



Ammonium Hydroxide (29%)

OSHA Hazard Communication Standard
29 CFR 1910.1200. Prepared to GHS Rev 3.

Initial version: June 17, 2014

Revision date: June 17, 2019

Safety Data Sheet

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SECTION 1 - IDENTIFICATION

SDS REVISION #: 002

PRODUCT IDENTIFIER USED ON THE LABEL: Ammonium Hydroxide (29%)

OTHER MEANS OF IDENTIFICATION: Aqueous ammonia; Aqua ammonia; Ammonium hydroxide solution; Ammonium hydroxide – 29%

CHEMICAL FORMULA: NH_4OH

RECOMMENDED USE OF THE CHEMICAL AND RESTRICTIONS ON USE:

RELEVANT USES: Cleaning solution, pH adjustment

RESTRICTIONS OF USE: Uses other than described above.

NAME, ADDRESS AND TELEPHONE NUMBER OF THE CHEMICAL MANUFACTURER, IMPORTER, OR OTHER RESPONSIBLE PARTY:

MANUFACTURED BY: MGC Pure Chemicals America, Inc.
6560 South Mountain Road
Mesa, AZ 85212-9716

PHONE NUMBERS: Inquiries - (480) 987-9100

EMERGENCY PHONE NUMBER: Transportation Emergencies
U.S. (800) 424-9300 (Chemtrec)
Maritime (703) 527-3887 (Chemtrec)

SECTION 2 - HAZARD(S) IDENTIFICATION

CLASSIFICATION OF THE CHEMICAL IN ACCORDANCE WITH PARAGRAPH (d) OF §1910.1200;

GHS CLASSIFICATION:

Skin corrosive (Category 1B)
Serious eye damage (Category 1)
Specific target organ toxicity, single exposure (Category 3), Respiratory tract irritation
Acute toxicity, oral (Category 4)



SIGNAL WORD:
Danger!



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SECTION 2 - HAZARD(S) IDENTIFICATION (continued)

HAZARD STATEMENTS:

Causes severe skin burns and eye damage. May cause respiratory irritation. Harmful if swallowed.

PRECAUTIONARY STATEMENTS:

Prevention

Do not breathe vapors, mist or spray. Wash exposed areas thoroughly after handling. Wear protective gloves, protective clothing and eye and face protection. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area.

Response

If swallowed: Call a physician if you feel unwell. Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a doctor if breathing has stopped. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Specific treatment (see sections 4 to 8 on this SDS and any additional information on this label)

Storage

Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal

Dispose of container in accordance with all applicable regulations. This product, if disposed of, is considered a hazardous waste

HAZARDS NOT OTHERWISE CLASSIFIED: None

PERCENTAGE OF INGREDIENT(S) OF UNKNOWN ACUTE TOXICITY:

29% of the mixture consists of ingredients of unknown acute toxicity (dermal / inhalation).

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| <u>Component</u> | <u>%</u> | <u>CAS No.</u> |
|--------------------|----------|----------------|
| Ammonium hydroxide | 28-30 | 1336-21-6 |
| Water | 70-72 | 7732-18-5 |



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SECTION 4 - FIRST-AID MEASURES

DESCRIPTION OF NECESSARY MEASURES, SUBDIVIDED ACCORDING TO THE DIFFERENT ROUTES OF EXPOSURE, I.E., INHALATION, SKIN AND EYE CONTACT, AND INGESTION:

IF INHALED:

Immediately move to fresh air. If breathing has stopped, give artificial respiration. Get immediate medical attention.

IN CASE OF SKIN CONTACT:

Immediately flush exposed area with water for at least 15 minutes, and then wash with soap and water. If reddening persists, or if open sores or blisters develop, see a physician. Remove contaminated clothing and launder before re-use.

IN CASE OF EYE CONTACT:

Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids occasionally. Remove contact lenses, if present and easy to do. Get immediate medical attention. Do not use chemical antidote.

IF SWALLOWED:

Immediately rinse mouth with water. If conscious, immediately give two large glasses of water. Never give anything by mouth to an unconscious person. Do **not** induce vomiting; vomiting may further damage the mouth and throat. Call a physician.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED:

Contact with living tissue (skin, eyes, nose, etc.) causes severe, permanent damage. Excessive inhalation of high concentrations of vapors may cause pulmonary edema

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

Perform endoscopy in all cases of suspected ingestion. In cases of severe esophageal corrosion, the use of therapeutic doses of steroids should be considered. General supportive measures with continual monitoring of gas exchange, acid-base balance, electrolytes and fluid intake are also required.

