

SAFETY DATA SHEET

1092

Product Name **BETWEEN 4.8 AND 35.4 % AMMONIA, BALANCE NITROGEN**

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) 1092 - SDS NUMBER · PRODUCT CODE: 292 · SPECIAL GAS MIXTURE
Use(s) CALIBRATION · INDUSTRIAL APPLICATIONS
SDS Date 27 March 2012

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

RISK PHRASES

R23 Toxic by inhalation.
R34 Causes burns.
R50 Very toxic to aquatic organisms.

SAFETY PHRASES

S9 Keep container in a well ventilated place.
S16 Keep away from sources of ignition - No smoking.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).
S61 Avoid release to the environment. Refer to special instructions/safety data sheets.

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

UN Number	1955	DG Division	2.3
Packing Group	None Allocated	Subsidiary Risk(s)	None Allocated
Hazchem Code	2RE		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	Cas No.	Content
AMMONIA	N-H3	7664-41-7	4.8 - 35.4%
NITROGEN	N2	7727-37-9	Remainder

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. Remove contaminated clothing and check there is no obstruction to the airway. If breathing is weak or has ceased, give artificial respiration. Further

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	treatment should be symptomatic and supportive. Consult doctor and recommend admission to hospital for observation. For advice, contact a Poison 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	Management of pulmonary oedema. Alkali burns, particularly to the eyes, can result in severe and sometimes permanent damage.
First Aid Facilities	Eye wash facilities and safety shower are recommended.

5. FIRE FIGHTING MEASURES

Flammability	Gas is flammable within certain vapour concentration limits and can form explosive mixtures with air. Gas is lighter than air and will generally disperse, however may concentrate in hollows or sumps. Dissolves exothermically in water. Corrosive to metals evolving flammable hydrogen. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights, mobile phones etc. when handling.
Fire and Explosion	Temperatures in a fire may cause cylinders to rupture and internal pressure relief devices to be activated. 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. If a flame from the cylinder is impinging on flammable materials or other cylinders then evacuate the area. If the cylinder is standing alone and the flame is not impinging on flammable materials or other cylinders then let the flame continue until all gas has been consumed. Ensure working area is well ventilated before re-entry. Products of combustion include oxides of nitrogen which are hazardous.
Extinguishing	For small flames, use dry chemical, carbon dioxide or water spray. For large fires, use water fog or spray. Note that ammonia is readily absorbed by water and the resultant ammonia solution is alkaline. Prevent contamination of drains or waterways, absorb runoff with sand or similar.
Hazchem Code	2RE 2 Water Fog (or fine water spray if fog unavailable) R Full protective equipment including Self Contained Breathing apparatus. E Evacuation of people in the vicinity of the incident should be considered.

6. ACCIDENTAL RELEASE MEASURES

Spillage	If the cylinder is leaking, eliminate all potential ignition sources and evacuate area of personnel. Prevent spreading of vapours through drains and ventilation systems. 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.
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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. Outside or detached storage preferred. Keep out of direct sunlight. Refer to AS/NZ 2022: Anhydrous Ammonia - Storage and Handling and AS 4332: The Storage and Handling of Gases in Cylinders.
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. Use only in well-ventilated areas. When handling cylinders, use appropriate trolley. Do not drag or roll cylinders.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Ammonia	SWA (AUS)	25	17	35	24
Nitrogen	SWA (AUS)	Asphyxiant			

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Biological Limits	No biological limit allocated.
Engineering Controls	Avoid inhalation. Use in well ventilated areas. Maintain vapour levels below the recommended exposure standard.
PPE	
Eye / Face	Wear safety glasses.
Hands	Wear leather gloves.
Body	Wear coveralls and safety boots.
Respiratory	Wear a Type K (Ammonia) respirator. Where an inhalation risk exists, wear Self Contained Breathing Apparatus (SCBA) or an Air-line respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	COLOURLESS GAS
Odour	PUNGENT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	0.597 (Air = 1) (Ammonia)
Specific gravity	NOT APPLICABLE
Solubility (water)	0.346 kg/kg (Ammonia)
Vapour pressure	NOT AVAILABLE
Upper explosion limit	28 % (Ammonia)
Lower explosion limit	15 % (Ammonia)
Autoignition temperature	651°C (Ammonia)
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
% Volatiles	100 %
Critical temperature	132.4°C (Ammonia)
Critical pressure	11277 kPa (Ammonia)

