



# Material Safety Data Sheet

NFPA Classification	DOT/TDG Pictograms	WHMIS Classification	Protective Clothing
Health Flammability Reactivity Specific Hazard		 	   

## Section I. Chemical Product and Company Identification

<b>PRODUCT NAME/ TRADE NAME</b>	Aqua Ammonia, Industrial Grade 19%		
<b>SYNONYM</b>	Aqueous Ammonia, Ammonia Solution		
<b>CHEMICAL NAME</b>	Ammonium Hydroxide	<b>Revision Number:</b>	
<b>CHEMICAL FAMILY</b>	An inorganic Alkali liquid, (Alkali)	<b>MSDS prepared by Technical Services on:</b> June 27, 2005	
<b>CHEMICAL FORMULA</b>	NH <sub>4</sub> OH·H <sub>2</sub> O	<b>24 Hour Emergency Telephone Number:</b>	
<b>MATERIAL USES</b>	Industrial applications: Cleaning solutions. Metal industry: Metallurgy. Ore processing.	(520) 720-2150 (Ask for the Shift Supervisor) CHEMTREC 1-800-424-9300	
<b>MANUFACTURER</b>	<b>SUPPLIER</b>		
Apache Nitrogen Products, Inc. P. O. Box 700 Benson, AZ 85602 Fax (520) 720-4158 www.apachenitro.com	Apache Nitrogen Products, Inc. P. O. Box 700 Benson, AZ 85602 Fax (520) 720-4158 www.apachenitro.com		

## Section II. Hazardous Ingredients

NAME	CAS #	Exposure Limits (ACGIH)				% by Weight
		TLV-TWA mg/m <sup>3</sup>	TLV-TWA ppm	STEL mg/m <sup>3</sup>	STEL ppm	
Ammonium Hydroxide	1336-21-6		25		35	19 as NH <sub>3</sub>

### Other Information on Ingredients:

## Section III. Hazards Identification

<b>POTENTIAL ACUTE HEALTH EFFECTS</b>	<p>Corrosive. Dangerous in case of skin or eye contact, ingestion, or inhalation. Liquid or spray mists may produce chemical burns and severe tissue damage on contact with the eyes, the mouth, mucous membranes, and the respiratory tract.</p> <p>Skin contact may produce serious chemical burns.</p> <p>May cause severe burns to the mouth, throat and digestive tract if ingested. Damage may be life threatening.</p> <p>Inhalation of the spray mist or vapors may produce severe irritation of the respiratory tract characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in chemical pneumonia and pulmonary edema which may be life threatening.</p> <p>Overflow of liquid during filling operations or inhalation of displaced headspace vapor from transport containers may result in severe overexposure to ammonia vapor.</p>
<b>POTENTIAL CHRONIC HEALTH EFFECTS</b>	<p>CARCINOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.          MUTAGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.          TERATOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.</p> <p>Repeated or prolonged exposure to the substance may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mists or vapors may produce respiratory tract irritation leading to frequent attacks of bronchial infection.</p>

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**Section IV. First Aid Measures**

<b>EYE CONTACT</b>	Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 30 minutes, keeping eyelids open. Rinse with copious amounts of water. Use warm water if available. Obtain immediate medical attention.
<b>MINOR SKIN CONTACT</b>	In case of contact with the chemical, remove contaminated clothing as quickly as possible. <b>Flush exposed skin with copious amounts of water for at least 30 minutes.</b> Use warm water if available. If irritation persists, seek medical attention. Dispose of contaminated clothing in a manner that limits further exposure.
<b>EXTENSIVE SKIN CONTACT</b>	No additional information.
<b>MINOR INHALATION</b>	Using appropriate respiratory protection, remove the affected individual from the area of overexposure. Allow the person to rest in a well ventilated area. If irritation persists, obtain medical attention.
<b>SEVERE INHALATION</b>	In emergency situations use proper respiratory protection to evacuate affected individuals to a safe area as soon as possible. Loosen tight clothing around the person's neck and waist. Oxygen may be administered if breathing is difficult. If the person is not breathing, perform artificial respiration. Obtain immediate medical attention.
<b>SLIGHT INGESTION</b>	Do not induce vomiting. Careful removal of the substance from the stomach by medical personnel is required. Call a physician or poison control center immediately. Get immediate medical attention. If tolerated, give no more than 1 cup of milk or water to rinse the mouth and throat and dilute the stomach contents. No more than 8 ounces (1 cup) in adults and 4 ounces (1/2 cup) in children is recommended to minimize the risk of vomiting.
<b>EXTENSIVE INGESTION</b>	No additional information.