SECTION 5 - FIRE-FIGHTING MEASURES

FLAMMABLE PROPERTIES:

This product contains a large quantity of water, and would not, under normal circumstances, burn. Heating above 160° F (71° C) may produce sufficient vapors to ignite if presented with a source of ignition.





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SECTION 5 - FIRE-FIGHTING MEASURES (continued)

SUITABLE (AND UNSUITABLE) EXTINGUISHING MEDIA:

SUITABLE EXTINGUISHING MEDIA:

Use water fog, foam, dry chemical or carbon dioxide as appropriate for other materials involved in the fire.

UNSUITABLE EXTINGUISHING MEDIA:

Do not use water jet as an extinguisher, as this will spread the fire.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL (E.G., NATURE OF ANY HAZARDOUS COMBUSTION PRODUCTS):

Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.

Hazardous combustion products may include the following substances:

Oxides of nitrogen.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE-FIGHTERS:

Keep personnel removed from and upwind. Wear full protective clothing and self-contained breathing apparatus with full face-piece. Cool containers with water.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:

Wear respiratory protection. Do not breathe vapors, mist or gas. Eliminate all ignition sources.

Persons not wearing protective equipment should be excluded from the area of the spill until cleanup has been completed.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:

Dike area of spill to prevent spreading and pump liquid to salvage tank. Absorb remaining liquid on vermiculite, floor absorbent or other absorbent material and shovel into containers.

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. This product is toxic to fish; prevent run-off to sewers, streams, lakes and other bodies of water.

EPA has designated ammonium hydroxide as a hazardous substance with an RQ of 1000 pounds. Reporting spills of this material to the National Response Center at (800) 424-8802 may be required.



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SECTION 7 - HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING:

Avoid contact with skin, eyes and clothing. Avoid inhalation of vapors. Wash thoroughly after handling. Ammonia gas accumulates, under pressure, in the headspace of the storage container. Open containers only in a well-ventilated area. Wear protective equipment. Do not use copper, brass or zinc-plated materials for handling this product.

PRECAUTIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBLES:

Keep in closed or covered containers when not in use. Store in cool dry place with adequate ventilation. Storage at elevated temperatures (above 77° F) can cause pressure to build up in the container. Cool before opening container. Do not store near heat or open flames.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

OSHA PERMISSIBLE EXPOSURE LIMIT (PEL), AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH) THRESHOLD LIMIT VALUE (TLV), AND ANY OTHER EXPOSURE LIMIT USED OR RECOMMENDED BY THE CHEMICAL MANUFACTURER, IMPORTER, OR EMPLOYER PREPARING THE SAFETY DATA SHEET, WHERE AVAILABLE.

EXPOSURE GUIDELINES:

Ammonium hydroxide
(CAS# 1336-21-6)

OSHA PEL - 50 ppm (ammonia)
ACGIH TLV - 25 ppm (ammonia)
ACGIH STEL - 35 ppm (ammonia)
NIOSH ceiling - 50 ppm (ammonia)

APPROPRIATE ENGINEERING CONTROLS:

Provide sufficient ventilation to maintain exposure below established exposure limits.

INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT:

EYE / FACE PROTECTION:

Chemical splash goggles in compliance with OSHA regulations and full face-shield are advised.



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SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION (continued)

SKIN AND HAND PROTECTION:

Wear protective gloves such as Neoprene or BUNA-N. Impervious clothing and boots are recommended. Leather shoes and boots cannot be decontaminated if soaked with liquid material.

RESPIRATORY PROTECTION:

A NIOSH/MSHA approved self-contained breathing apparatus or respirator with an ammonia gas cartridge is recommended, especially if product is heated or where there is insufficient ventilation to maintain exposure below established exposure limits.

