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SAFETY DATA SHEET

AMMONIA

SDS NO.	MG-900
REVISION DATE	08/12/2022
ISSUE DATE	22/09/2009
REV. NO.	02
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1 – PRODUCT AND COMPANY IDENTIFICATION

1.1 PRODUCT IDENTIFIER :

1.1.1 PRODUCT NAME

Ammonia, Anhydrous

1.1.2 SYNONYMS

Ammonia; Anhydrous Ammonia; Aqueous Ammonia; Aqua Ammonia

1.1.3 CAS NUMBER

7664-41-7

1.1.4 CHEMICAL FORMULA

NH₃

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST :

1.2.1 RELEVANT IDENTIFIED USES

Synthetic/Analytical chemistry.

1.3 DETAILS OF THE SUPPLIER :

1.3.1 COMPANY IDENTIFICATION

Multan Chemicals Limited
4-C-II Industrial Estate,
Multan, Pakistan

1.4 EMERGENCY TELEPHONE NUMBER :

1.4.1 EMERGENCY PHONE NUMBER(S)

+92-61-6538206-8

2 – HAZARD(S) IDENTIFICATION

2.1 CLASSIFICATION OF SUBSTANCE OR MIXTURE :

FLAMMABLE GASES - Category 2
GASES UNDER PRESSURE - Liquefied gas ACUTE TOXICITY (inhalation) - Category 4 SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 1

2.2 LABEL ELEMENTS :

2.2.1 LABELING PICTOGRAMS



2.2.2 SIGNAL WORD

Danger

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2.2.3 HAZARD STATEMENT

Flammable gas.
Contains gas under pressure; may explode if heated.
May cause frostbite.
May form explosive mixtures in Air. Harmful if inhaled.
Causes severe skin burns and eye damage. Very toxic to aquatic life.

2.2.4 PRECAUTIONARY STATEMENT

Read and follow all Safety Data Sheets (SDS) before use. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.

2.3 OTHER HAZARDS

Liquid can cause burns similar to frostbite.

3 – COMPOSITION/INFORMATION ON INGREDIENTS

3.1 SUBSTANCES :

3.1.1 CHEMICAL IDENTITY OF THE SUBSTANCE

Substance

3.1.2 COMMON NAME(S)/ SYNONYM(S)

Ammonia, Anhydrous

3.1.3 CAS NO.

7664-41-7

3.1.4 IMPURITIES AND STABILIZING ADDITIVES WHICH ARE THEMSELVES CLASSIFIED AND WHICH CONTRIBUTE TO THE CLASSIFICATION OF THE SUBSTANCE

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 – FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES :

4.1.1 INHALATION

Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight

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4.1.2 SKIN CONTACT

clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Continue to rinse for at least 10 minutes. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do not rub affected area. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

4.1.3 EYE CONTACT

Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

4.1.4 INGESTION

Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Chemical burns must be treated promptly by a physician. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. As this product rapidly becomes a gas when released, refer to the inhalation section.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS BOTH ACUTE AND DELAYED :

4.2.1 ACUTE SYMPTOMS AND EFFECTS

Causes serious eye damage. Liquid can cause burns similar to frostbite. Causes severe burns. Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

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5 – FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA :

5.1.1 SUITABLE EXTINGUISHING MEDIA	Use an extinguishing agent suitable for the surrounding fire.
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5.2 SPECIFIC HAZARDS ARISING FROM THE CHEMICAL :

5.2.1 DURING FIRE	Contains gas under pressure. Flammable gas.
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5.2.2 DURING EXPLOSION	In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is very toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
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5.2.3 DURING REACTIVITY	Decomposition products may include the following materials: nitrogen oxides
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5.3 ADVICE FOR FIRE FIGHTERS :

5.3.1 FIRE FIGHTING INSTRUCTIONS	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.
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5.3.2 SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.
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6 – ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES :

6.1.1 GENERAL MEASURES	Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
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6.1.2 PROTECTIVE EQUIPMENT FOR NON-EMERGENCY PERSONNEL

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material.

