUS)	12500	22500	30000	54000
Chlorodifluoromethane	ASCC (AUS)	1000	3540	--	--
Dichlorodifluoromethane	ASCC (AUS)	1000	4950	--	--
Nitrogen	ASCC (AUS)	Asphyxiant			

Biological Limits

Ingredient	Reference	Determinant	Sampling Time	BEI
BENZENE	ACGIH BEI	S-Phenylmercapturic acid in urine	End of shift	25 mg/g creatinine

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)**	INSOLUBLE
Odour	SLIGHT ETHEREAL 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	13000 kPa @ 15°C		

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), alkalis/ alkali earth metals.

Decomposition May evolve toxic gases (chlorides, phosgene, fluorides, carbon oxides) when heated to decomposition.

Hazardous Reactions Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Asphyxiant vapour - narcotic at high levels. Adverse health effects may result from exposure to high vapour levels or with direct eye or skin contact. Use safe work practices to avoid vapour generation - inhalation. Cardiac arrhythmias may occur at very high vapour levels. Benzene is classified as a confirmed human carcinogen (IARC Group 1).

Eye Non irritant. However, direct contact with evaporating liquid may result in severe cold burns with possible permanent damage.

Inhalation Narcotic - asphyxiant at very high concentrations. Over exposure may result in rapid breathing, headache, drowsiness with loss of mental alertness. High level exposure may result in incoordination, vomiting, mental instability, lung damage, convulsions, coma and death.

Skin Non irritant. However, direct contact with the liquefied material or escaping compressed gas may cause frostbite injury.

Ingestion Ingestion is considered unlikely due to product form.

Toxicity Data

BENZENE (71-43-2)
- Carcinogenicity: Confirmed human carcinogen (IARC Group 1)
- LC50 (Inhalation): 9980 ppm (mouse)
- LCLo (Inhalation): 2 ppm/5 minutes (human)
- LD50 (Ingestion): 930 mg/kg (rat)
- LD50 (Intraperitoneal): 2890 ug/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)

CARBON DIOXIDE (124-38-9)
- LC50 (Inhalation): 470000 ppm/30M (rat)
- LCLo (Inhalation): 9 pph/5M (human)

CHLORODIFLUOROMETHANE (HCFC-22) (75-45-6)
- Carcinogenicity: Not classifiable as to its carcinogenicity (IARC Group 3)
- LC50 (Inhalation): 35 pph/15 minutes (rat)
- LCLo (Inhalation): 25 pph/4 hours (rat)
- TCLo (Inhalation): 50000 ppm/5 hours/56 days (rat)

DICHLORODIFLUOROMETHANE (CFC-12) (75-71-8)
- LC50 (Inhalation): 800,000 ppm/30 min (rat)
- TCLo (Inhalation): 200,000 ppm/30min (human)

12. ECOLOGICAL INFORMATION

Environment OZONE DEPLETING SUBSTANCE. Chloroflurocarbons (CFCs) diffuse slowly into the stratosphere where they will be destroyed by photolysis, resulting in the release of chlorine and fluorine atoms in the stratosphere. Release of CFCs into the environment should therefore be minimised and where possible, recycling of CFCs is recommended.

13. DISPOSAL CONSIDERATIONS

Waste Disposal OZONE DEPLETING SUBSTANCE. Do not send to landfill. Do not puncture or incinerate aerosol cans. Contact your state EPA or the manufacturer for additional information. Prevent contamination of drains and waterways as environmental damage may result.

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. Refer to Commonwealth, State and Territory Dangerous Goods Legislation which contain requirements which affect gas storage and transport.

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 Classified as a Schedule 7 (S7) Poison 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 valve 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.

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.

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 Report