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MATERIAL SAFETY DATA SHEET

2230

PRODUCT NAME **DETECTAGAS 99% CARBON DIOXIDE IN AIR**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name BOC LIMITED (AUSTRALIA)
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Emergency 1800 653 572 (24/7) (Australia only)
Web Site <http://www.boc.com.au/>
Synonym(s) 294511NR - PART NUMBER • 2230 - MSDS NUMBER
Use(s) CALIBRATION • INDUSTRIAL APPLICATIONS
MSDS Date 25 September 2007

2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO NOHSC 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 |
| Pkg Group | None Allocated | Hazchem Code | 2T | EPG | 2C1 |

3. COMPOSITION / INFORMATION ON INGREDIENTS

| Ingredient | Formula | CAS No. | Content |
|----------------|-----------------|---------------|-----------|
| CARBON DIOXIDE | CO ₂ | 124-38-9 | 99% |
| AIR | Not Available | Not Available | remainder |

4. FIRST AID MEASURES

Eye Hold eyelids apart and flush continuously with water. Continue until advised to stop by the Poisons Information Centre, a doctor, or for at least 15 minutes. Keep patient calm.

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 Ingestion is considered unlikely. However, if ingestion occurs, drink large volumes of water. Seek medical attention. For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor.

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. 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 | 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. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Exposure Standards | Ingredient | Reference | TWA | | STEL | |
|--------------------|----------------|-------------|------|-------|-------|-------|
| | | | ppm | mg/m3 | ppm | mg/m3 |
| | CARBON DIOXIDE | NOHSC (AUS) | 5000 | -- | 30000 | -- |

Biological Limit Values No biological limit allocated.

Engineering Controls Use with adequate natural ventilation. Open windows and doors where possible. In poorly ventilated areas, mechanical extraction ventilation is recommended.

PPE Wear 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) | NOT AVAILABLE |
| Odour | SLIGHT ODOUR | Specific Gravity | NOT AVAILABLE |
| pH | NOT AVAILABLE | % Volatiles | NOT AVAILABLE |
| 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 AVAILABLE | Autoignition Temperature | NOT AVAILABLE |

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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 Moist carbon dioxide is corrosive, hence acid resistant materials are required (stainless steel). Certain properties of some plastics and rubbers may be affected by gas or liquid, ie. embrittlement, leaching of plasticisers, etc.

Decomposition May evolve toxic gases if heated to decomposition.

Hazardous Reactions Polymerization is not expected to occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Asphyxiant gas - non irritant. When released into air the concentration of carbon dioxide is diluted. 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 will follow in a few minutes. Adverse health affects to long term exposure to carbon dioxide have not been reported. However in environments such as submarines where exposure to levels of 0.5 - 1.0% may occur, specialist medical opinion should be sought on the effects of long term exposure.

Eye Non irritant gas.

Inhalation Non irritant - Asphyxiant.

Skin Non irritating.

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

Toxicity Data No LD50 data available for this product.

12. ECOLOGICAL INFORMATION

Environment Carbon dioxide is a natural component of the earth's atmosphere (0.027 - 0.035 % v/v). However, increases in the atmospheric carbon dioxide levels have been linked with global warming, and hence emission of carbon dioxide into the atmosphere should be minimised as far as possible.

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

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. Keep locked up and out of reach of children.



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

Pkg Group None Allocated **Hazchem Code** 2T **EPG** 2C1

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 Drugs and Poisons (SUSDP).

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

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:

ADB - Air-Dry Basis.

CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.

CNS - Central Nervous System.

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.

pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).

ppm - Parts Per Million.

TWA/ES - Time Weighted Average or Exposure Standard.

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.

Report Status

This document has been compiled by RMT on behalf of the manufacturer of the product and serves as the manufacturer's Material Safety Data Sheet ('MSDS').

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 MSDS, 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 MSDS.

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MSDS Date: 25 September 2007

End of Report