

Safety Data Sheet

Ammonium Hydroxide, SEMI

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ammonium Hydroxide, SEMI

Synonyms/Generic Names: Aqueous ammonia, Ammonia solution

Product Number: 0487

Product Use: Industrial, Manufacturing or Laboratory use

Manufacturer: Columbus Chemical Industries, Inc.
N4335 Temkin Rd.
Columbus, WI. 53925

For More Information: 920-623-2140 (Monday-Friday 8:00-4:30)
www.columbuschemical.com

In Case of Emergency Call: CHEMTREC - 800-424-9300 or 703-527-3887 (24 Hours/Day, 7 Days/Week)

2. HAZARDS IDENTIFICATION

Hazard Not Otherwise Classified (HNOC): Lachrymator

Signal Word: Danger

Pictograms:



GHS Classification:

| | |
|------------------------|-------------|
| Acute toxicity, Oral | Category 4 |
| Skin corrosion | Category 1A |
| Serious eye damage | Category 1 |
| Acute aquatic toxicity | Category 1 |

GHS Label Elements, including precautionary statements:

Hazard Statements:

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| H302 | Harmful if swallowed. |
| H314 | Causes severe skin burns and eye damage. |
| H400 | Very toxic to aquatic life. |

Precautionary Statements:

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| P260 | Do not breathe dust/fume/gas/mist/vapors/spray. |
| P264 | Wash hands thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |

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| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| 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 person 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. Continue rinsing. |
| P310 | Immediately call a POISON CENTER/doctor/physician. |
| P363 | Wash contaminated clothing before reuse. |
| P391 | Collect spillage. |
| P405 | Store locked up. |
| P501 | Dispose of contents/container in accordance with local regulations. |

Potential Health Effects

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|-------------------|---|
| Eyes | Causes eye burns. |
| Inhalation | May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. |
| Skin | May be harmful if absorbed through skin. Causes skin burns. |
| Ingestion | Toxic if swallowed. |

NFPA Ratings

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|------------------------|---------------|
| Health | 3 |
| Flammability | 0 |
| Reactivity | 0 |
| Specific hazard | Not Available |

HMIS Ratings

| | |
|-------------------|---|
| Health | 3 |
| Fire | 0 |
| Reactivity | 0 |

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Component | Weight % | CAS # | EINECS# / ELINCS# | Formula | Molecular Weight |
|--------------------|----------|-----------|-------------------|-------------------|------------------|
| Ammonium Hydroxide | 28-30 | 1336-21-6 | 215-647-6 | H ₅ NO | 35.05 g/mol |
| Water | Balance | 7732-18-5 | 231-791-2 | H ₂ O | 18.00 g/mol |

4. FIRST-AID MEASURES

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| Eyes | Rinse with plenty of water for at least 15 minutes and seek medical attention immediately. |
| Inhalation | Move casualty to fresh air and keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention immediately. |
| Skin | Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and wash using soap. Get medical attention immediately. |
| Ingestion | Do Not Induce Vomiting! Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention immediately. |

5. FIRE-FIGHTING MEASURES

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| Suitable (and unsuitable) extinguishing media | Product is not flammable. Use appropriate media for adjacent fire. Cool unopened containers with water. |
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| Special protective equipment and precautions for firefighters | Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots. |
| Specific hazards arising from the chemical | Emits toxic fumes (nitrogen oxides, ammonia) under fire conditions. (See also Stability and Reactivity section). |

6. ACCIDENTAL RELEASE MEASURES

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| Personal precautions, protective equipment and emergency procedures | See section 8 for recommendations on the use of personal protective equipment. |
| Environmental precautions | Prevent spillage from entering drains. Any release to the environment may be subject to federal/national or local reporting requirements. |
| Methods and materials for containment and cleaning up | Absorb spill with noncombustible absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Dispose of all waste and cleanup materials in accordance with regulations. |

7. HANDLING AND STORAGE

Precautions for safe handling

See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use. Avoid formation of aerosols.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area. Keep away from incompatible materials (see section 10 for incompatibilities).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure controls:

| Component | Exposure Limits | Basis | Entity |
|--------------------|--------------------------------|-------|--------|
| Ammonium Hydroxide | 25 ppm | TWA | ACGIH |
| | 35 ppm | STEL | ACGIH |
| | 25 ppm 18 mg/m ³ | TWA | NIOSH |
| | 35 ppm 27 mg/m ³ | STEL | NIOSH |

TWA: Time Weighted Average over 8 hours of work.

TLV: Threshold Limit Value over 8 hours of work.

REL: Recommended Exposure Limit

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit during x minutes.

