

## Safety Data Sheet

### Section 1 - Chemical Product And Company Identification

**Product Identifier: Aqua Ammonia Solutions**

**Synonyms/Common Names:** Ammonium Hydroxide; Aqueous Ammonia; Water  
Ammonia; Aqua Ammonia; Ammonia Solutions

**Product Use & Restrictions:** Refer to label or call number below  
CAS Number: See Section II                      HBCC MSDS No. CA13226



Rooto Corporation  
3505 W. Grand River Ave  
Howell, MI 48855  
Emergency: Chemtrec: 800-424-9300

### Section 2 – Hazard Identification

#### Classifications of the Product

Skin Corrosion; Category 1B  
Acute Toxicity, Inhalation; Category 3 Acute  
Aquatic Toxicity; Category 1



#### Pictograms:

Labels / Signal Word: **Danger**

#### Hazard Statements

H314 Causes severe skin burns and eye damage  
H331 Toxic if inhaled  
H400 Very toxic to aquatic life

#### Precautionary Statements

P261 Avoid breathing fumes, gas, mist, vapors, spray.  
P264 Wash hands thoroughly after handling.  
P271 Use only outdoors or in a well-ventilated area.  
P273 Avoid release to the environment  
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.  
P304+P340 IF INHALED: Remove victim to fresh air and keep comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.  
P310 Immediately call POSION CENTER/Physician.  
P363 Wash contaminated clothing before reuse.  
P381 Eliminate all ignition sources if safe to do so.  
P391 Collect Spillage.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with specified local, regional, national, international regulations for disposal.

### **Section 3 - Composition/Information on Ingredients**

**Chemical Name:** Aqua Ammonia Solutions

**Synonyms/Common Names:** Ammonium Hydroxide; Aqueous Ammonia; Water Ammonia; Aqua Ammonia; Ammonia Solutions

**CAS Number:**

**For Ammonia Solutions 14-19.5%**

| Chemical Name      | CAS Number | %       |
|--------------------|------------|---------|
| Ammonium Hydroxide | 31336-21-6 | 100     |
| Anhydrous Ammonia  | 7664-41-7  | 14-19.5 |
| Water              | 7732-18-5  | 86-80.5 |

**For Ammonia Solutions 20-300%**

| Chemical Name     | CAS Number | %     |
|-------------------|------------|-------|
| Ammonia Hydroxide | 7664-41-7  | 100   |
| Anhydrous Ammonia | 7664-41-7  | 20-30 |
| Water             | 7732-18-5  | 80-70 |

### **Section 4 – First Aid Measures**

**Ingestion: Do Not Induce Vomiting.** If person is conscious, give large quantities of water and, if possible, diluted vinegar, lemon juice, orange juice, or other citric juices to neutralize the ammonia. Delay may cause perforation of esophagus or stomach. OBTAIN MEDICAL ATTENTION.

**Inhalation:** Remove victim to fresh air. Give oxygen if breathing is difficult. If breathing has stopped, start artificial respiration. Keep victim calm and resting. OBTAIN MEDICAL ATTENTION.

**Skin:** Apply water immediately to exposed areas of skin and continue for at least 30 minutes. Remove contaminated clothing while continuing to apply water. Do not apply salves or ointments to affected areas. OBTAIN MEDICAL ATTENTION.

**Eyes:** Immediately flush with flowing water for at least 30 minutes with the eyelids held apart. OBTAIN MEDICAL ATTENTION.

**Medical Conditions Generally Aggravated by Exposure:** Ammonia is a respiratory irritant. Persons with impaired pulmonary function may be at increased risk from exposure.

#### **Summary of Acute Health Hazards**

**Ingestion:** May cause corrosion to the esophagus and stomach with perforation and peritonitis. Ingestion causes burning pain in mouth, throat, stomach, and thorax, constriction of throat, and coughing. This is soon followed by vomiting of blood or by passage of loose stools containing blood. Ingestion of 3-4 ml may be

fatal.

**Inhalation:** If inhaled, will cause nausea, vomiting, breathing difficulty, and convulsions. Shock or loss of consciousness may result. Brief exposure to 5000 ppm may be fatal.

**Skin: Absorption:** Ammonia, because of its alkalinity and water solubility, tends to break down and disrupt the outer cell layers, permitting rapid penetration. Even so, ammonia is not a systemic poison and the effects will be limited to local effects.

**Contact:** Causes smarting of the skin and first-degree burns on short exposure. May cause second-degree burns on long exposure.

**Eyes:** Vapor is irritating to the eyes. Liquid will cause burns.

**Effects of Overexposure:** Irritation and possible burns of the skin and mucous membranes. Headache, salivation, nausea, and vomiting. Difficult or labored breathing and cough with bloody mucous discharge. Bronchitis, laryngitis, hemoptysis, and pulmonary edema or pneumonitis. Ulceration of the conjunctiva and cornea, and corneal and lenticular opacities. Damage to the eyes may be permanent.

### **Section 5 – Fire Fighting Measures**

**Emergency Media:** Water spray or fog type streams. Chemical or CO<sub>2</sub> should be used on small fires only. Use water to keep fire exposed containers cool and to protect men affecting the shut off.

