BOC Limited
ABN 95 000 029 729
10 Julius Avenue
NORTH RYDE NSW 2113
Tel +61 131 262
Fax +61 1300 728 990

MATERIAL SAFETY DATA SHEET

Product Name **13 COMPONENT MIXTURE (BALANCE CO2) (BOC LIMITED - AUS)**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name BOC LIMITED (AUSTRALIA)
Address 10 Julius Avenue, North Ryde NSW, 2113, AUSTRALIA
Telephone +61 131 262, (02) 8874 4400
Fax +61 132 427 (24 hours)
Emergency 1800 658 278 (A/H) (Australia only)

Synonyms BOC 13 COMPONENT MIXTURE.

Uses CALIBRATION, INDUSTRIAL APPLICATIONS.

2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO NOHSC CRITERIA
CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	Formula	Conc.	CAS No.
OCTANE	C8-H18	Not Available	111-65-9
PENTANE	C5-H12	Not Available	109-66-0
N-HEXANE	C6-H14	Not Available	110-54-3
BUTANE	C4-H10	Not Available	106-97-8
ETHANE	C2-H6	0.0008%	74-84-0
METHANE	C-H4	0.0002%	74-82-8
PROPANE	C3-H8	0.0001%	74-98-6
2,2-DIMETHYLBUTANE	C6-H14	Not Available	75-83-2
1-PENTANE		Not Available	Not Available
NITROGEN	N2	Not Available	7727-37-9
NONANE	C9-H20	Not Available	111-84-2
1-BUTENE	C4-H8	Not Available	106-98-9
CARBON DIOXIDE	CO2	Remainder	124-38-9

4. FIRST AID MEASURES

Eye Exposure is considered unlikely.

Inhalation Remove from area of exposure immediately. If assisting a victim avoid becoming a casualty, wear an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Be aware of possible explosive atmospheres. If victim is not breathing apply artificial respiration and seek urgent medical attention. Give oxygen if available. Keep warm and rested.

Skin Exposure is considered unlikely.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor. Due to product form and application, ingestion is considered unlikely.

Advice To Doctor Treat symptomatically.

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5. FIRE FIGHTING MEASURES

Flammability Non flammable.

Fire and Explosion Non flammable. Temperatures in a fire may cause cylinders to rupture. Call fire brigade. Cool cylinders exposed to fire by applying water from a protected location. Do not approach cylinders suspected of being hot.

Extinguishing Non flammable. Use water fog to cool containers from protected area.

Hazchem Code 2T

6. ACCIDENTAL RELEASE MEASURES

Spillage GAS CYLINDERS: If the cylinder is leaking, eliminate all potential ignition sources and evacuate area of personnel. Inform manufacturer/supplier of leak. Wear appropriate PPE and carefully move it to a well ventilated remote area, then allow to discharge. Do not attempt to repair leaking valve or cylinder safety devices.

7. HANDLING AND STORAGE

Handling Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas (eg. if container is damaged).

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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation Maintain adequate ventilation. Confined areas (eg. tanks) should be adequately ventilated or gas tested. Maintain vapour levels below the recommended exposure standard.

Exposure Standards

OCTANE (111-65-9)
ES-TWA : 300 ppm (1400 mg/m3)
ES-STEL : 375 ppm (1750 mg/m3)
WES-TWA : 300 ppm (1400 mg/m3)

PENTANE (109-66-0)
ES-TWA : 600 ppm (1770 mg/m3)
ES-STEL : 750 ppm (2210 mg/m3)
WES-TWA : 600 ppm (1770 mg/m3)

N-HEXANE (110-54-3)
ES-TWA : 20 ppm (72 mg/m3) n-Hexane
ES-TWA# : 500 ppm (1760 mg/m3) (Hexane - other isomers)
ES-STEL : 1000 ppm (3500 mg/m3) (Hexane - other isomers)
WES-TWA : 20 ppm (72 mg/m3)

BUTANE (106-97-8)
ES-TWA : 800 ppm (NIOSH; NOHSC)

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION cont.

ES-TWA# : 1000 ppm (ACGIH)

ETHANE (74-84-0)
ES-TWA : 1000 ppm Ethane (ACGIH)
ES-TWA# : Asphyxiant - No values assigned (NOHSC)
WES-TWA : Asphyxiant

METHANE (74-82-8)
ES-TWA : 1000 ppm (ACGIH)
ES-TWA# : Asphyxiant - No values assigned (NOHSC)
WES-TWA : Asphyxiant

PROPANE (74-98-6)
ES-TWA : 1000 ppm (ACGIH; NIOSH)
ES-TWA# : Asphyxiant - No values assigned (NOHSC)

NITROGEN (7727-37-9)
ES-TWA : 19.5% (ACGIH)
ES-TWA# : Asphyxiant - No values assigned (NOHSC)
WES-TWA : Asphyxiant