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under recommended conditions of storage.
Conditions to Avoid	Avoid shock, friction, heavy impact, heat, sparks, open flames and other ignition sources.
Material to Avoid	Ammonia is stable. Ammonia has potentially explosive or violent reactions with strong oxidisers, nitric acid, fluorine and nitrogen oxide. Ammonia forms explosive products with silver chloride, silver oxide, bromine, iodine and mercury. Ammonia is incompatible or has potentially hazardous reactions with silver, acetaldehyde, acrolein, boron, perchlorates, chlorine monoxide, chlorites, nitrogen tetroxide and sulphur. Ammonia is hygroscopic and will absorb moisture from the air to form an alkaline aqueous solution.
Hazardous Decomposition Products	May evolve toxic gases if heated to decomposition.
Hazardous Reactions	Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary	Highly corrosive. Characteristic smell from 5 ppm and irritant effects usually provides good warning properties. Extremely irritating and corrosive. Over exposure to low levels may result in irritation with coughing and bronchospasm. Acute exposure to high levels may result in pulmonary oedema and asphyxia. Can be promptly fatal above 1500 ppm. Delayed reaction including pulmonary oedema may occur up to 24 hours after exposure. Chronic exposure to ammonia vapour may result in
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	irritation to the eyes, nose and upper respiratory tract.												
Eye	Highly corrosive. Gas and liquid are extremely irritating and corrosive. Mild concentrations of vapour will cause irritation, higher concentrations may cause burns, inflammation and swelling of the eyes with possible loss of vision. Persons with potential exposure should not wear contact lenses.												
Inhalation	Inhalation of concentrations moderately above the exposure standard (25ppm) may result in irritation to the nose and throat. High level exposure may result in breathing difficulties, chest pain, coughing, pink frothy sputum and pulmonary oedema. Accumulation of fluid in the lungs can occur. Upper airway swelling may occur and lead to airway obstruction. Over exposure may predispose to the development of acute bronchitis and pneumonia.												
Skin	Corrosive. Evaporating liquid may cause low temperatures of piping and equipment which could lead to cold burns.												
Ingestion	Ingestion is considered unlikely due to product form.												
Toxicity Data	AMMONIA (7664-41-7) <table><tr><td>LC50 (inhalation)</td><td>2000 ppm/4 hours (rat)</td></tr><tr><td>LCLo (inhalation)</td><td>5000 ppm/5 minutes (human)</td></tr><tr><td>LD50 (ingestion)</td><td>350 mg/kg (rat)</td></tr><tr><td>TCLo (inhalation)</td><td>20 ppm (human)</td></tr><tr><td>TDLo (ingestion)</td><td>0.015 mL/kg (man)</td></tr><tr><td>TDLo (skin)</td><td>1000 mg/kg (human)</td></tr></table>	LC50 (inhalation)	2000 ppm/4 hours (rat)	LCLo (inhalation)	5000 ppm/5 minutes (human)	LD50 (ingestion)	350 mg/kg (rat)	TCLo (inhalation)	20 ppm (human)	TDLo (ingestion)	0.015 mL/kg (man)	TDLo (skin)	1000 mg/kg (human)
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TDLo (skin)	1000 mg/kg (human)												

12. ECOLOGICAL INFORMATION

Environment	May cause pH changes in aqueous ecological systems.
Ecotoxicity	Toxic to aquatic organisms. Very toxic to aquatic organisms.
Persistence/Degradability	This product is biodegradable.
Mobility	This product has low mobility in soil.

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

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



	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
UN Number	1955	-	-
Proper Shipping Name	COMPRESSED GAS, TOXIC, N.O.S.	-	-
DG Class/ Division	2.3	-	-
Subsidiary Risk(s)	None Allocated	-	-
Packing Group	None Allocated	-	-
Hazchem Code	2RE		
Other Information	Ensure cylinder is separated from driver and foodstuffs.		

15. REGULATORY INFORMATION

Poison Schedule	Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
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Inventory Listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

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.

Application method: Gas withdrawal: regulator of suitable pressure and flow rating fitted to cylinder or manifold with low pressure gas distribution to equipment. Liquid withdrawal: appropriate refrigeration equipment or appropriate heat exchanger to vaporise the liquid.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this ChemAlert 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 ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations	ACGIH	American Conference of Governmental Industrial Hygienists
	CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
	CNS	Central Nervous System
	EC No.	EC No - European Community Number
	GHS	Globally Harmonized System
	IARC	International Agency for Research on Cancer
	mg/m ³	Milligrams per Cubic Metre
	PEL	Permissible Exposure Limit
	pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
	ppm	Parts Per Million
	REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
	STOT-RE	Specific target organ toxicity (repeated exposure)
	STOT-SE	Specific target organ toxicity (single exposure)
	SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
	TLV	Threshold Limit Value
	TWA/OEL	Time Weighted Average or Occupational Exposure Limit

Revision History

Revision	Description
1.0	Standard SDS Review

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 SDS