IDLH: Immediately Dangerous to Life or Health

WEEL: Workplace Environmental Exposure Levels

CEIL: Ceiling

Personal Protection

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| Eyes | Wear chemical safety glasses or goggles. |
| Inhalation | Provide local exhaust, preferably mechanical. If exposure levels are excessive, use an approved respirator. |
| Skin | Wear nitrile or rubber gloves, apron or lab coat. |
| Other | Not Available |

Other Recommendations

Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

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| Appearance (physical state, color, etc.) | Colorless, clear liquid. |
| Odor | Intense, pungent, suffocating odor of ammonia. |
| Odor threshold | 5 - 50 ppm as ammonia |
| pH | Not Available |
| Melting point/freezing point | -69.2°C (-92.6°F) |
| Initial boiling point and boiling range | 38-100°C (100-212°F) |
| Flash point | Not Flammable |
| Evaporation rate | Not Available |
| Flammability (solid, gas) | Not Flammable |
| Upper/lower flammability or explosive limit | Not Explosive |
| Vapor pressure | 287.9 kPa (@ 20°C) |
| Vapor density | Not Available |
| Density | 0.898 (Water = 1) |
| Solubility (ies) | Not Available |
| Partition coefficient: n-octanol/water | Not Available |
| Auto-ignition temperature | 651°C (1,204°F) |
| Decomposition temperature | Not Available |

10. STABILITY AND REACTIVITY

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| Chemical Stability | Stable |
| Possibility of Hazardous Reactions | Will not occur. |
| Conditions to Avoid | Not Available |
| Incompatible Materials | Zinc, iron, copper. |
| Hazardous Decomposition Products | Nitrogen oxides. |

11. TOXICOLOGICAL INFORMATION

Acute Toxicity*Ammonium Hydroxide*

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|--------------------|-----------------------------|
| Skin | Not Available |
| Eyes | Not Available |
| Respiratory | Not Available |
| Ingestion | LD50 Oral - rat - 350 mg/kg |

Carcinogenicity

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| IARC | No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. |
| ACGIH | No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. |
| NTP | No components of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. |
| OSHA | No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA. |

Signs & Symptoms of Exposure

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| Skin | Causes severe irritation. Causes skin burns. May cause deep, penetrating ulcers of the skin. Contact with skin may cause staining, inflammation, and thickening of the skin. |
| Eyes | Severe burns and possible irreversible eye damage including corneal injury and cataracts. |
| Respiratory | Coughing burns, breathing difficulty. May cause acute pulmonary edema, pneumoconiosis, fibrosis, and even coma. It is a respiratory stimulant when inhaled at lower concentrations. |
| Ingestion | Burns, swelling of the lips, mouth, and larynx, throat constriction, nausea, vomiting, convulsions, shock, and may cause severe and permanent damage to gastrointestinal tract. |

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| Chronic Toxicity | Not Available |
| Teratogenicity | Not Available |
| Mutagenicity | Mutagenic for bacteria and/or yeast. |
| Embryotoxicity | Not Available |
| Target Organ(s) | Not Available |
| Reproductive Toxicity | Not Available |
| Respiratory/Skin Sensitization | Not Available |

12. ECOLOGICAL INFORMATION**Ecotoxicity***Ammonium Hydroxide*

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|-----------------------------|--|
| Aquatic Vertebrate | mortality NOEC - Oncorhynchus tshawytscha - 3.5 mg/l - 3.0 d |
| Aquatic Invertebrate | LC50 - Daphnia magna (Water flea) - 32 mg/l - 50 h |
| Terrestrial | Not Available |

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|--------------------------------------|-----------------------------|
| Persistence and Degradability | Not Available |
| Bioaccumulative Potential | Not Available |
| Mobility in Soil | Not Available |
| PBT and vPvB Assessment | Not Available |
| Other Adverse Effects | Very toxic to aquatic life. |

13. DISPOSAL CONSIDERATIONS

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| Waste Product or Residues | Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product or residue. |
| Product Containers | Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product container. |

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

14. TRANSPORTATION INFORMATION

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| US DOT | UN2672, Ammonia solution, 8, pg III |
| TDG | UN2672, AMMONIA SOLUTION, 8, PG III |
| IMDG | UN2672, AMMONIA SOLUTION, 8, PG III |
| Marine Pollutant | Yes |

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|-----------|-------------------------------------|
| IATA/ICAO | UN2672, Ammonia solution, 8, pg III |
|-----------|-------------------------------------|

15. REGULATORY INFORMATION

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| TSCA Inventory Status | All ingredients are listed on the TSCA Active inventory. |
| DSL / NDSL | All ingredients are listed on the DSL inventory. |
| California Proposition 65 | Not Listed |
| Rhode Island: Hazardous Substance List | Not Listed |
| Massachusetts: Toxic or Hazardous Substance List, Right to Know | Not Listed |
| Pennsylvania: Hazardous Substance List | Listed: Ammonium Hydroxide |
| New Jersey: Right to Know Hazardous Substance List | Listed: Ammonium Hydroxide |
| SARA 302 | Not Listed |
| SARA 304 | Not Listed |
| SARA 311 | Acute Health Hazard. |
| SARA 312 | Acute Health Hazard. |
| SARA 313 | Listed: Ammonium Hydroxide |
| WHMIS Canada | Class D1B: Poisonous and infectious material – Immediate and serious effects – Toxic. Class E: Corrosive material. |

16. OTHER INFORMATION

| Revision | Date |
|------------|------------|
| Original | 11/27/2012 |
| Revision 1 | 07/26/2013 |
| Revision 2 | 04/18/2016 |
| Revision 3 | 04/11/2022 |

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