NONANE (111-84-2)
ES-TWA : 200 ppm (1050 mg/m3)
WES-TWA : 200 ppm (1050 mg/m3)

CARBON DIOXIDE (124-38-9)
ES-TWA : 5000 ppm (ACGIH; NIOSH; NOHSC)
ES-STEL : 30000 ppm (ACGIH; NIOSH; NOHSC)
WES-TWA : 5000 ppm (9000 mg/m3)

PPE Wear safety glasses, safety boots and leather gloves. When using large quantities or where heavy contamination is likely, wear coveralls. Where an inhalation risk exists, wear an Air-line respirator or Self Contained Breathing Apparatus (SCBA).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: COLOURLESS GAS
Odour: ODOURLESS
pH: NOT AVAILABLE
Vapour Pressure: NOT AVAILABLE
Vapour Density: NOT AVAILABLE
Boiling Point: NOT AVAILABLE
Melting Point: NOT AVAILABLE
Evaporation Rate: NOT AVAILABLE

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9. PHYSICAL AND CHEMICAL PROPERTIES cont.

Solubility (water): NOT AVAILABLE
Specific Gravity: NOT AVAILABLE
% Volatiles: NOT AVAILABLE
Flammability: NON FLAMMABLE
Flash Point: NOT RELEVANT
Upper Explosion Limit: NOT RELEVANT
Lower Explosion Limit: NOT RELEVANT
Autoignition Temperature: NOT AVAILABLE

10. STABILITY AND REACTIVITY

Reactivity Compatible with most commonly used materials. Avoid heating cylinders

Decomposition Products May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Asphyxiant gas. Symptoms of exposure are directly related to displacement of oxygen from air. As the amount of oxygen inhaled is reduced from 21-14% volume, the pulse rate will accelerate and the rate and volume of breathing will 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 cause no pain. Muscular effort lead to rapid fatigue. Further reduction to 6% may cause 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 will follow in minutes.

Eye Non irritating.

Inhalation Non irritating - Asphyxiant. Effects are proportional to oxygen displacement.

Skin Non irritating.

Ingestion Due to product form, ingestion is considered highly unlikely.

Toxicity Data

OCTANE (111-65-9)
LC50 (Inhalation) : 118 g/m3/4 hours (rat)

PENTANE (109-66-0)
LC50 (Inhalation) : 364 g/m3/4 hours (rat)

N-HEXANE (110-54-3)
LC50 (Inhalation) : > 5 mg/L
LD50 (Ingestion) : 28.7 g/kg (rat)

BUTANE (106-97-8)
LC50 (Inhalation) : 658 g/m3/4 hours (rat)

PROPANE (74-98-6)
LC50 (Inhalation) : 50,000 ppm

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11. TOXICOLOGICAL INFORMATION cont.

NONANE (111-84-2)
LC50 (Inhalation) : 3200 ppm/4 hr (rat)

12. ECOLOGICAL INFORMATION

Environment Limited ecotoxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Cylinders should be returned to the manufacturer or supplier for disposal.

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.

UN Number 1956
Shipping Name COMPRESSED GAS, N.O.S.
DG Class 2.2
Subsidiary Risk(s) None Allocated
Packing Group None Allocated
Hazchem Code 2T

15. REGULATORY INFORMATION

AICS All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

Poison Schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

16. OTHER INFORMATION

Additional Information APPLICATION METHOD: Gas regulator of suitable pressure and flow rating fitted to cylinder or manifold with low pressure gas distribution to equipment.

ABBREVIATIONS:
mg/m3 - Milligrams per cubic metre
ppm - Parts Per Million

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16. OTHER INFORMATION cont.

TWA/ES - Time Weighted Average or Exposure Standard.
CNS - Central Nervous System
NOS - Not Otherwise Specified
pH - relates to hydrogen ion concentration - this value will relate to a scale of 0 - 14, where 0 is highly acidic and 14 is highly alkaline.
CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.
M - moles per litre, a unit of concentration.
IARC - International Agency for Research on Cancer.
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.

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.
COLOUR RATING SYSTEM: Chem Alert reports are assigned a colour rating of Green, Amber or Red for the purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all Chem Alert reports so as to clearly identify how users can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

Report Reviewed 11th January 2006

Date Printed 20th July 2006

Report Status Chem Alert reports are compiled as an independent source of information by RMT's scientific department. The information is based on the latest chemical and toxicological research, and in compliance with relevant standards, guidance notes and legislation (where applicable). The Chem Alert report is not intended as a replacement to the manufacturer's original MSDS that is provided to Chem Alert subscribers for convenience. In many instances, Chem Alert reports are compiled on behalf of manufacturers, in which case they serve as the "Manufacturer's MSDS" and are clearly identified as such on the relevant reports.

Prepared By Risk Management Technologies
5 Ventnor Avenue, West Perth
Western Australia 6005
Phone: +61 8 9322 1711
Fax: +61 8 9322 1794
Web: www.rmt.com.au

Colour Rating AMBER