

Safety Data Sheet

1. IDENTIFICATION

Product Identifier: Ammonium Hydroxide, 50% v/v

Product Code(s): NC-2095, NC-0049, A1032

Synonyms: Ammonia Solution; Ammonia Aqueous

Recommended Use: For manufacturing, industrial, and laboratory use only. Use for neutralization of acidic systems, as a catalyst, as a solvent, or as a laboratory reagent.

Uses Advised Against: Not for food, drug, or household use.

Supplier: The Science Company
7625 W Hampden Ave #14 Lakewood CO 80227
Phone: (303) 777-3777 Fax: (303) 777-3331

Emergency Phone Number: (800) 255-3924 (CHEM-TEL)

2. HAZARDS IDENTIFICATION

Hazard Classifications:

| | |
|----------------------------|-------------|
| Acute Toxicity – Oral: | Category 4 |
| Skin Corrosion/Irritation: | Category 1A |
| Eye Damage/Irritation: | Category 1 |

Signal Word: DANGER

Hazard Statements: Harmful if swallowed.
Causes severe skin burns and serious eye damage.

Pictograms:



Precautionary Statements:

Prevention: Wash thoroughly after handling.
Do not eat, drink, or smoke when using this product.
Do not breathe fumes, mists, vapors, or spray.
Wear protective gloves, protective clothing, eye protection, and face protection.

Response: Immediately call a poison center or doctor.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage: Store locked up.

Disposal: Dispose of contents and container in accordance with local, regional, national, and international regulations.

Hazards Not Otherwise Classified: This product is harmful to aquatic life. Avoid release to the environment.
This product will continuously release hazardous ammonia vapor. Ensure proper storage and handling (see Section 7) and personal protection measures (see Section 8).

Toxicity Statement: Not applicable.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

| Component | Common Name / Synonyms | CAS# | Chemical Formula | % by Weight |
|-----------|------------------------|-----------|------------------|-------------|
| Water | Water | 7732-18-5 | H ₂ O | 85.5 – 86.5 |
| Ammonia | Ammonium Hydroxide | 1336-21-6 | NH ₃ | 13.5 – 14.5 |

Trade Secret Statement: Not applicable.

4. FIRST AID MEASURES

First Aid Procedures:

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious, or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician immediately.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, keep head low so that vomit does not enter lungs. Never give anything by mouth to an unconscious person. Rinse mouth with water. Call a physician or poison control center immediately.

Skin Contact: Remove contaminated clothing and shoes. Wash skin with plenty of water for at least 15 minutes. Wash clothing before reuse. Call a physician immediately.

Eye Contact: Check for and remove contact lenses, if present and easy to do. Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

General Advice: Poison information centers in each state can provide additional assistance for scheduled poisons. Ensure that those providing first aid and medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Symptoms and Effects: Irritation, burning, coughing, sneezing, choking sensation, hoarseness, difficulty breathing, shock, headache, nausea, vomiting, diarrhea, collapse. Harmful if swallowed, inhaled, or exposed to the skin or eyes. Causes burns to the eyes, skin, respiratory tract, and gastrointestinal tract. May enter lungs if swallowed or vomited. Liquid and vapors are corrosive. May cause tissue damage. Prolonged or repeated exposure may cause tissue damage, inflammation, and mutagenic effects.

**Immediate Medical Care/
Special Treatment:** Immediate medical attention is required. Call a physician or poison control center immediately. Treat symptomatically.

5. FIREFIGHTING MEASURES

Suitable Extinguishing Media: Water spray, dry powder, alcohol resistant foam, carbon dioxide.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream, as it may scatter and spread fire.

**Hazardous Combustion
Products:** Nitrogen oxides, ammonia.

Specific Hazards: Fire may produce irritating, corrosive, and/or toxic fumes.

**Special Protective Equipment/
Precautions for Firefighters:** As in any fire, wear MSHA/NIOSH approved (or equivalent), self-contained, positive-pressure or pressure-demand breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions and
Protective Equipment:** Ventilate area of leak or spill. Isolate hazard area and keep unnecessary and unprotected personnel away from the area of the leak or spill. Keep upwind. Wear appropriate personal protective equipment (see Section 8). Avoid contact with eyes, skin, and clothing.

