Material Safety Data Sheet

Ammonia (NH_3)

Section 1 - Chemical Product and Company Identification	
Product Name	**MSDS No.**
Anhydrous Ammonia	**0002**
Chemical Name	**Version No.**
Ammonia	02
Chemical Formula	
NH_3	
Material Use	**Next Revision**
Mostly used in the production of fertilizers. Also, Ammonia has the following industrial Applications: manufacture of chemicals, synthetic fibers, cleaning solutions.	September**,2023**
Synonyms	
Anhydrous Ammonia, Liquefied Ammonia, Ammonia Anhydrous: both standard & commercial grade.	
Company Identification	
Maaden Phosphate Company P.O Box 1110 Jubail 31961 KSA	
Emergency Contact	**For Information**
+966-13-342-6666	+966-3-342-6688 cc@maaden.com.sa

Section 2 - Composition, Information on Ingredients

Chemical Name	CAS No	Percent
Ammonia (NH_3)	7664-41-7	99.9

Section 3 – Physical and Chemical Properties

Physical State	Liquefied gas	**Molecular Weight**	17.03
Appearance	Colorless gas, liquid under pressure. Mist of high concentration may appear greenish	**Solubility**	Soluble in water
Odor:	Sharp Pungent Odor	**Boiling Point**	-33.35 ºC
pH:	Basic (11.6)	**Melting Point**	-77.7 ºC
Vapor Pressure (kPa)	10 atm @ 25.7 ºC	**Vapor Density**	0.89 g/l
Viscosity	0.255 centipoise at -28.3 °F (-33.5 °C)	**Evaporation Rate**	N/A
Bulk Density	620 kg/m3	**Specific Gravity**	0.682 (liq NH_3)

Section 4 - Hazards Identification

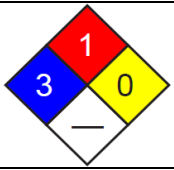
Emergency Overview

Target Organs	Lungs

Potential Health Effects

Eye	Irritation to eye, conjunctivitis, swelling of eye lid
Skin	Skin irritation
Ingestion	Ingestion in not a likely route
Inhalation	Irritation to nose and throat, coughing, Exposure to very high concentrations of gaseous ammonia can result in lung damage and death
Chronic	Corneal ulcers have been reported following splashing of ammonia water in the eye
Others:	Contact with Liquid may cause cold burn/frost bite

Section 5 - First Aid Measures	
Eyes	Immediately flush eyes with plenty of water. Do not rub.
Skin	Get under shower. Remove contaminated clothing and shoes
Ingestion	Drink water or milk. Never give anything to induce vomiting
Inhalation	Remove from exposure to fresh air. If breathing stops give artificial respiration
Antidote	N/A.
Notes to Physician	Bronchospasm may be treated with the use of a bronchodialator such as albuterol and an anticholinergic inhalant such as Atrovent.

Section 6 - Firefighting Measures	
Flammability	Flammable
Flammability Limits	LEL: 16 % ; UEL: 25%
Explosion Risk	Explosion hazard in a confined space. Considered as Class I, Group D Electrical Hazard
Auto-Ignition Temperature	651 °C
Flash Point	11 °C
Products of Combustion	Nitrogen (NOx) and water
Fire Hazard in The Presence of Various Substances	May ignite in the presence of open flames and sparks. The presence of oil or other combustible materials will increase the fire hazard.
Explosion Hazard in The Presence of Various Substances	Ammonia not readily ignited but a mixture of ammonia and air will explode when ignited under favorable conditions.
Fire Fighting Media and Instructions	Stop ammonia leak (if it may be done safely) before extinguishing the fire. Use water spray to cool fire-exposed ammonia containers (do not direct water into spilled ammonia). Move ammonia containers from fire if without risk. Keep a safe distance as the ammonia cylinders may explode.
Extinguishing Media	For small fire.....dry chemical or CO2 For large fire.....water spray, fog, or foam
NFPA Rating	

	Health: 3; Flammability: 1; Reactivity: 0

Section 7 - Accidental Release Measures

General Information	Release may require isolation or evacuation.
Small Spills	Stop or control the leak if this can be done without risk. Use water to cool and disperse vapors to protect personnel. Approach release from upwind.
Large Spills	Follow same procedure for small spills. Refer to the Emergency Response Guidelines.