**Section V. Fire and Explosion Data**

<b>THE PRODUCT IS</b>	Not combustible, however, evolved ammonia gas may support combustion if allowed to accumulate within a narrow upper and lower flammability limit.
<b>AUTO-IGNITION TEMPERATURE</b>	Not applicable.
<b>FLASH POINT</b>	Not applicable.
<b>FLAMMABILITY LIMITS</b>	Ammonia gas may burn in concentrations between 16 - 25%. Such concentrations may exist <u>in the headspace</u> of storage vessels. Exercise caution.
<b>PRODUCTS OF COMBUSTION</b>	Nitrogen oxides (NO, NO <sub>2</sub> no).
<b>FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES</b>	Not applicable.

**Section V. Fire and Explosion Data**

<b>EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES</b>	This product is non-explosive.
<b>FIRE FIGHTING MEDIA AND INSTRUCTIONS</b>	Use CO <sub>2</sub> , water spray or fog.
<b>SPECIAL REMARKS ON FIRE HAZARDS</b>	Toxic or combustible gases (ammonia, nitrogen oxides) will be evolved at elevated temperatures.
<b>SPECIAL REMARKS ON EXPLOSION HAZARDS</b>	No additional remarks.

**Section VI. Accidental Release Measures**

<b>SMALL SPILL</b>	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of acetic acid such as vinegar.
<b>LARGE SPILL</b>	Corrosive liquid. Wear a self-contained breathing apparatus and appropriate personal protective equipment. (See Exposure Controls/Personal Protection Section) Stop leak if possible to do so without risk. Dike and contain spilled material. Ensure that the spilled material does not enter sewers, wells, or watercourses. Product will promote algae growth which may degrade water quality and taste. Notify downstream water users. Pump up spilled material and place in suitable containers for reuse or disposal. Ensure that clean-up, pumping and holding equipment is metallurgically compatible with ammonia. Ensure disposal complies with local regulations.

**Section VII. Handling and Storage**

<b>PRECAUTIONS</b>	Avoid contact with skin and eyes. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Keep container tightly closed and in a well ventilated place. Keep out of reach of children.
<b>STORAGE</b>	Keep in a cool, well-ventilated place away from acids. Keep away from food, drink and animal feed. Keep away from living quarters. Keep out of reach of children.

**Section VIII. Exposure Controls / Personal Protection**

<b>ENGINEERING CONTROLS</b>	Provide exhaust ventilation or other engineering controls to keep the vapor concentrations below their respective threshold limit values. Ensure that an eyewash station and safety shower is near the work location.
<b>PERSONAL PROTECTION</b>	The selection of personal protective equipment varies, depending upon conditions of use. Wear splash

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goggles, PVC chemical resistant protective clothing jacket and pants), impervious neoprene or PVC gloves, and rubber boots. Use a NIOSH/MSHA approved chemical respirator with ammonia cartridges if ventilation is not adequate to maintain ammonia concentrations below the Occupational Exposure Limit. A respiratory protection program that meets OSHA 29 CFR 1910.134 requirements must be followed whenever workplace conditions warrant a respirator's use.

**PERSONAL PROTECTION IN CASE OF LARGE RELEASE**

Splash goggles. Full chemically resistant protective clothing. Rubber boots and gloves. A self contained breathing apparatus should be used to avoid inhalation of the substance. The selection of personal protective equipment varies, depending on the conditions of use. Suggested protective clothing might not be sufficient; consult a specialist before handling this product.

**Section VIII. Exposure Controls / Personal Protection****EXPOSURE LIMITS**

Consult local authorities for acceptable exposure limits in your jurisdiction.

ACGIH TLV-TWA: 25 ppm, TLV-STEL: 35 ppm.  
MSHA STANDARD - air: TWA 25 ppm (18 mg/m<sup>3</sup>)

U.S. OSHA:

OSHA PEL (Gen Industry):8H TWA 50 ppm (35 mg/m<sup>3</sup>)  
REFERENCE: Code of Federal Regulations 29:1910.1000  
OSHA PEL (Construction):8H TWA 50 ppm (35 mg/m<sup>3</sup>)  
REFERENCE: Code of Federal Regulations 29:1926.55  
OSHA PEL (Shipyard):8H TWA 50 ppm (35 mg/m<sup>3</sup>)  
REFERENCE: Code of Federal Regulations 29: 1915.1000

NIOSH REL, AMMONIA in air:10H TWA 25 ppm; STEL 35 ppm, IDLH 300 ppm

**Section IX. Physical and Chemical Properties****PHYSICAL STATE AND APPEARANCE**

Liquid

**MOLECULAR WEIGHT**

Not applicable.

