

BOC Limited
988 Great South Road
PENROSE AUCKLAND
Tel: + 64 9 525 5600
Fax: + 64 9 579 7889

Product Name VAPORMATE (BOC LIMITED - NZ)

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name BOC LIMITED (NEW ZEALAND)
Address 988 Great South Road, Penrose Auckland, NEW ZEALAND
Telephone +64 9 525 5600
Emergency 0800 111 333 (NZ only)

Synonyms 16.7 WEIGHT % (11.0 VOLUME %) ETHYL FORMATE BALANCE CO₂, PRODUCT CODES: 279D, 279G, VAPORMATE FUMIGANT.

Uses FUMIGANT, INDUSTRIAL APPLICATIONS.

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO CRITERIA IN THE HS (MIN DEG OF HAZ) REGS 2001
CLASSIFIED AS A DANGEROUS GOOD ACCORDING TO NZS 5433

Risk And Safety Phrases Risk and Safety Phrases are standardised phrases allocated to Hazardous Substances. Risk phrases convey a general description of the physicochemical, environmental and health hazards of a substance. Safety phrases provide information on safe storage, handling, disposal, personal protection and first aid.

RISK PHRASES

R23 Toxic by inhalation.
R36/37/38 Irritating to eyes, respiratory system and skin.

SAFETY PHRASES

S23 Do not breathe gas/fumes/vapour/spray (where applicable).
S24/25 Avoid contact with skin and eyes.

HSNO Classifications HSNO Classifications for this product are outlined below. Please refer to the New Zealand Hazardous Substances (Classification) Regulations 2001 for more information.

6.1E, 6.3B, 6.4A, 9.1D

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	Formula	Conc.	CAS No.
CARBON DIOXIDE	CO ₂	83.3%	124-38-9
ETHYL FORMATE	C ₃ H ₆ O ₂	16.7%	109-94-4

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 Leave area of exposure. Avoid becoming a casualty, wear an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Give oxygen and if necessary, artificial respiration. Seek urgent medical attention.

Skin Remove contaminated clothing and gently flush affected areas with water. Product may penetrate skin and cause toxic systemic effects. Seek immediate medical attention. Launder clothing before reuse.

Colour Rating
AMBER

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4. FIRST AID MEASURES cont.

Ingestion Ingestion is considered unlikely. However, should ingestion occur, contact a Poisons Information Centre on 0800 764 766 (0800 POISON) or +643 479 7248 (New Zealand) or a doctor.

Advice To Doctor Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flammability Non flammable liquefied gas mixture.

Fire and Explosion Non flammable liquefied gas mixture. 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 2XE

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 combustible or incompatible materials. Cylinders should preferably be stored below 45 C in a secure area and upright in such a manner as to prevent them from being knocked or falling over. 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. Also store removed from aluminium, chrome, manganese, acryldehyde, aziridine and sodium peroxide. The treated storage area should be equipped with a suitable system monitoring for air levels of ethyl formate, formic acid and carbon dioxide.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation This product is vaporised into a gas tight fumigation space, therefore ventilation is not normally required. Maintain vapour levels below the recommended exposure standard.

Exposure Standards CARBON DIOXIDE (124-38-9)
ES-TWA : 5000 ppm (ACGIH; NIOSH; NOHSC)
ES-STEL : 30000 ppm (ACGIH; NIOSH; NOHSC)
WES-TWA : 5000 ppm (NOHSC)

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION cont.

ETHYL FORMATE (109-94-4)
ES-TWA : 100 ppm Ethyl formate
WES-TWA : 100 ppm (303 mg/m3)

PPE Wear full-length PVC gloves and a Type A (Organic vapour) Respirator. Self Contained Breathing Apparatus (SCBA) or an Air-line respirator is required if entering the enclosed area under fumigation prior to aeration (high CO2 issue). Only experienced and trained person should use this product.



9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: COLOURLESS GAS
Odour: SLIGHT ODOUR
pH: NOT AVAILABLE
Vapour Pressure: NOT AVAILABLE
Vapour Density: NOT AVAILABLE
Boiling Point: -78.5 C (Carbon dioxide)
Melting Point: -56.6 C (Carbon dioxide)
Evaporation Rate: NOT AVAILABLE
Solubility (water): 0.759 cm3/cm3 (Carbon dioxide)
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 Moist carbon dioxide is corrosive, hence acid resistant materials are required (stainless steel). Incompatible with oxidising agents (nitrates, oxygen), halogens (chlorine, bromine), acids (nitric acid) and some chlorides. Dusts of aluminium, chrome and manganese ignite then explode when heated in carbon dioxide. Incompatible with acrylaldehyde, aziridine and sodium peroxide. Most rubbers and plastics are affected by carbon dioxide.

Decomposition Products May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Toxic. Irritating to eyes, skin and respiratory system. Symptoms of exposure are directly related to displacement of oxygen from the lungs. Carbon dioxide is normally present in the air at a concentration of 340ppm by volume. Accelerated breathing and heart rate may occur with exposure above the normal level. Carbon dioxide can be fatal

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11. TOXICOLOGICAL INFORMATION cont.

with exposure to very high concentrations. Long term exposure to CO₂ has no known health effects. Exposure to ethyl formate may cause toxic effects, including dizziness or suffocation, dyspnea and pulmonary oedema. Ethyl formate is a narcotic and may cause CNS depression leading to death due to circulatory and respiratory failure without convulsions or coma.

Eye Irritating to the eyes.

Inhalation Toxic. Effects are proportional to oxygen displacement. Inhalation of vapours may cause dizziness or suffocation.

Skin Irritating to skin.

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

Toxicity Data ETHYL FORMATE (109-94-4)
LD50 (Ingestion) : 1110 mg/kg (guinea pig)

12. ECOLOGICAL INFORMATION

Environment This product is used as an insect fumigant. Uncontrolled release of this product may cause damage to the environment. Do not allow product to enter waterways.

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 3162

Shipping Name LIQUEFIED GAS, TOXIC, N.O.S.

DG Class 2.3

Subsidiary None Allocated

Risk(s)

Packing Group None Allocated

Hazchem Code 2XE

15. REGULATORY INFORMATION

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

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15. REGULATORY INFORMATION cont.

HSNO Controls HSNO Controls for this product are outlined below. Please refer to page 31 of the User Guide to the HSNO Control Regulations (November 2001) for more information.

D4

16. OTHER INFORMATION

Additional Information GENERAL INSTRUCTIONS: All entrances to the fumigated area must be placarded with "DANGER, area under fumigation, DO NOT ENTER, unless wearing appropriate personal protective equipment". The placard should also carry a skull & crossbones pictogram.

APPLICATION SYSTEM: Vapormate is vaporised into an enclosed gas tight fumigation space to allow the fumigant to penetrate deep into the commodity being treated for the recommended exposure time period. Only BOC approved (20 M pa) dispensing equipment can be used with Vapormate.

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.

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 21st December 2005

Date Printed 21st December 2005

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16. OTHER INFORMATION cont.

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.

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