Section 8 - Handling and Storage

Handling	Use with adequate ventilation. Do not breathe gas/vapor.
Storage	Cylinders and tanks. Keep in dry cool and well ventilated area. Ensure facilities are well maintained and emergency response and first aid equipment is available.
Additional Information	Keep away from ignition sources, strong acids and oxidizing agents

Section 9 - Exposure Controls, Personal Protection

Engineering Controls	Workers must be trained in the safe handling and use of ammonia. Maintain concentrations within exposure guidelines. Process block valves, equipment enclosures and other isolation facilities may be necessary.
Personal Protection	Wear appropriate respiratory protection contact may occur as a result of brief periodic exposures. Wear long sleeved clothing, ammonia resistant coveralls, chemical resistant gloves, and safety or chemical glasses with side Shields face shield, safety boots.
Personal Protection in Case of Large Release	Same as above
Exposure Limits	15 min for gaseous ammonia: 35 ppm 8 hr. TWA: 25 ppm IDLH: 300 ppm

Section 10 – Personal Protective Equipment	
Eyes	Safety goggle, face shield
Skin	Butyl rubber, ammonia resistant coveralls, apron, boots, gloves.
Respirators	Self-contained breathing apparatus (SCBA) or air purifying respirator. Ammonia cartridge can be used if concentration of ammonia is less than 250 ppm.

Section 11 - Stability and Reactivity	
Chemical Stability	Stable. Liquid under pressure floats and boils on water.
Instability Temperature	N/A
Conditions to Avoid	Keep away from ignition sources, strong acids, oxidizing materials and halogens.
Incompatibilities with Other Materials	Reacts with hypochlorite or other halogen sources to form explosive compounds. Highly reactive with oxidizing and reducing agents. Extremely reactive with acids.
Hazardous Decomposition Products	Emits fumes of NOx. Produces hydrogen above 450 °C
Hazardous Polymerization	Anhydrous ammonia is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Heat, ignition sources, contact with oxidizing agents, combustible materials and incompatibles.
Corrosivity	Highly corrosive to copper and its alloys and any metal surface. Slightly corrosive to aluminum and zinc.
Special Remarks	Same as above.

Section 12 - Toxicological Information	
Significant Route of Exposure	Inhalation, eyes contact, skin contact.

Toxicity to Animals	Very toxic to marine environment
Chronic Effects on Humans	Exposure can cause coughing, chest pains, difficulty in breathing. Repeated significant overexposure can cause permanent lung function damage, edema and chemical pneumonitis. May cause serious damage to the eyes.
Other Effects on Humans	Slightly to very dangerous in case of skin contact, eyes contact, or inhalation. Material may be irritating or corrosive.

Section 13 - Ecological Information

Eco-toxicity	Hazardous for human and animal life. Ammonia is toxic hazards to fish. Free ammonia concentrations of 2.5 mg per liter at pH 7.4 to 8.5 are considered harmful to marine environment.
Degradation	Not available
Environmental Fate	Not available
Special Remarks	Do not release large amounts of Ammonia to the atmosphere.

Section 14 - Disposal Considerations

Waste Disposal	Dispose of in a manner consistent with local regulations.

Section 15 - Transport Information

DOT/ TDG Classification	DOT Class 2.3: Poisson Gas.

	TDG Class 2.3: Toxic Compressed Gas.
Shipping Name	Ammonia, Anhydrous
Hazard Class	2.2
UN Number	UN1005
Packing Group	Not available
Special Provisions	Not available
Additional information	None

Section 16 – Additional Information

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