**COLOR**

Colorless

**pH (10% SOLN/WATER)**

13

**ODOR**

Pungent Ammonia odor. (Strong)

**BOILING POINT**

30°C (86°F)

**ODOR THRESHOLD**

5ppm

**MELTING POINT**

-30°C (-22°F)

**TASTE**

Not available.

**CRITICAL TEMPERATURE**

Not available

**VOLATILITY**

100% (w/w) 100% (w/w)

**SPECIFIC GRAVITY g/cc**

0.926 (Water = 1)

**SOLUBILITY**

Easily soluble in cold or hot water.

**BULK DENSITY kg/m<sup>3</sup> ; lbs/ft<sup>3</sup>**

926kg/m<sup>3</sup>; 7.7 lbs/gal (US)

**DISPERSION PROPERTIES**

See solubility in water.

**VAPOR PRESSURE VAPOR DENSITY**

475 mm of Hg (@ 20°C)  
0.6 (Air = 1)

**WATER/OIL DIST. COEFF.**

Not available.

**Section X. Stability and Reactivity Data****STABILITY**

The product is stable.

**INSTABILITY TEMPERATURE**

Not applicable

**CONDITIONS OF INSTABILITY**

No additional remark.

**INCOMPATIBILITY WITH VARIOUS SUBSTANCES**

Highly reactive with acids. Slightly reactive with oxidizing agents, reducing agents, metals, alkalis. Non-reactive with combustible materials, organic materials.

**CORROSIVITY**

Corrosive to copper. Not corrosive to mild steel, aluminum, glass, 304 or 316 stainless steel.

**SPECIAL REMARKS ON REACTIVITY**

Copper, aluminum and zinc alloys, acrolin, mineral acids, dimethylsulphate, mercury, chlorine, silver. Hazardous thermal decomposition products are ammonia and oxides of nitrogen.

**SPECIAL REMARKS ON CORROSIVITY**

Corrosive to brass. Incompatible with copper alloys (stress cracking). Will corrode a wide variety of metals. Contact your sales representative or a metallurgical specialist to ensure compatibility with system equipment.

**Section XI. Toxicological Information****SIGNIFICANT ROUTES OF EXPOSURE**

Eye contact. Inhalation. Skin contact.

**SPECIAL REMARKS ON TOXICITY TO ANIMALS**

Will release ammonium ions. Ammonia is a toxic hazard to fish. Avoid spills or release to water courses. Toxic to wildlife and domestic animals. Severe over-exposure can produce lung damage, choking, unconsciousness or death. May be harmful to livestock and wildlife if ingested. Clean up all spilled material to prevent animal exposure.

**OTHER EFFECTS ON HUMANS**

Slightly dangerous to very dangerous in case of skin contact, of eye contact, of inhalation. Material may be irritating or corrosive.

**Section XI. Toxicological Information**

**SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS** Prolonged and/or repeated exposures may cause breathing disorders and/or lung damage.

**SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS** No additional remark.

**Section XII. Ecological Information**

**ECOTOXICITY** Toxic for humans or animal life. Corrosive to skin and eyes on contact. Severe overexposure can produce lung damage, choking, unconsciousness or death. May cause severe eye irritation. Will release ammonium ions. Ammonia is a toxic hazard to fish.

**BOD and COD** Not available.

**PRODUCTS OF DEGRADATION** Not available.

**TOXICITY OF THE PRODUCTS OF DEGRADATION** The products of biodegradation are less toxic than the original product.

**SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION** No additional remark.

**Section XIII. Disposal Considerations**

**WASTE DISPOSAL OR RECYCLING** Recycle to process, if possible. Dispose of in accordance with all applicable federal, provincial or state and local regulations.

**Section XIV. Transport Information**

**DOT / TDG CLASSIFICATION** DOT CLASS 8: Corrosive liquid.

**PIN and Shipping Name** Proper shipping name: Ammonia solutions. PIN #: UN 2672 PGIII

**SPECIAL PROVISIONS FOR TRANSPORT** US DOT: IB3, T7, TP1

**DOT (U.S.A.) (Pictograms)**



**National Fire Protection Association (U.S.A.)** Hazards presented under acute emergency conditions only.

**NOTICE TO READER**

The buyer assumes all risk in connection with the use of this material. The buyer assumes all responsibility for ensuring this material is used in a safe manner in compliance with applicable environmental, health and safety laws, policies and guidelines. Apache Nitrogen Products, Inc. assumes no responsibility or liability for the information supplied on this sheet, including any damages or injury caused thereby. Apache Nitrogen Products, Inc. does not warrant the fitness of this material for any particular use and assumes no responsibility for injury or damage caused directly or indirectly by or related to the use of the material. The information contained in this sheet is developed from what Apache Nitrogen Products, Inc. believes to be accurate and reliable sources, and is based on the opinions and facts available on the date of preparation.