**Unusual Fire and Explosion Hazards:** The presence of oil or other combustible materials will increase the fire hazard. The explosive (flammable) range of ammonia is broadened by a mixture of oxygen replacing air, and by temperature and pressure higher than atmospheric. Stop the flow of liquid. Approach fire upwind and evacuate area downwind if needed.

**Special Protective Equipment for Firefighters:** Wear self-contained breathing apparatus and full protective clothing.

**NFPA Rating:** Health - 3; Flammability – 1; Instability - 0; O=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

NFPA Rating is for Ammonia, Anhydrous, and Liquefied Gas only. Ammonia Solutions are not rated by the NFPA (National Fire Protection Association).

### **Section 6 – Accidental Release Measures**

**Personal Precautions:** Approach spill from upwind and evacuate area downwind.

**Protective Equipment:** Wear self-contained breathing apparatus and full protective clothing.

**Emergency Procedures:** Stop the flow.

**Methods of Containment and Clean-Up:** Dike to contain spill. Dilute with water, if necessary to reduce ammonia vaporization. Can be neutralized with dilute phosphoric or sulfuric acids. Vinegar will effectively neutralize small spills of aqua ammonia. Prevent runoff from entering streams, drinking water supply or sewers.

### **Section 7 – Handling and Storage**

**Safe Handling:** Avoid heating containers of aqua ammonia. Avoid contact with skin and eyes. Avoid inhalation of vapors.

**Storage:** Avoid storing in close proximity to strong acids.

**Work/Hygienic Practices:** Avoid contact with skin and avoid breathing vapors. Do not eat, drink, or smoke in work area. Wash hands before eating, drinking, or using

restroom. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

**Ventilation:** Local exhaust is essential. Spark-proof fans desirable with mechanical ventilation. Ducts should be located at ceiling level and lead upwards to the outside. Local exhaust must be adequate to reduce ammonia concentration below 25 ppm.

### **Section 8 – Exposure Controls / Personal Protection**

#### **Exposure Controls**

**Engineering Controls:** See Section 7: Ventilation. Eyewash fountain and safety shower should be available in the work area.

**Exposure Guideline(s):** Ammonium Hydroxide: CAS Number 1336-21-6, Exposure Limits (TWAs) in Air: ACGIH TLV: 25 ppm; OSHA PEL: 50 ppm; STEL: 35 ppm; Ammonia (concentration 20% or greater): CAS Number 7664-41-7, Exposure Limits (TWAs) in Air: ACGIH TLV: 25 ppm; OSHA PEL: 50 ppm; CAL-OSHA PEL: 25 ppm; STEL: 35 ppm

#### **Personal Protection**

**Personal Protection Equipment (PPE):** Unless ventilation is adequate to keep airborne concentrations below the exposure standard, wear approved respiratory protection such as an ammonia canister mask or an approved air supplied respirator. Canister or cartridge type masks must not be used above their exposure limits. From 0-199 ppm, a cartridge type ½ mask respirator is needed. From 200-299 ppm a type "N" gas mask with full face piece is needed. Over 300 ppm a self-contained breathing apparatus (SCBA) is required.

**Protective Clothing:** Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Neoprene and nitrile rubber are recommended materials. Polyvinyl alcohol is not recommended.

**Eye Protection:** Tight fitting chemical safety and splash-proof goggles and/or a splash-proof face shield must be worn if there is a likelihood of exposure. Persons subject to ammonia exposure must not wear contact lenses.

### **Section 9 – Physical and Chemical Properties**

|  |  |
|--|--|
| <b>Appearance:</b> Colorless liquid            | <b>Odor:</b> Pungent odor  |
| <b>Odor Threshold:</b> 5 PPM                   | <b>pH:</b> 12-14   |
| <b>Melting Point/Freezing Point:</b> N/A       | <b>Initial Boiling Point/Range:</b> 27°C- 52°C @ 14.7 PSIA                   |
| <b>Flash Point:</b> 651°C; 1204°F              | <b>Evaporation Rate (BuAc=1):</b> N/A  |
| <b>Flammability:</b> N/A                       | <b>Lower/Upper Explosive Limit:</b> 16-25% by volume Ammonia gas             |
| <b>Vapor Pressure (mmHg):</b> 720 @ 27°C; 52°C | <b>Vapor Density (Air=1):</b> 0.6 @ 32°F; 0°C                                |
| <b>Relative Density:</b> N/A                   | <b>Solubility in Water:</b> 100%   |
| <b>Partition Coefficient:</b> N/A              | <b>Autoignition Temperature:</b> N/A   |
| <b>Decomposition Temperature:</b> 300°C        | <b>Viscosity:</b> N/A  |
| <b>% Volatiles:</b> 14-30%                     | <b>Specific Gravity (Water=1) @ 60°F; 1S.S°C by % of Solution:</b> See below |
| <b>Molecular Weight:</b> 35.05                 | <b>VOC:</b> Approx . 0g/L  |

