1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name:	Ammonia Solution 25%
Recommended Use:	Cleaning
Supplier: **ABN:**	Midland Chemicals 91 622 018 986
Street Address:	18 Elliott Street Midvale Western Australia
Telephone Number:	+61 08 9274 1992
Facsimile:	+61 08 9250 1710
Emergency Telephone:	**1 800 033 111 (ALL HOURS)**

2. HAZARDS IDENTIFICATION

Road and Rail; Classified as Dangerous Goods according to the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by road or rail.

Globally Harmonised System

Hazard Classification
Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS).

Hazard Categories
Acute Toxicity (Oral) - Category 4
Skin corrosion/irritation – Category 1C
Serious Eye Damage/Irritation - Category 1
Specific Target Organ Toxicity (single exposure) – Category 3

Pictograms

Signal Word
Danger

Hazard Statements
H302 Harmful if Swallowed
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation
H400 Very toxic to aquatic life
AUH071 Corrosive to the respiratory tract

Precautionary Statement
Prevention
P260 Do not breathe mist / vapours / spray
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P270 Do not eat, drink or smoke when using this product
P271 Use only outdoors or in well-ventilated area
P273 Avoid release to the environment
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P310 Immediatley call a POISON CENTER or doctor physician
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POSION CENTRE/doctor.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse
P391 Collect Spillage
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Storage
P403+P233 Store in well-ventilated place. Keep container tightly closed.
P405 Store Locked up.

Disposal
P501 Dispose of contents/container in accordance with local / regional / national / international regulations.

Other Hazards
Lachrymator

Poison Schedule : S6
Hazchem Code: 2R

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Proportion
Ammonia	1336-21-6	25%
Water (demineralised)	7732-18-5	75%

4. FIRST AID MEASURES

General adviceContact the Poisons Information Centre (Phone: Australia 131 126; New Zealand 0800 764 766) or consult a doctor/physician. Show this safety data sheet to the doctor in attendance.

If Inhaled
Remove victim from area of exposure -avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood -cyanosis), ensure airways are clear of any obstruction and have a qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. Seek immediate medical advice.

In case of skin contact
Remove contaminated clothing and wash affected areas with soap and water. Consult a doctor/physician. Launder clothing before reuse. In case of eye contact In case of eye contact, check for and remove any contact lenses.

In case of eye contact
Immediately rinse thoroughly with plenty of running water for at least 15 minutes, keeping eyelids open. Consult a doctor/physician.

If swallowed
If swallowed Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek immediate medical assistance.

Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in Section 2.2 and/or Section 11.

Indication of any immediate medical attention and special treatment needed
Treat symptomatically. Can cause corneal burns. Following severe exposure, the patient should be kept under medical supervision for at least 48 hours.

First Aid facilities
Eye wash facilities and safety shower should be available.

5. FIRE FIGHTING MEASURES

General Measure
If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Avoid getting water inside containers.

Flammability Conditions
Non-combustible; Material itself does not burn.

Extinguishing Media
If material is involved in a fire, use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction - Do not use water jets.

Fire and Explosion Hazard
Ammonia vapours may form explosive mixtures with air; may evolve flammable hydrogen gas. Containers may explode when heated.

Hazardous products of combustion:
Fire or heat will produce irritating, toxic and/or corrosive gases, including ammonia, nitrogen oxides, hydrogen.

Special Fire Fighting precautions
Contain runoff from fire control or dilution water - Runoff may be toxic and/or corrosive and may pollute waterways.

Personal protective equipment:
Wear self-contained breathing apparatus (SCBA) and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for this material.

Flash Point: No Data Available
Lower explosion Limit: 16%
Upper Explosion Limit: 25%
Auto Ignition Temperature: No data available
Hazchem Code: 2R

6. ACCIDENTAL RELEASE MEASURES

Genral Response Procedure
Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Do not breathe vapours and prevent contact with eyes, skin and clothing.

Clean Up Procedure:
Absorb with earth, sand or other non-combustible material and transfer to suitable, properly labelled containers for disposal (see SECTION 13).

Containment
Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Cover with plastic sheet to prevent spreading. Use water spray to knock down vapours.

