

Material Safety Data Sheet

Ammonium hydroxide water solution, >14N NH₄OH (>25% as ammonia, NH₃)

ACC# 00211

Section 1 - Chemical Product and Company Identification

MSDS Name: Ammonium hydroxide water solution, >14N NH₄OH (>25% as ammonia, NH₃)

Catalog Numbers: AC205840000, AC205840010, AC205840025, AC205840050, AC255210000, AC255210025, AC255210051, AC423300000, AC423300025, AC423300250, AC423305000, S70665, S70665MF, S75029, S93119, S93120, S93120A, A667-212, A669-212, A669-385LB, A669-500, A669-500LC, A669-612GAL, A669C-212, A669C-212LC, A669J-500, A669P-500, A669S-212, A669S-212E, A669S-212LC, A669S-500, A669S212EA, FLA669S-212EA, SCH1143, 58018A

Synonyms: Ammonium hydrate; Ammonia solution; Ammonia water; Aqueous ammonia; Aqua ammonia.

Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

| CAS# | Chemical Name | Percent | EINECS/ELINCS |
|-----------|---------------|---------|---------------|
| 7664-41-7 | Ammonia | >25-30 | 231-635-3 |
| 7732-18-5 | Water | Balance | 231-791-2 |

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless liquid.

Danger! Causes eye and skin burns. Causes digestive and respiratory tract burns. Harmful if inhaled or swallowed.

Target Organs: Eyes, skin, mucous membranes.

Potential Health Effects

Eye: Contact with liquid or vapor causes severe burns and possible irreversible eye damage. Lachrymator (substance which increases the flow of tears).

Skin: Causes severe skin irritation. Causes skin burns. May cause deep, penetrating ulcers of the skin. Contact with the skin may cause staining, inflammation, and thickening of the skin.

Ingestion: Harmful if swallowed. May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. Causes throat constriction, vomiting, convulsions, and shock.

Inhalation: Effects may be delayed. Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma.

Chronic: Prolonged inhalation may cause respiratory tract inflammation and lung damage. Prolonged or repeated exposure may cause corneal damage and the development of cataracts and glaucoma.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

Ingestion: If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: After inhalation exposure, observe for 24 to 72 hours as pulmonary edema may be delayed.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Ammonium hydroxide itself is non-combustible. However concentrated ammonia solutions may give off ammonia vapours. Ammonia gas is generally not considered a serious fire or explosion hazard because ammonia/air mixtures are difficult to ignite. A relatively high concentration of ammonia gas must be present in order for ignition to occur. However, a large and intense energy source may cause ignition and/or explosion in a confined space.

Extinguishing Media: Use extinguishing media most appropriate for the surrounding fire.

Flash Point: Not available.

Autoignition Temperature: 651 deg C (1,203.80 deg F)
Explosion Limits, Lower:15%
Upper: 28%
NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Neutralize spill with a weak acid such as vinegar or acetic acid. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation. Approach spill from upwind.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Discard contaminated shoes. Do not breathe vapor. Use only with adequate ventilation.

Storage: Do not store in direct sunlight. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosives area. Isolate from oxidizing materials and acids. Walls, floors, shelving, fittings, lighting and ventilation systems in storage area should be made from carbon steel or stainless steel which do not react with ammonium hydroxide.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Exposure Limits

| Chemical Name | ACGIH | NIOSH | OSHA - Final PELs |
|--------------------|-------------------------|---|--------------------------------------|
| Ammonia | 25 ppm TWA; 35 ppm STEL | 25 ppm TWA; 18 mg/m ³ TWA 300 ppm IDLH | 50 ppm TWA; 35 mg/m ³ TWA |
| Ammonium hydroxide | none listed | none listed | none listed |
| Water | none listed | none listed | none listed |

OSHA Vacated PELs: Ammonia: No OSHA Vacated PELs are listed for this chemical. Ammonium hydroxide: No OSHA Vacated PELs are listed for this chemical. Water: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear chemical splash goggles and face shield.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: colorless

Odor: strong odor - ammonia-like

pH: 13.6

Vapor Pressure: 557 mm Hg @ 21 deg C

Vapor Density: 0.59 (air=1)

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 27 deg C

Freezing/Melting Point: -69 deg C

Decomposition Temperature: Not available.

Solubility: Soluble.

