BOC
A Member of The Linde Group

SAFETY DATA SHEET

 # 1573

Product Name **5 COMPONENT MIXTURE (NH3, N2, CH4, AR, BALANCE H2)**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier name	**BOC LIMITED (AUSTRALIA)**
Address	10 Julius Avenue, North Ryde, NSW, 2113, AUSTRALIA
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)	1573 - MSDS NUMBER • PRODUCT CODE: 285, 288 • SPECIAL GAS MIXTURE
Use(s)	CALIBRATION • INDUSTRIAL APPLICATIONS
SDS date	01 February 2013

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

RISK PHRASES

R12	Extremely Flammable.
R23	Toxic by inhalation.
R34	Causes burns.

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	1953	**DG division**	2.3
Packing group	None Allocated	**Subsidiary risk(s)**	2.1
Hazchem code	2PE		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Identification	Classification	Content
METHANE	CAS: 74-82-8 EC: 200-812-7	F+;R12	7 to 16%
AMMONIA	CAS: 7664-41-7 EC: 231-635-3	F;R10 T;R23 C;R34 N;R50	4 to 10%
HYDROGEN	CAS: 1333-74-0 EC: 215-605-7	F+;R12	Remainder
NITROGEN	CAS: 7727-37-9 EC: 231-783-9	Not Available	19 to 21%

ARGON	CAS: 7440-37-1 EC: 231-147-0	Not Available	4 to 6%

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 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 Highly flammable. 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. This material is capable of forming explosive mixtures in air.

Extinguishing Stop flow of gas if safe to do so, such as by slowly closing the cylinder valve.

Hazchem code 2PE

- 2 Water Fog (or fine water spray if fog unavailable)
- P 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

Personal precautions If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Eliminate ignition sources. Consider the risk of potentially explosive atmospheres.

Environmental precautions Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Methods of cleaning up Carefully move material to a well ventilated remote area, then allow to discharge if safe to do so. Do not attempt to repair leaking valve or cylinder safety devices.

References See Sections 8 and 13 for exposure controls and disposal.

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 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 standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Ammonia	SWA (AUS)	25	17	35	24
Argon	SWA (AUS)	Asphyxiant			
Hydrogen	SWA (AUS)	Asphyxiant			
Methane	SWA (AUS)	Asphyxiant			
Nitrogen	SWA (AUS)	Asphyxiant			

Biological limits No biological limit allocated.

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical explosion proof extraction ventilation is recommended. 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 HIGHLY FLAMMABLE
Flash point NOT AVAILABLE
Boiling point NOT AVAILABLE
Melting point NOT AVAILABLE
Evaporation rate NOT APPLICABLE
pH NOT APPLICABLE
Vapour density NOT AVAILABLE
Specific gravity NOT APPLICABLE
Solubility (water) SOLUBLE (Ammonia)
Vapour pressure NOT AVAILABLE
Upper explosion limit 75 % (Hydrogen)
Lower explosion limit 4 % (Hydrogen)
Autoignition temperature NOT AVAILABLE
Decomposition temperature NOT AVAILABLE
Viscosity NOT AVAILABLE
Partition coefficient NOT AVAILABLE
% Volatiles 100 %
Cylinder pressure (when full) 13000 kPa @ 15°C

10. STABILITY AND REACTIVITY

Material to avoid Incompatible (potentially explosive) with oxidising agents (eg. hypochlorites), acids (eg. nitric acid), metals and heat sources. Copper, zinc, tin and their alloys will be corroded. Forms explosive compounds with silver and mercury. Violent reactions can occur with halogens and organic halides.

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 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 Corrosive. Over exposure may result in irritation of the nose and throat, with coughing. Effects may be delayed.

Skin Severe irritant. Contact may result in irritation, redness, pain, rash, dermatitis and possible burns.

Ingestion Ingestion is considered unlikely due to product form.

Toxicity data

METHANE (74-82-8)

LC50 (inhalation)	326 gm/m3/2h (mouse)

AMMONIA (7664-41-7)

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)

12. ECOLOGICAL INFORMATION

Toxicity No information provided.

Persistence and degradability No information provided.

Bioaccumulative potential No information provided.

Mobility in soil No information provided.

Other adverse effects May cause pH changes in aqueous ecological systems.

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	1953	-	-
Proper shipping name	COMPRESSED GAS, TOXIC, FLAMMABLE, N.O.S.	-	-

DG class/ Division	2.3	-	-
Subsidiary risk(s)	2.1	-	-
Packing group	None Allocated	-	-
GTEPG	2A4		

Hazchem code 2PE

Other information 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.

15. REGULATORY INFORMATION

Poison schedule Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

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 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
LD50	Lethal Dose, 50% / Median Lethal Dose
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

Product Name **5 COMPONENT MIXTURE (NH3, N2, CH4, AR, BALANCE H2)**

Revision history

Revision	Description
2.0	Standard SDS Review.
1.0	Initial SDS creation

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier 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, importer or supplier.

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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Revision: 2
SDS Date: 01 February 2013

End of SDS