Decontamination
Carefully neutralise using dilute hydrochloric acid.

Environmental Precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. If contamination of sewers or waterways has occurred, advise local emergency services. Observe all local and national regulations.

Evacuation Criteria
Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground. Large spill: Immediately contact Police or Fire Brigade; Consider initial downwind evacuation of areas within at least 250 m.

Personal Precautionary Measures
Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8). Large spill: Wear SCBA and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection.

7. HANDLING AND STORAGE

This material must be stored, maintained and used in accordance with the relevant regulations.

Conditions for safe storage:
Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed when not in use - Check regularly for leaks. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up.
Keep in original container

Precautions for safe handling:

Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Do not breathe mist/vapours and prevent contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection (see SECTION 8).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits:

Chemical Name	Reference	TWA – Peak Limitation		STEL	
		Ppm	Mg/m^3	Ppm	Mg/m^3
Ammonia (7664-41-7)	AASCC	25	17	35	24

Note: the exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5day working week.
These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentration of chemicals. They are not a measure of relative toxicity

Engineering controls:
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE Requirements

Personal Protective Equipment:
The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods and environmental factors.

Eye/face protection: Face shield and safety glasses or goggles. See Australian Standards (AS/NZS 1336 & 1337).
Skin protection: Wear protective gloves (long) and protective clothing (splash apron or equivalent chemical impervious outer garment and rubber boots) appropriate for the risk of exposure. See Australian Standards (AS 2161 & 2919 and AS/NZS 2210). Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use. Wash and dry hands.
Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination or type ABEK respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. See Australian Standards (AS/NZS 1715 & 1716).

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid
Colour: colourless
Odour: Sharp pungent
Solubility: not available
Specific Gravity: 0.96 @ 20^{o}C
Vapour Density (air=1): 0.6
Vapour Pressure (20 °C): approx. 7.1 psi @ 20□C
Flash Point (°C): not available
Flammability Limits (%):not available
Auto Ignition Temperature (°C): not available
Boiling Point/Melting Point (°C): approx 38^{o}C @ 101.3kPa
Freezing Point: approx -59^{o}C
pH: 11.7 @ 1% Aqueous Solution

10. STABILITY AND REACTIVITY

General information: Reacts violently with acids. Reacts exothermically with strong mineral acids. May form explosive compounds with mercury, halogens, and hypochlorites.

Chemical stability: Flammable ammonia gas will be liberated at all temperatures, which may form explosive mixtures with air.

Conditions to avoid: Avoid exposure to heat. Avoid exposure to light. Avoid sources of ignition.

Incompatible materials: Incompatible/reactive with acids, oxidising agents, metal halides, silver compounds, mercury, halogens and ethylene oxide; Corrosive to aluminum and zinc; Attacks copper, nickel, tin and brass.

Hazardous decomposition products: Fire or heat will produce irritating, toxic and/or corrosive gases, including ammonia, nitrogen oxides, hydrogen.

Hazardous reactions: Reacts violently with acids. Reacts exothermically with strong mineral acids. Corrosive to copper, nickel, tin, zinc, aluminium and their alloys. Aqua ammonia will react with many organic and inorganic acids to form ammonium salts and compounds; with certain metals to form complexion salts; with halogens to form haloamines (such as its reaction with sodium hypochlorite [bleach] to form toxic chloramines); and under extreme circumstances with silver and mercury to form explosive azides.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain and chemical burns to the gastrointestinal tract.

Eye contact: A severe eye irritant. Corrosive to eyes; contact can cause corneal burns. Contamination of eyes can result in permanent injury.

Skin contact: Contact with skin will result in severe irritation. Corrosive to skin - may cause skin burns.

Inhalation: Breathing in mists or aerosols will produce respiratory irritation. Inhalation of high concentrations may result in shortness of breath, chest pain, severe headache and lung damage including pulmonary oedema. Effects may be delayed.

Long Term Effects: No information available for the product.

