

MATERIAL SAFETY DATA SHEET

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Chemical Name		<p style="font-size: small;">PRIDE-CHEM INDUSTRIES PTE LTD DISCLAIMER: THE INFORMATION AND RECOMMENDATIONS PRESENTED HEREIN ARE BASED ON SOURCES BELIEVED TO BE RELIABLE. PRIDE-CHEM INDUSTRIES MAKES NO REPRESENTATION ON ITS COMPLETENESS OR ACCURACY. IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE CHEMICAL'S SUITABILITY FOR ITS INTENDED USE, THE CHEMICAL'S SAFE USE, AND THE CHEMICAL'S PROPER DISPOSAL. NO REPRESENTATIONS AND/OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR OF ANY OTHER NATURE, ARE MADE WITH RESPECT TO THE INFORMATION PROVIDED IN THIS MSDS OR TO THE CHEMICAL TO WHICH INFORMATION MAY REFER. PRIDE-CHEM INDUSTRIES NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT, ANY OTHER ADDITIONAL RESPONSIBILITY OR LIABILITY FOR THE USE OF, OR RELIANCE UPON, THIS INFORMATION.</p>				
<h2>Ammonium Hydroxide</h2>						
SECTION 1 : PRODUCT AND COMPANY INFORMATION						
Characterization		Product Name				
Liquid		Ammonium Hydroxide				
DOT Proper Shipping Name		Chemical Formula				
Ammonium Hydroxide		NH₄OH				
DOT Hazard Class and Label Requirements	DOT Abstract Service (CAS) Number	NIOSH No.				
8	1336-21-6	BQ 9625000				
DOT Identification Number		Synonyms				
UN 2672		Ammonium Hydroxide; Aqua Ammonia				
SECTION 2 : COMPOSITION/INFORMATION ON INGREDIENTS						
Hazardous Components						
Ammonia 20 – 35% , Water 65 – 80%						
SECTION 3 : HAZARDS IDENTIFICATION						
Health	Fire	Reactive	Other	Degree of Hazard	Colour Coding	Other Codes
3	0	0	COR	0 = No Hazard 1 = Slight Hazard 2 = Moderate Hazard 3 = Serious Hazard 4 = Severe Hazard	Health = Blue Fire = Red Reactivity = Yellow Other = White	OX = Oxidizer ACID = Acid ALK = Alkali COR = Corrosive W = Use No Water
SECTION 4 : FIRST AID MEASURES						
Hazard Rating		Type of Hazard				
Caution		Cause burn to skin and eyes				
Product Inhalation		Emergency and First-aid Procedures				
Severe irritation of nose, throat & upper respiratory tract with cough, wheezing & shortness of breath leading to chest pain headache, nausea and vomiting. Inhalation may be fatal as a result of spasm, inflammation and edema of larynx and bronchi, chemical pneumonitis and pulmonary edema. Cessation of respiration may lead to death if exposure continues.		Remove from exposure, keep warm and at rest. If respondent is under respiratory distress, give oxygen. If breathing stops or shows signs of failing, apply artificial respiration. Obtain medical attention urgently. Transfer promptly to medical facility. Observation for 24-48 hours since pulmonary edema is possible.				
Product on Skin & Eyes		Emergency and First-aid Procedures				
Corrosive to skin. Long exposure may results in destruction of tissue.		Do not remove clothing. Immediately wash with water. Continue washing for at least 15 minutes, occasionally lifting eyelids, seek medical attention. Contaminated clothing should be washed thoroughly before re-use.				
Product Ingestion		Emergency and First-aid Procedures				
Dizziness, nausea and severe irritation of throat & upper respiratory tract with cough, shortness of breath, chest pain, and vomiting.		Wash out mouth if possible. Obtain medical attention urgently.				

