BOC
A Member of The Linde Group

SAFETY DATA SHEET

083

Product Name **PHOSFUME**

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)	083 - SDS NUMBER • 20 G/KG PHOSPHINE IN CARBON DIOXIDE • PRODUCT CODE: 106
Use(s)	FUMIGANT
SDS Date	26 Mar 2010

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO ASCC CRITERIA

RISK PHRASES

R26 Very toxic by inhalation.

SAFETY PHRASES

S18 Handle and open container with care.
S36 Wear suitable protective clothing.
S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).
S7/9 Keep container tightly closed and in a well ventilated place.

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN No.	1955	**DG Class**	2.3	**Subsidiary Risk(s)**	None Allocated
Packing Group	None Allocated	**Hazchem Code**	2RE	**EPG**	2B1

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	CAS No.	Content
PHOSPHINE	H3-P	7803-51-2	2%
CARBON DIOXIDE	CO2	124-38-9	98%

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). 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 There is no specific antidote to phosphine poisoning and treatment is therefore symptomatic and supportive. Usual methods for pulmonary oedema, renal failure, cerebral oedema and circulatory collapse. Treatment for cold burns or asphyxiation.

First Aid Facilities The manufacturer reports that an emergency shower and an eye wash basin should be available. A suitable gas filter breathing mask is recommended for use while escaping from a contaminated area. Rescue personnel should use self contained breathing apparatus and a full chemical suit or full coveralls. Air-Viva(TM) or Oxy-Viva(TM). Water or sterile solution for irrigation.

5. FIRE FIGHTING MEASURES

Flammability Non flammable.

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. Remove cool cylinders from the path of the fire. Evacuate the area if unable to keep cylinders cool.

Extinguishing Use water fog to cool containers from protected area.

Hazchem Code 2RE

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. Replace valve seal and protective cap when not in use.

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
Carbon dioxide	ASCC (AUS)	5000	9000	30000	54000
Carbon dioxide in coal mines	ASCC (AUS)	12500	22500	30000	54000

PHOSPHINE

ES-TWA: 0.3 ppm Phosphine

WES-TWA: 0.3 ppm (0.42 mg/m3)

Biological Limits No biological limit allocated.

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 an Air-line respirator or self Contained Breathing Apparatus (SCBA).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	COLOURLESS GAS	**Solubility (Water)**	0.25 - 0.758 cm3/cm3
Odour	CHARACTERISTIC ROTTING FISH ODOUR	**Specific Gravity**	NOT APPLICABLE

pH	NOT APPLICABLE	**% Volatiles**	100 %
Vapour Pressure	6300 kPa @ 25°C (Approximately)	**Flammability**	NON FLAMMABLE
Vapour Density	1.53 (Air = 1)	**Flash Point**	NOT RELEVANT
Boiling Point	-78°C (Approximately)	**Upper Explosion Limit**	NOT RELEVANT
Melting Point	NOT AVAILABLE	**Lower Explosion Limit**	NOT RELEVANT
Evaporation Rate	NOT APPLICABLE		
Critical Pressure	7380 kPa (Approximately)	**Critical Temperature**	31°C (Approximately)

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 carbon dioxide, 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. Reacts with oxygen, halogens, nitric acid and some chlorides and nitrates. Corrosive when moist.

Decomposition May evolve toxic gases if heated to decomposition.

Hazardous Reactions Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary Highly toxic. Primary hazard is phosphine which acts on the central nervous system, lungs, heart and may result in injury to kidneys and other organs. Sub-acute exposure may result in anaemia, bronchitis, gastro-intestinal disorder, speech and motor disturbances (double vision, tremor and gait difficulties. Symptoms usually appear rapidly but may be delayed 1 to 3 days. Symptoms at higher exposure include faintness, weakness, apathy, nausea, vomiting, diarrhoea, tremors, intense thirst, abdominal pain, oppressed feeling in chest, dyspnoea, cough with sputum, coughing of frothy liquid, convulsions, paralysis and coma. It has been claimed that chronic exposure may effect the bones in a manner similar to white phosphorous, but such exposure is unlikely.

Eye Irritant vapour. Low temperature evaporating liquid can cause cold burns.

Inhalation Highly toxic - severe irritant. Effects may be delayed.

Skin Irritating vapour. Direct contact with the liquefied material or escaping compressed gas may cause frost-bite injury.

Ingestion Ingestion is considered unlikely due to product form. However, ingestion of liquid may result in burns to the mouth and throat.

Toxicity Data

PHOSPHINE (7803-51-2)
LC50 (Inhalation): 11ppm/4 hours (rat)
LCLo (Inhalation): 1000ppm/5min (human)
CARBON DIOXIDE (124-38-9)
LC50 (Inhalation): 470000 ppm/30M (rat)
LCLo (Inhalation): 9 pph/5M (human)

12. ECOLOGICAL INFORMATION

Environment When discharged to the atmosphere, carbon dioxide may contribute to the greenhouse effect.

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

Product Name **PHOSFUME**

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

Shipping Name	COMPRESSED GAS, TOXIC, N.O.S.				
UN No.	1955	**DG Class**	2.3	**Subsidiary Risk(s)**	None Allocated
Packing Group	None Allocated	**Hazchem Code**	2RE	**EPG**	2B1

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. The manufacturer reports that this product is for use by authorised or licensed persons only.

APPLICATION METHOD: Liquid withdrawal through specialised equipment and controlled gas distribution to produce or building.

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.

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End of Report