Emergency Procedures: Evacuate immediate personnel as needed. In case of chemical emergency, or if unsure how to address an accidental release, consult a professional (see Section 1).

Methods for Containment: Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements, or confined areas. Dike the spilled material, where this is possible. Product should not be released to the environment. Contain and recover liquid when possible.

Methods for Cleanup: Absorb spill with an inert material (e.g. vermiculite, dry sand, earth, cloth, or fleece) and place in a non-combustible container for reclamation or disposal. Do not flush to sewer. Clean contaminated surface thoroughly. Residues from spills can be diluted with water and neutralized with a dilute acidic material. Never return spills in original containers for reuse. Clean up in accordance with all applicable regulations.

7. HANDLING AND STORAGE

Handling: Wear personal protective equipment (see Section 8). Use only in well-ventilated areas. Provide sufficient air exchange and/or exhaust in work rooms. Avoid contact with skin, eyes, and clothing. Do not breathe vapors or spray mist. Do not ingest. When using, do not eat, drink, or smoke. Keep away from incompatible materials (see Section 10). Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Use caution when opening product container, as pressure buildup may occur. Containers of this material may be hazardous when empty, as they retain product residues. Observe all warnings and precautions listed for this product. As with all bases, never add water directly to this product. Instead, add product to water to prevent violent eruption of the solution.

Storage: Store in a dry, ventilated area. Avoid storing in direct sunlight. Store in a segregated and approved area away from heat and incompatible materials (see Section 10). Store in original container. Keep containers tightly closed and upright. Keep away from food, drink, and animal foodstuffs. Keep out of the reach of children. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of this product.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

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|----------|-----------------------|----------------------|--|
| Water: | No information found. | | |
| Ammonia: | OSHA: PEL: | 50 ppm | |
| | | 35 mg/m ³ | |
| | ACGIH: TWA: | 25 ppm | |
| | STEL: | 35 ppm | |

Engineering Controls: Ensure adequate ventilation. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Measures:

Eye/Face Protection: Wear safety glasses with side shields or goggles and a face shield. Maintain approved eye wash station and accessible rinse facilities in work area.

Skin Protection: Wear appropriate chemical resistant clothing (with long sleeves) and appropriate chemical resistant gloves.

Respiratory Protection: An air-purifying, NIOSH-approved respirator with appropriate cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a full-face, positive-pressure, air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are unknown, or if any other circumstances exist where air-purifying respirators may not provide adequate protection.

Specific Requirements for Personal Protective Equipment: Ensure that glove material is compatible with this product. This information is available from glove manufacturers.

9. PHYSICAL AND CHEMICAL PROPERTIES

Unless otherwise indicated, all properties are given at 25 °C and standard pressure.

Appearance: Colorless, transparent liquid.

Odor: Ammoniac, pungent.

Odor Threshold: 5-50 ppm as ammonia.

Formula Weight: 35.05 (as NH₄OH)

pH: > 10

Melting/Freezing Point: No information found.

Boiling Point/Range: No information found.

Decomposition Temperature: No information found.

Flash Point: Not applicable.

Auto-ignition Temperature: Not applicable.

Flammability: Not flammable.

| | |
|---|---------------------------|
| Flammability/Explosive Limits: | No information found. |
| Solubility: | Miscible with water. |
| Vapor Pressure: | No information found. |
| Vapor Density (Relative): | 0.60 as ammonia (Air = 1) |
| Specific Gravity: | 0.932 (Water = 1) |
| Evaporation Rate: | No information found. |
| Viscosity: | No information found. |
| Partition Coefficient (n-octanol/water): | No information found. |

10. STABILITY AND REACTIVITY

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| Reactivity Data: | No information found. |
| Chemical Stability: | Product may release ammonia vapor over time or in elevated thermal conditions. |
| Conditions to Avoid: | Heat, direct sunlight, incompatible materials. |
| Incompatible Materials: | Strong acids, oxidizers, metals, halogens. |
| Hazardous Decomposition Products: | Ammonia, nitrogen oxides. |
| Possibility of Hazardous Reactions: | May react vigorously, violently, or explosively with the incompatible materials listed above. Excessive thermal conditions may yield pressurized ammonia vapor. Combustion of ammonia vapor will yield nitrogen oxides. |
| Hazardous Polymerization: | Will not occur. |