Specific Gravity/Density: 0.89

Molecular Formula: NH₄OH

Molecular Weight: 35.04

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Ammonium hydroxide is actually a solution of ammonia in water. Therefore the flammable properties of ammonia apply.

Conditions to Avoid: High temperatures, confined spaces, Ammonia solutions are corrosive to copper, zinc, aluminum and their alloys..

Incompatibilities with Other Materials: Strong oxidizing agents, acids, acrolein, halogens, mercury, hypochlorite, silver nitrate, acrylic acid, dimethyl sulfate, silver oxide.

Hazardous Decomposition Products: Nitrogen oxides (NO_x) and ammonia (NH₃).

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 7664-41-7: BQ0875000

CAS# 1336-21-6: BQ9625000

CAS# 7732-18-5: ZC0110000

LD50/LC50:

CAS# 7664-41-7:

Inhalation, mouse: LC50 = 4230 ppm/1H;
 Inhalation, mouse: LC50 = 4600 mg/m³/2H;
 Inhalation, rabbit: LC50 = 7 gm/m³/1H;
 Inhalation, rat: LC50 = 2000 ppm/4H;
 Inhalation, rat: LC50 = 18600 mg/m³/5M;
 Inhalation, rat: LC50 = 7040 mg/m³/30M;
 Skin, rat: LD50 = 112000 mg/m³/15M;
 Skin, rat: LD50 = 71900 mg/m³/30M;
 Skin, rat: LD50 = 4840 mg/m³/60M;

CAS# 1336-21-6:

Draize test, rabbit, eye: 250 ug Severe;
 Draize test, rabbit, eye: 44 ug Severe;
 Oral, rat: LD50 = 350 mg/kg;

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

Carcinogenicity:

CAS# 7664-41-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 1336-21-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found**Teratogenicity:** No information found**Reproductive Effects:** No information found**Mutagenicity:** No information found**Neurotoxicity:** No information found**Other Studies:**

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 0.008 mg/L; 24 Hr.; Unspecified

Fish: Fathead Minnow: LC50 = 8.2 mg/L; 96 Hr.; Unspecified

Fish: Bluegill/Sunfish: LC50 = 0.024-0.093 mg/L; 48 Hr.; Unspecified

Water flea Daphnia: EC50 = 0.66 mg/L; 48 Hr.; 22 degrees C

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.**RCRA U-Series:** None listed.

Section 14 - Transport Information

| | US DOT | Canada TDG |
|-----------------------|-------------------|------------------|
| Shipping Name: | AMMONIA SOLUTIONS | AMMONIA SOLUTION |
| Hazard Class: | 8 | 8 |
| UN Number: | UN2672 | UN2672 |
| Packing Group: | III | III |

Section 15 - Regulatory Information

US FEDERAL**TSCA**

CAS# 7664-41-7 is listed on the TSCA inventory.

CAS# 1336-21-6 is listed on the TSCA inventory.

CAS# 7732-18-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 7664-41-7: 100 lb final RQ; 45.4 kg final RQ CAS# 1336-21-6: 1000 lb final RQ; 454 kg final RQ

SARA Section 302 Extremely Hazardous Substances

CAS# 7664-41-7: 500 lb TPQ

SARA Codes

CAS # 1336-21-6: immediate, delayed.

Section 313

This material contains Ammonia (CAS# 7664-41-7, >25-30%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

CAS# 7664-41-7 is listed as a Hazardous Substance under the CWA. CAS# 1336-21-6 is listed as a Hazardous Substance under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

CAS# 7664-41-7 is considered highly hazardous by OSHA.

STATE

CAS# 7664-41-7 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 1336-21-6 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Massachusetts.

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

C N

Risk Phrases:

R 34 Causes burns.

R 50 Very toxic to aquatic organisms.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

WGK (Water Danger/Protection)

CAS# 7664-41-7: 2

CAS# 1336-21-6: 2

CAS# 7732-18-5: No information available.

Canada - DSL/NDSL

CAS# 7664-41-7 is listed on Canada's DSL List.

CAS# 1336-21-6 is listed on Canada's DSL List.

CAS# 7732-18-5 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D1B, E.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 7664-41-7 is listed on the Canadian Ingredient Disclosure List.

CAS# 1336-21-6 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/22/1999

Revision #13 Date: 3/22/2006

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.