6.1.3 PROTECTIVE EQUIPMENT FOR EMERGENCY RESPONDERS

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 ENVIRONMENTAL PRECAUTIONS

Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

7 – HANDLING AND STORAGE

7.1 PRECAUTION FOR SAFE HANDLING

Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Do not breathe gas. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

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7.2 CONDITION FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES :

7.2.1 SAFE STORAGE REQUIREMENTS

Store in accordance with local regulations. Store in a segregated and approved area. Cylinder temperatures should not exceed 52 °C (125 °F).

7.2.2 KEEP AWAY FROM

Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Eliminate all ignition sources.

7.2.3 SUITABLE PACKAGING MATERIAL

Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over.

8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS :

8.1.1 OCCUPATIONAL EXPOSURE

Exposure limits

ACGIH TLV (United States, 3/2015).
 STEL: 24 mg/m³ 15 minutes.
 STEL: 35 ppm 15 minutes.
 TWA: 17 mg/m³ 8 hours.
 TWA: 25 ppm 8 hours.

NIOSH REL (United States, 10/2013).
 STEL: 27 mg/m³ 15 minutes.
 STEL: 35 ppm 15 minutes.
 TWA: 18 mg/m³ 10 hours.
 TWA: 25 ppm 10 hours.

OSHA PEL (United States, 2/2013).
 TWA: 35 mg/m³ 8 hours.
 TWA: 50 ppm 8 hours.

OSHA PEL 1989 (United States, 3/1989).
 STEL: 27 mg/m³ 15 minutes.
 STEL: 35 ppm 15 minutes.

8.2 EXPOSURE CONTROLS :

8.2.1 APPROPRIATE ENGINEERING CONTROLS

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

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8.2.2 INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT :

8.2.2.1 RESPIRATORY PROTECTION

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

8.2.2.2 HAND PROTECTION

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

8.2.2.3 EYE PROTECTION

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/ or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

8.2.2.4 SKIN PROTECTION

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

8.3 ENVIRONMENTAL CONTROLS

EXPOSURE

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

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9 – PHYSICAL AND CHEMICAL ROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES :

9.1.1 PHYSICAL STATE	Gas. [Liquefied gas]
9.1.2 APPEARANCE	Colorless.
9.1.3 MOLECULAR MASS	17.03 g/mole
9.1.4 COLOR	Colorless.
9.1.5 ODOR	Pungent.
9.1.6 MELTING POINT	-77.7°C (-107.9°F)
9.1.7 FREEZING POINT	-77.7°C (-107.9°F)
9.1.8 BOILING POINT	-33°C (-27.4°F)
9.1.9 CRITICAL TEMPERATURE	132.85°C (271.1°F)
9.1.10 AUTO-IGNITION TEMPERATURE	651°C (1203.8°F)
9.1.11 FLAMMABILITY (SOLID/GAS)	Extremely flammable in the presence of the following materials or conditions: oxidizing materials.
9.1.12 VAPOR PRESSURE	114.1 (psig)
9.1.13 RELATIVE VAPOR DENSITY	0.59 (Air = 1)
9.1.14 RELATIVE GAS DENSITY	0.044 lb/ft ³
9.1.15 SOLUBILITY	540 g/l
9.1.16 EXPLOSIVE LIMITS	Lower: 15% Upper: 28%

10 – STABILITY AND REACTIVITY

10.1 REACTIVITY	No specific test data related to reactivity available for this product or its ingredients.
10.2 CHEMICAL STABILITY	The product is stable.
10.3 POSSIBILITY OF HAZARDOUS REACTION	Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 CONDITIONS TO AVOID	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
10.5 INCOMPATIBLE MATERIALS	Oxidizers
10.6 HAZARDOUS DECOMPOSITION PRODUCTS	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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11 – TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS :

11.1.1 ACUTE TOXICITY

IDLH : 300 ppm

11.1.2 CORROSION/ IRRITATION

Not available.

11.1.3 RESPIRATORY/SKIN SENSITIZATION

Not available.

11.1.4 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE)

Not available.

11.1.5 MUTAGENICITY

Not available.

11.1.6 CARCINOGENICITY

Not available.

11.1.7 REPRODUCTIVE TOXICITY

Not available.