SECTION 5 : FIRE FIGHTING MEASURES		
Flash Point	N.A.	Auto-Ignition temperature 651 °C
		Explosive Limit LEL: 16 UEL: 25
Extinguishing Media Use extinguishing agent such as water spray or fog, carbon dioxide, or dry chemical extinguishers suitable for the type of surrounding fire. Use Water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire.		
Special Fire Fighting Procedures Vapour is extremely irritating: wear full protective clothing and "NIOSH/MSHA approved" self-contained breathing apparatus (SCBA). Heat will build pressure and may rupture closed storage containers. Keep fire-exposed containers cool with water spray.		
Fire & Explosive Hazard Slight, when heated; liquid inflicts burns and its vapour emits toxic and irritating fumes; can react with oxidising materials.		
SECTION 6 : ACCIDENTAL RELEASE MEASURES		
Steps to be taken in case of Material Release or Spillage Remove all ignition sources. Cleanup workers must wear protective clothing, face shield, goggles, respiratory protection & equipment to prevent body contact. Stop leak if you can without risk. Preferred clean-up procedure: Isolate valve. Dam up spill, cover with sand or inert porous material and transfer to appropriate sealable containers. If this is not possible, cover leakage with gunny sack soaked with weak acid and spray water to minimise leakage and "knock down" vapour. Flush clean-up area with water. Dilute acid, like sulfuric or preferably 3% acetic acid may be used to neutralise final traces of ammonium hydroxide. For large spills, pick up spill with vacuum equipment or pump for disposal, or flush holding area with water, prior to neutralisation. Notify local authorities if flushed spillage unavoidably enters public sewer or water systems.		
SECTION 7 : HANDLING AND STORAGE		
Precautions to be taken in Handling and Storage Store in cool dry place, preferably away from the main building, out of direct sunlight, and away from sources of ignition and other chemicals, such as oxygen, halogens and acids. Ammonia Solution should be handled wearing protective clothing, eye protection with material like neoprene, rubber, buna-n or vinyl gloves. Keep container tightly closed. If there is exposure to high concentrations of vapour, approved breathing apparatus should be worn.		
Unsuitable: Copper and its alloy, aluminum or its alloy, galvanised surface, phenolic or polyester resins		Suitable: Mild steel, stainless steel, neoprene, polyethylene
SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION		
Respiratory Protection Exposure above 50ppm : Approved full face-respirator with an ammonia vapour cartridge. Greater protection is obtained from a self-contained breathing apparatus with full face piece and pressure demand or other positive pressure		
Ventilation Local exhaust ventilation or general mechanical systems general is recommended.		
Eyes Protection Chemical goggles and/or Face mask.		
Skin Protection Butyl Rubber gloves, hard hats, rubber boots with protective clothing or rubber apron to be worn when handling. Safety showers and eye-wash should be provided nearby where skin contact can occur.		
Other Additional Protective Measures Always wash hands thoroughly after handling chemical; never bring food, drink or smoking materials into vicinity of chemicals. Neutralisation supplies (3% acetic acid preferably) and abundant running water should be close at hand in working and storage areas.		
SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES		
Boiling Point	36 - 100 °C	Specific Gravity (H ₂ O=1) 0.90 (25%)
Vapour Pressure (MM HG)	334 mmHg (25% at 21 °C)	Molecular Weight 35.05
Vapour Density (Air=1)	1.2 (25%)	Freezing Point -78°C (-108 F)
Solubility in water Complete (In all Proportions) % Volatiles by Volume : 100		
Synonyms Ammonium Hydroxide; Aqua Ammonia		
Appearance and Odour Clear Colorless Solution with a Strong Odor		

SECTION 10 : STABILITY AND REACTIVITY			
Stability Stable	Conditions to Avoid Ammonium hydroxide is corrosive to copper and galvanised surfaces. Forms sensitive explosive mixtures with air and hydrocarbons. Explosive reaction with silver chloride, silver nitrate, silver azide and silver oxide.		
	Incompatibility Incompatible with numerous commodities, primarily strong oxidizers, acids, halogens, salts of silver and zinc and gold, mercury, calcium and hypochlorite bleaches.		
Hazardous Polymerization No	Conditions to Avoid Heat, sunlight, incompatibles, sources of ignition. Potentially violent or explosive reactions on contact with interhalogens. Do not mix with our materials, especially for cleaning purposes (never mix ammonia with bleach as toxic gas emissions can occur).		
	Incompatibility Ammonium hydroxide catalyzes the polymerization of acrolein and other unsaturates, causing an increase in temperatures and pressure, which may explode containers. Emit toxic NH ₃ and NO _x in heat conditions.		
SECTION 11 : TOXICOLOGICAL INFORMATION			
Hazard Rating Caution		Toxicity LD ₅₀ (Oral Rat) 350mg/kg	
Permissible Exposure Limit (PEL) 50ppm 35mg/m³	Short-Term Exposure Limit (STEL) 35ppm 27mg/m³	Threshold Limit Value (TLV/TWA) 25ppm 18mg/m³	
SECTION 12 : ECOLOGICAL INFORMATION			
Acute Ecological Effects Acute (short-term) toxic effects may include the death of animals, birds, or fish, and death or low growth rate in plants. Acute effects are seen 2 to 4 days after animals or plants are exposed to ammonia. Under natural conditions of pH and temperature, ammonia has a moderate acute toxicity to aquatic life.			
Chronic Ecological Effects Chronic (long-term) toxic effects may include shortened life span, reproductive problems, lower fertility, and changes in appearance or behaviour in exposed animals. These effects can be seen long after first exposure(s) to toxic chemicals. Under natural conditions of pH and temperature, total ammonia has moderate chronic toxicity in aquatic life.			
SECTION 13 : DISPOSAL CONSIDERATIONS			
Waste Disposal Method Leaking gas should be vented slowly into a fume cupboard or water fed scrubbing tower or column. Dispose in accordance with all applicable environmental regulation. May consider incineration of gas.			
SECTION 14 : TRANSPORT & PACKAGING INFORMATION			
UN Number and Classification 2672 8.0		ADR/RID Classification Class 8	
IMCO Classification Liquid		IATA Classification Liquid	
Road Transportation			
Hazard warning sign 2672 corrosive substance		Hazchem Code 2 P	
Sea Transportation			
IMDG page No. 8110	Class 8	Label Corrosive	Packaging group III
Air Transportation			
ICAO/IATA code (UN No.) 2672	Class 8	Label Corrosive	Packaging group III
Passenger aircraft max. quantity 5 litres		Cargo aircraft max. quantity 60 litres	
SECTION 15 : REGULATORY INFORMATION			
N. A.			

SECTION 16 : OTHER INFORMATION

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