

BOC Limited
ABN 95 000 029 729
10 Julius Avenue
NORTH RYDE NSW 2113
Tel + 61 131 262
Fax + 61 132 427

Product Name **BACTIGAS**

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 653 572 (A/H) (Australia only)
Synonyms 282 - PRODUCT CODE.
Uses DISINFECTANT, SPACE SPRAY.

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.
CARBON DIOXIDE	CO ₂	97%	124-38-9
ETHANOL	C ₂ H ₆ O	2.7%	64-17-5
MELALEUCA ALTERNIFOLIA OIL (TEA TREE OIL)		0.3%	68647-73-4

4. FIRST AID MEASURES

- Eye** Treatment for cold burns: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek medical attention.
- 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** 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** Ingestion is considered unlikely. However, if ingestion occurs, drink large volumes of water. Seek medical attention
- Advice To Doctor** Treat for asphyxia and cold burns.

5. FIRE FIGHTING MEASURES

Flammability Non flammable. No fire or explosion hazard exists.

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5. FIRE FIGHTING MEASURES cont.

Fire and Explosion Non flammable liquid and vapour. Temperatures in a fire may cause liquid vessels and related equipment to rupture. Storage vessels may contain fine particle insulation materials or foam products which may be hazardous or release hazardous decomposition products in a fire. Call fire brigade. Cool vessels exposed to fire by applying water from a protected location. Do not approach vessels suspected of being hot. Evacuate the area if unable to keep vessels cool.

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

Hazchem Code 2RE

6. ACCIDENTAL RELEASE MEASURES

Spillage Release of liquid to atmosphere will generate vapour fog clouds which can travel considerable distances and affect visibility. These clouds should be treated as asphyxiating atmospheres as the evaporated liquid will have displaced air. Refer to vessel operating instructions. In an emergency allow liquid and gas to escape to atmosphere. Monitor oxygen concentration in confined spaces. Contact manufacturer for guidance. Leak checking may be done by pressure drop test or soapy water at joints and outlets. Shut liquid and gas supply valves to stop leak if possible and safe to do so.

7. HANDLING AND STORAGE

Handling Use safe work practices to avoid eye or skin contact and inhalation. Observe good personal hygiene. Prohibit eating, drinking and smoking in contaminated areas. Wash hands before eating.

Storage Refer to vessel operating instructions. Do not store near sources of ignition, oxidising agents, poisons, combustible material and flammable liquids. Portable liquid containers should be stored: upright, prevented from falling, in a secure area; below 45 C, 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 Use with adequate natural ventilation. Open windows and doors where possible. In poorly ventilated areas, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

Exposure Standards CARBON DIOXIDE (124-38-9)
ES-TWA : 5000 ppm (9000 mg/m³)
ES-STEL : 30000 ppm (54000 mg/m³)

ETHANOL (64-17-5)
ES-TWA : 1000 ppm (1880 mg/m³)

PPE Wear safety glasses, safety boots and leather or cotton gloves. Where an inhalation risk exists, wear Self Contained Breathing Apparatus (SCBA) or an Air-line respirator. Only experienced and properly trained people should use this product.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION cont.



9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: COLOURLESS GAS
Odour: WARM SPICY ODOUR
pH: NOT AVAILABLE
Vapour Pressure: NOT AVAILABLE
Vapour Density: NOT AVAILABLE
Boiling Point: NOT AVAILABLE
Melting Point: NOT AVAILABLE
Evaporation Rate: NOT AVAILABLE
Solubility (water): 0.759 cm³/cm³
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
Density: 1.53 (Air = 1)
Cylinder pressure (when full): 6300 kPa @ 25 C (Approximately)
Critical Temperature: 31 C (Approximately)
Critical Pressure: 7,380 kPa (Approximately)

10. STABILITY AND REACTIVITY

Reactivity 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. Dust of aluminium, chrome and manganese ignite and explode when heated in carbon dioxide. Incompatible with acrylaldehyde, aziridine, metal acetylides, sodium peroxide. Corrosive when moist.

Decomposition Products May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Asphyxiant. Severe frost-bite burns may result from exposure to cold vapour or liquid. 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. The effects of carbon dioxide will be observed before the asphyxiation hazard due to other components of this product. Inhalation of a mixture containing no oxygen may result in unconsciousness from the first breath and death will follow in a few minutes. Low concentrations of carbon dioxide are potentially toxic due to cellular membrane effects and biochemical alterations such as increased partial pressure of carbon dioxide, increased concentration of bicarbonate ions and acidosis. Long term exposure to CO₂ has no known health effects. Escaping liquid can form a dry ice powder like snow.

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11. TOXICOLOGICAL INFORMATION cont.

- Eye** Non irritating. However, direct contact with evaporating liquid may result in severe cold burns with possible permanent damage. Eye contact with dry ice powder could result in frostbite or cold burns.
- Inhalation** Non irritant - Asphyxiant.
- Skin** Non irritating. Contact with evaporating liquid (eg. cold vessels or pipes containing low pressure liquid) may result in frost-bite with severe tissue damage. Skin contact with dry ice powder could result in frostbite or cold burns.
- Ingestion** Due to product form, ingestion is considered highly unlikely. Solid carbon dioxide will cause cold burns to mouth and throat.
- Toxicity Data** ETHANOL (64-17-5)
LC50 (Inhalation) : 2000 ppm/10 hours (rat)
LD50 (Ingestion) : 3450 mg/kg (mouse)
- MELALEUCA ALTERNIFOLIA OIL (TEA TREE OIL) (68647-73-4)
LD50 (Ingestion) : 1900 mg/kg (rat)

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** Ensure all liquid and gas supply valves are shut. Notify the manufacturer that you will be returning the portable liquid container. Residual product will be disposed of under the manufacturer's supervision.
- Legislation** Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

- Transport** Transport on open top vehicles in accordance with Australian Code for the Transport of Dangerous Goods.
- UN Number** 3163
- Shipping Name** LIQUEFIED GAS, N.O.S.
- DG Class** 2.2
- Subsidiary Risk(s)** None Allocated
- Packing Group** None Allocated
- Hazchem Code** 2RE

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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 METHOD OF APPLICATION: Low temperature liquid requires specialised transfer equipment and methods, pressure regulated gas applications use heat transfer to evaporated liquid.

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.

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. Information provided by Risk Management Technologies is summarised for ease of use. Additional technical information is available by calling +61 8 9322 1711.

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.

ABBREVIATIONS:

mg/m³ - Milligrams per cubic metre

ppm - Parts Per Million

TWA/ES - Time Weighted Average or Exposure Standard.

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.

Report Reviewed 2nd May 2005

Date Printed 6th May 2005

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

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16. OTHER INFORMATION cont.

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
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