Toxicological Data:
Acute Toxicity:
LD50 Oral, rat is 350 mg/kg
LC50 Inhalation, rat, mouse ranges from 2940 - 13770 mg total NH3/m3, 10-60 minutes

Skin corrosion/irritation
No data available
Serious eye damage/eye irritation
No data available
Respiratory or skin sensitisation
No data available
Germ cell mutagenicity
No indication of mutagenicity when tested in vitro in the Bacterial Reverse Mutation Assay and in vivo using the Micronucleus Assay
Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive toxicity
No indication of reprotoxicity.
Specific target organ toxicity (STOT) - single exposure
STOT SE 3 (Conc >5%)
Specific target organ toxicity (STOT) - repeated exposure
No data available
Aspiration hazard
No definitive information available

12. ECOLOGICAL INFORMATION

Ecotoxicity Keep out of waterways and drains.
LC50 (Cyprinus carpio) = 1.60 - 196 mg/L unionised NH3, 48h. - EC50 (Daphnia magna) = 101 mg/L, 48h

Persistence and Degradability
The material is biodegradable.
In the soil, ammonia is quickly oxidized by microorganisms to nitrate ion (nitrification).In fresh water it may be nitrified by microorganisms or adsorbed on sediment particles and colloids. Substantially biodegradable in water. In the atmosphere, it may be degraded by photolysis or neutralised by acid pollutants of the air

Bioaccumalitive potential
Does not bioaccumulate.
The accumulation of ammonia in biota is not considered of importance in the environment as it does not accumulate in lipid-rich tissues in the same manner as organic chemicals. Ammonia is ubiquitous in the aquatic environment due to the breakdown of plant and animal material and due to animal excretory processes. As a product of normal metabolism, Ammonia is not expected to bio accumulate

Mobility in soil
There is limited mobility in soil expected due to the strong adsorption of ammonium ions to clay minerals and the bacterial oxidation to nitrate. Ammonia in soil is in dynamic equilibrium with nitrate and other substrates in the nitrate cycle.

Other adverse effects
Very toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Disposal methods: Ensure waste disposal conforms to relevant local, state and federal authority waste disposal regulations. All empty packaging should be disposed of as unused product. Empty containers can contain vapour; do not drill cut, grind or weld. Contact a specialist disposal company or the local waste regulator for advice. Processing, use or contamination of this product may change the waste management options.

14. TRANSPORT INFORMATION

Road and Rail Transport
classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; DANGEROUS GOODS.

UN No: 2672
Class-Primary: 8 Corrosive
Packing Group: III
Proper Shipping Name: Ammonia Solution 25%
Hazchem Code: 2R

Marine Transport
classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; DANGEROUS GOODS.

UN No: 2672
Class-Primary: 8 Corrosive
Packing Group: III
Proper Shipping Name: Ammonia Solution 25%
Hazchem Code: 2R

Air Transport
classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; DANGEROUS GOODS.

UN No: 2672
Class-Primary: 8 Corrosive
Packing Group: III
Proper Shipping Name: Ammonia Solution 25%
Hazchem Code: 2R

15. REGULATORY INFORMATION

Hazard Classification
Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS).

Hazard Categories
Acute Toxicity (Oral) - Category 4
Skin corrosion/irritation – Category 1
Serious Eye Damage/Irritation - Category 1
Specific Target Organ Toxicity (single exposure) – Category 3
Acute Aquatic Toxicity – Category 1

Pictograms

Signal Word
Danger

Hazard Statements
H302 Harmful if Swallowed
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation
H400 Very toxic to aquatic life

Precautionary Statement
Prevention
P260 Do not breathe mist / vapours / spray
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product
P271 Use only outdoors or in well-ventilated area
P273 Avoid release to the environment
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P363 Wash contaminated clothing before reuse
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POSION CENTRE/doctor.
P391 Collect Spillage

Storage
P403+P233 Store in well-ventilated place. Keep container tightly closed.

P405 Store Locked up.

Disposal
P501 Dispose of contents/container in accordance with local / regional / national / international regulations.

Other Hazards
Lachrymator

Poison Schedule : S6
Hazchem Code: 2R

16. OTHER INFORMATION

This material safety data sheet has been prepared by Midland Chemicals

This MSDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. No liability is accepted whether direct or indirect from its application since the conditions of final use are outside Midland Chemicals control. The end user is obliged to conform to relevant government regulations and/or patent laws applicable in their respective States of Countries.