GENERAL HYGIENE CONSIDERATIONS:

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Wash hands after use.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.):

Physical state: Liquid @ 68° F (20° C)

Color: Clear, colorless

Odor: Ammonia

Odor Threshold: 25-50 ppm

pH: >12.5 (as is)

Melting point/freezing point:

Melting point: No data available:

Freezing Point: -106° F (-77° C)

Initial Boiling Point: ~82° F (28° C)

and boiling range

Flash Point: >181° F (83° C) Closed Cup

Evaporation Rate: Unavailable

Flammability (solid, gas): Not applicable

Upper/lower flammability or explosive limits:

Upper Explosion Limit: 28% (ammonia)

Lower Explosion Limit: 15% (component)

Vapor Pressure (mm Hg): 570 @ 68° F (20° C)

Vapor Density (Air = 1): 0.60

Relative density (H₂O=1): ~0.898 @ 68° F (20° C)

Solubility(ies) in Water: 100%

Partition coefficient Log Pow is -1.3

(n-octanol/water):

Autoignition Temperature: 1204° F (651° C)

Decomposition temperature: No data available

Viscosity: No data available

Weight per Gallon: ~7.5

Volatile %: >99%

VOC %: nil

SECTION 10 - STABILITY AND REACTIVITY

REACTIVITY:

Reacts with strong acids and water-reactive materials

CHEMICAL STABILITY:

High temperatures cause large quantities of ammonia gas to be released. In extreme cases, this could cause the container to rupture.



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SECTION 10 - STABILITY AND REACTIVITY (continued)

POSSIBILITY OF HAZARDOUS REACTIONS:

Reacts with water-reactive materials, strong acids and strong oxidizers

CONDITIONS TO AVOID:

Avoid exposure to excessive heat

INCOMPATIBLE MATERIALS:

Avoid contact with strong mineral acids. Product corrodes copper, brass, aluminum alloys and zinc-plated materials.

HAZARDOUS DECOMPOSITION PRODUCTS:

Ammonia gas

SECTION 11 - TOXICOLOGICAL INFORMATION

INFORMATION ON LIKELY ROUTES OF EXPOSURE:

Skin and eye contact and inhalation

SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL, AND TOXICOLOGICAL CHARACTERISTICS:

Eyes: Tearing and redness

Skin: Redness and drying

Inhalation: Coughing nausea, headache, respiratory irritation

DELAYED AND IMMEDIATE EFFECTS AND CHRONIC EFFECTS FROM SHORT OR LONG-TERM EXPOSURE:

Immediate: Eye contact causes severe irritation which may result in permanent damage. Skin contact causes severe irritation and burns. Inhalation causes headache, nausea, irritation to the respiratory tract, esophageal perforation and lung damage

Delayed: Lung damage and shock

Chronic: Inhalation may cause coughing, irritation of the respiratory tract, possible inflammation of the respiratory tract, respiratory difficulties and adverse effects to the nasal septum.

NUMERICAL MEASURES OF TOXICITY (SUCH AS ACUTE TOXICITY ESTIMATES):

Toxicological information is based on literature information for ammonium hydroxide.



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SECTION 11 - TOXICOLOGICAL INFORMATION (continued)

Eye irritation

eye (rabbit); 750 µg - severe
eye (rabbit); 44 µg - severe
eye (rabbit) rinsed; 100 mg - severe

Inhalation

Human LC_{Lo} - 5000 ppm. Toxic effects not yet reviewed.
Human TC_{Lo} - 408 ppm. Lungs, thorax or respiration (fibrosis; focal; pulmonary edema)

Intravenous

Rabbit LD_{Lo} - 10 mg/kg. Toxic effects not yet reviewed.

Oral

Cat LD_{Lo} - 750 mg/kg. Toxic effects not yet reviewed.
Human LD_{Lo} - 43 mg/kg. Toxic effects not yet reviewed.
Rat LD₅₀ - 350 mg/kg. Toxic effects not yet reviewed.

Mutagenicity

E. coli; 10 mg/disc.

CARCINOGENICITY

This product is not reported to have any carcinogenic effects. This product (or components) is not listed in IARC Monographs, the current NTP Report on Carcinogens or the current ACGIH TLVs as a carcinogen or potential carcinogen. OSHA does not regulate it as a carcinogen.