11. TOXICOLOGICAL INFORMATION

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|------------------------------|--|--------|-----------------|----------|---|
| Routes of Exposure: | Inhalation, ingestion, skin contact, eye contact. | | | | |
| Acute Effects: | Harmful if swallowed, inhaled, or exposed to the skin or eyes. Causes burns to the eyes, skin, respiratory tract, and gastrointestinal tract. May enter lungs if swallowed or vomited. Liquid and vapors are corrosive. May cause tissue damage. | | | | |
| Chronic Effects: | Prolonged or repeated exposure may cause tissue damage, inflammation, and mutagenic effects. | | | | |
| Toxicological Data: | <table> <tr> <td>Water:</td> <td>Not applicable.</td> </tr> <tr> <td>Ammonia:</td> <td>LD₅₀ Oral, Rat: 350 mg/kg Corrosive to skin and eyes based on animal data. May be mutagenic based on animal data.</td> </tr> </table> | Water: | Not applicable. | Ammonia: | LD ₅₀ Oral, Rat: 350 mg/kg Corrosive to skin and eyes based on animal data. May be mutagenic based on animal data. |
| Water: | Not applicable. | | | | |
| Ammonia: | LD ₅₀ Oral, Rat: 350 mg/kg Corrosive to skin and eyes based on animal data. May be mutagenic based on animal data. | | | | |
| Symptoms of Exposure: | Irritation, burning, coughing, sneezing, choking sensation, hoarseness, difficulty breathing, shock, headache, nausea, vomiting, diarrhea, collapse. | | | | |
| Carcinogenic Effects: | This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. | | | | |

12. ECOLOGICAL INFORMATION

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|---------------------------------------|---|--|
| Ecotoxicological Data: | Water: | Not applicable. |
| | Ammonia: | LC ₅₀ , Water Flea (<i>Daphnia magna</i>): 0.66 mg/L 48 h |
| Persistence and Degradability: | Expected to be readily biodegradable. | |
| Environmental Effects: | Very toxic to aquatic life. May adversely affect pH of aquatic ecosystems. Avoid exposure to the environment. | |

13. DISPOSAL INFORMATION

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| Disposal Instructions: | All wastes must be handled in accordance with local, state, and federal regulations. Minimize exposure to product waste (see Section 8). Do not dispose unused waste down drains or into sewers. |
| Contaminated Packaging: | Because emptied containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities. |
| Waste Codes: | D002: Waste Corrosive Material (pH ≤ 2 or pH ≥ 12.5 or corrosive to steel) |

14. TRANSPORT INFORMATION

DOT:

| | |
|------------------------------|-------------------|
| UN Number: | UN2672 |
| Proper Shipping Name: | Ammonia solutions |
| Hazard Class: | 8 |
| Packing Group: | III |
| ERG Number: | 154 |

Environmental Hazard Regulations: No information found.

Other Transport Precautions: No information found.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

OSHA: This product is considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Inventory: All components of this product are on the U.S. TSCA Inventory.

U.S. EPCRA (SARA Title III):

Section 302: Ammonia

Sections 311/312:

| Hazard Category | List (Yes/No) |
|----------------------------------|---------------|
| Section 311 – Hazardous Chemical | Yes |
| Immediate Hazard | Yes |
| Delayed Hazard | No |
| Fire Hazard | No |
| Pressure Hazard | No |
| Reactivity Hazard | No |

Section 313: Ammonium Hydroxide**CERCLA Reportable Quantities:** Ammonium Hydroxide: 1000 lb**International Inventories:**

| Country or Region | Inventory Name | On Inventory (Yes/No)* |
|-------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | N/A |
| Canada | Domestic Substances List (DSL) | N/A |
| Canada | Non-Domestic Substances List (NDSL) | N/A |
| China | Inventory of Existing Chemical Substances in China (IECSC) | N/A |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | N/A |
| Europe | European List of Notified Chemical Substances (ELINCS) | N/A |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | N/A |
| Korea | Existing Chemicals List (ECL) | N/A |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | N/A |

*A "Yes" indicates that the listed component(s) of this product comply with the inventory requirements administered by the governing country(s).

16. OTHER INFORMATION**Disclaimer:**

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Reason for Revision:

Update of Section 9 over 06/11/2015 version.