12 – ECOLOGICAL INFORMATION

12.1 TOXICITY

Result	Species	Exposure
Acute EC50 29.2 mg/l Marine water	Algae - <i>Ulva fasciata</i> - <i>Zoea</i>	96 hours
Acute LC50 2080 µg/l Fresh water	Crustaceans - <i>Gammarus pulex</i>	48 hours
Acute LC50 0.53 ppm Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
Acute LC50 300 µg/l Fresh water	Fish - <i>Hypophthalmichthys nobilis</i>	96 hours
Chronic NOEC 0.204 mg/l Marine water	Fish - <i>Dicentrarchus labrax</i>	62 days

12.2 PERSISTENCE AND DEGRADABILITY

Not available.

12.3 BIO ACCUMULATIVE POTENTIAL

Not available.

12.4 MOBILITY IN SOIL

Not available.

13 – DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS :

13.1.1 PROVISION RELATING TO WASTE

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. This material and its container must be disposed of in a safe way.

13.1.2 DISPOSAL METHODS

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

13.1.3 PACKAGING/ CONTAINER

Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

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14 – TRANSPORT INFORMATION

14.1 ROAD (ADR) :

14.1.1 UN NUMBER

UN1005

14.1.2 UN PROPER SHIPPING NAME

AMMONIA, ANHYDROUS

14.1.3 TRANSPORT HAZARD CLASS (ES) :

14.1.3.1 HAZARD IDENTIFICATION NUMBER

268

14.1.4 PACKING GROUP :

14.1.3.1 LABELS



14.1.5 SPECIAL PRECAUTIONS FOR USER :

14.1.5.1 SPECIAL PROVISIONS

Inhalation hazard

This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤ 5 L or ≤ 5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the general provisions of §§ 173.24 and 173.24a.

Reportable quantity
100 lbs / 45.4 kg
Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

14.1.5.2 LIMITED QUANTITIES

Limited quantity
Yes.

Packaging instruction Passenger aircraft Quantity limitation: Forbidden.

Cargo aircraft Quantity limitation: Forbidden.

Special provisions
13,T50

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14.1 SEA (IMDG/IMSBC) :

14.2.1 UN NUMBER	UN1005
14.2.2 UN PROPER SHIPPING NAME	AMMONIA, ANHYDROUS
14.2.3 HAZARD IDENTIFICATION NUMBER	268
14.2.4 PACKING GROUP :	

14.2.4.1 LABELS



14.2.5 ENVIRONMENTAL HAZARDS :

14.2.5.1 MARINE POLLUTANT	Yes.
14.2.5.2 ENVIRONMENTALLY HAZARDOUS SUBSTANCE MARK	The marine pollutant mark is not required when transported in sizes of ≤ 5 L or ≤ 5 kg.

14.3 AIR (ICAO-TI/IATA-DGR) :

14.3.1 UN NUMBER	UN1005
14.3.2 UN PROPER SHIPPING NAME	AMMONIA, ANHYDROUS
14.3.3 TRANSPORT HAZARD CLASS(ES) :	

14.3.3.1 CLASS 2.3 (8)

14.3.3.2 LABELS



14.3.4 SPECIAL PRECAUTIONS FOR USER :

14.3.4.1 SPECIAL PROVISIONS	The environmentally hazardous substance mark may appear if required by other transportation regulations.
14.3.4.2 PASSENGER AND CARGO TRANSPORT, LIMITED QUANTITIES, MAXIMUM QUANTITY PACKAGING	Passenger and Cargo Aircraft Quantity limitation: 0 Forbidden Cargo Aircraft Only Quantity limitation: Forbidden

Read this Safety Data Sheet (SDS) before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of information before use or other exposure. The SDS information is based on sources believed to be reliable. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control, **MULTAN CHEMICALS LIMITED** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Also, additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks prior to use, and then to exercise appropriate precautions for protection of employees and others.



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SAFETY DATA SHEET

AMMONIA

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15 – REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): This material is listed or exempted.
Clean Water Act (CWA) 311: ammonia, anhydrous
Clean Air Act (CAA) 112 regulated toxic substances: ammonia, anhydrous

16 – OTHER INFORMATION

CANADA LABEL REQUIREMENTS :

Class A: Compressed gas.
Class B-1: Flammable gas.
Class D-1A: Material causing immediate and serious toxic effects (*very toxic*).
Class E: Corrosive material

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