SECTION 12 - ECOLOGICAL INFORMATION

ECOTOXICITY (AQUATIC AND TERRESTRIAL, WHERE AVAILABLE):

The following is based on various literature sources for 50%+ ammonium hydroxide solutions:

- 96-hr LC₅₀ for *Salmo gairdneri* (*Oncorhynchus mykiss*) - 0.16 - 1.1 mg/L
- 96-hr LC₅₀ for (*Pimephales promelas*) - 1-10 mg/L
- 96-hr LC₅₀ for (*Pimephales promelas*) - 0.75-3.4 mg/L
- 48-hr LC₅₀ for *Salmo gairdneri* (*Oncorhynchus mykiss*) - 47 ppm (cool water)
- 48-hr LC₅₀ for *Salmo gairdneri* (*Oncorhynchus mykiss*) - 34 ppm (warm water)

PERSISTENCE AND DEGRADABILITY

Readily biodegradable in water



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SECTION 12 - ECOLOGICAL INFORMATION (continued)

BIOACCUMULATIVE POTENTIAL:

Not expected to be bioaccumulative. Log P_{ow} is -1.3

MOBILITY IN SOIL:

Will likely be mobile in the environment due to its water solubility

OTHER ADVERSE EFFECTS (SUCH AS HAZARDOUS TO THE OZONE LAYER):

None known

SECTION 13 - DISPOSAL CONSIDERATIONS

DESCRIPTION OF WASTE RESIDUES AND INFORMATION ON THEIR SAFE HANDLING AND METHODS OF DISPOSAL, INCLUDING THE DISPOSAL OF ANY CONTAMINATED PACKAGING.

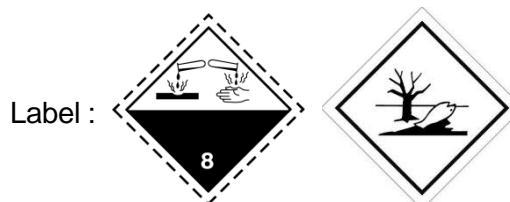
Incineration is the recommended disposal method for all chemical wastes such as this product, although this material may be sent to a hazardous waste treatment facility for neutralization and disposal. Material collected on absorbent material may be deposited in a landfill in accordance with all applicable local, state and federal regulations.

This product, if disposed of, may be considered a corrosive waste (D002) under current RCRA regulations, due to the pH of the material.

SECTION 14 - TRANSPORT INFORMATION

U.S. DOT, TDG (CANADIAN), IMO (WATER) AND ICAO (AIR) TRANSPORT INFORMATION:

UN Number: UN 2672
Shipping Name: Ammonia solution*
Class: 8, (corrosive)
Packing Group: III
RQ (product): 1000 pounds



**relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but not more than 35 percent ammonia*

SECTION 15 - REGULATORY INFORMATION



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TSCA INFORMATION:

All components in this product are in compliance with TSCA Inventory requirements or exempt from reporting.

CEPA:

All components in this product are included on the Canadian Domestic Substances List (DSL).

EINECS:

All components in this product are on the European Inventory of Existing Chemical Substances (215-647-6).

SARA:

CERCLA/SARA 302: Not applicable

CERCLA/SARA 311/312: Acute

CERCLA/SARA 313: Listed. Unlike other ammonium salts, ammonium hydroxide is specifically identified as being a reportable EPCRA section 313 chemical. This is because the chemical ammonium hydroxide (NH₄OH) is a misnomer. It is a common name used to describe a solution of ammonia in water (i.e., aqueous ammonia), typically a concentrated solution of 28 to 30 percent ammonia. EPA has consistently responded to questions regarding the reportability of these purported ammonium hydroxide solutions under the EPCRA section 313 ammonia listing by stating that these are 28 to 30 percent solutions of ammonia in water and that the solutions are reportable under the EPCRA section 313 ammonia listing.

SECTION 16 - OTHER INFORMATION

PREPARATION DATE: June 17, 2019

SUPERCEDES: Version 1, dated June 17, 2014

REASON FOR REVISION: 5-year review.

The product information contained herein is believed to be accurate as of the date of the Safety Data Sheet, and is provided without warranty, expressed or implied, as to the results of use of this information or the product to which it relates. Recipient assumes all responsibility for the use of this information and the use (alone or in combination with any other product), storage or disposal of the product, including any resultant personal injury or property damage.

END OF REPORT