**Weight/Gallon (Lbs.) by % of Solution:** See below

**Specific Gravity (Water=1) @ 60°F; 15.5° C by % of Solution:**

|                          |                         |                         |            |
|--------------------------|-------------------------|-------------------------|------------|
| 0.8957 (30%)-0.9261(20%) | Approx.<br>0.9459 (14%) | Approx.<br>0.9425 (15%) | 0.92 (19%) |
|--------------------------|-------------------------|-------------------------|------------|

**Water/Gallon (Lbs.) by 0% of Solution:**

|                    |            |            |            |
|--------------------|------------|------------|------------|
| 7.46-7.71 (20-30%) | 7.88 (14%) | 7.85 (15%) | 7.66 (19%) |
|--------------------|------------|------------|------------|

**Baume' @ 60°F by % of Solution:**

|                      |             |             |             |
|----------------------|-------------|-------------|-------------|
| 21.17-26.31 (20-30%) | 18.02 (14%) | 18.55 (15%) | 20.65 (19%) |
|----------------------|-------------|-------------|-------------|

**Section 10 – Stability and Reactivity**

**Reactivity:** Ammonia is lightly reactive, easily undergoing oxidation, substitution and addition reactions.

**Chemical Stability:** Stable

**Possibility of Hazardous Reactions or Polymerization:** Hazardous polymerization will not occur

**Conditions to Avoid:** Heat, open flames, and electrical equipment and fixtures which are not vapor-proof or grounded.

**Incompatible Materials:** Contact with mercury, chlorine, bromine, iodine, calcium, silver oxide, or hypochlorite can form explosive compounds.

**Hazardous Decomposition Products:** Combustion of ammonia will yield small amounts of nitrogen and water.

**Section 11 – Toxicological Information**

**Routes of Exposure:** Inhalation, ingestion, skin and eyes.

**Symptoms related to physical, chemical, and toxicological characteristics:**

Burning of the eyes, conjunctivitis, skin irritation, swelling of the eyelids and lips, dry red mouth and tongue, burning in the throat, and coughing. In more severe cases of exposure, difficulty in breathing, signs and symptoms of lung congestion, and ultimately, death from respiratory failure due to pulmonary edema may occur.

**Acute and Chronic effects:** See section 4

**Numerical Measures of Toxicity:** Toxicity by Ingestions: Oral rat, LD50: 350 mg/kg

**Carcinogenicity Lists:** NTP: No IARC Monograph: No OSHA Regulated: Yes

**Section 12 – Ecological Information**

**Ecotoxicity:** Harmful to aquatic life in very low concentrations. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Do not contaminate any body of water by direct application, cleaning of equipment or disposal.

**Persistence and degradability:** N/A

**Bioaccumulative Potential:** N/A  
**Mobility in Soil:** N/A

**Section 13 - Disposal Considerations**


Consult Federal, State, or Local authorities for proper disposal procedures.

**Section 14 - Transport Information**

**UN#:** N/A  
**UN/DOT Proper Shipping Name:** N/A  
**Transport Hazard Class:** N/A  
**Packing Group:** III  
**Marine Pollutant:** Yes  
**Transport in Bulk:** N/A  
**Special Precautions:** N/A

**Section 15 – Regulatory Information**

**Toxicity by Ingestion:** Oral rat, LD50: 350 mg/kg  
**IDLH Value\*:** 300 ppm \*The Immediately Dangerous to Life and Health Value  
**Reportable Quantity:** 1000 Pounds (454 Kilograms) (134 Gal.)

|  |   |             |         |
|--|---|-------------|---------|
|            | Maximum use level for Ammonium Hydroxide under NSF/ANSI Standard 60 |             |         |
|  | Ammonium Hydroxide 19%  | Maximum use | 26 mg/L |
|  | Ammonium Hydroxide 20%  | Maximum use | 25 mg/L |
|  | Ammonium Hydroxide 29.45%   | Maximum use | 17 mg/L |
|  | Ammonium Hydroxide 26° be   | Maximum use | 17 mg/L |
|  | Ammonium Hydroxide 24.5%*   | Maximum use | 20 mg/L |
| *NSF certification for 24.5% applies to Aqua Ammonia produced at the San Jose facility only. |   |             |         |

**Section 313 Supplier Notification:** This product contains the following toxic chemical(s) subject to the reporting requirements of SARA TITLE III Section 313 of the Emergency Planning and Community Right-To Know Act of 1986 and of 40 CFR 372:

| <u>CAS#</u> | <u>Chemical Name</u>          | <u>%By Weight</u> |
|-------------|-------------------------------|-------------------|
| 1336-21-6   | Ammonium Hydroxide            | 14-19.5%          |
| 7664-41-7   | Ammonia (cone 20% or greater) | 20-30%            |

**Section 16 - Other Information**

**Synonyms/Common Names:** Ammonium Hydroxide; Aqueous Ammonia; Water Ammonia; Aqua Ammonia; Ammonia Solutions

**Chemical Family/Type:** Inorganics Bases

**Sections changed since last revision:** MSDS to First Issue SDS Conversion

**IMPORTANT!** Read this MSDS 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 the information before use or other exposure. This MSDS has been prepared according to the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The MSDS 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, Rooto Corporation 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.