
Section 01 Identification

Product Identifier	Ammonium Hydroxide Solution 3%, Tech. Grade
Other Means of Identification	Aqua ammonia, ammonia solution
Product Use and Restrictions on Use	For commercial and industrial use.
Initial Supplier Identifier	ClearTech Industries Inc. 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7 Phone: 800.387.7503 Fax: 888.281.8109 www.cleartech.ca
Prepared By	ClearTech Industries Inc. technical writer
24-Hour Emergency Phone	306.664.2522

Section 02 Hazard Identification

Physical Hazards

This product does not qualify for any physical hazard class under WHMIS 2015

Health Hazards

Skin corrosion / irritation Category 2

Serious eye damage / eye irritation Category 1

Specific target organ toxicity - single exposure - Category 3

Signal Word

Danger

Hazard Statements

H315 Causes skin irritation.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

Pictograms



Precautionary Statements

Prevention

- P260 Do not breathe vapours, fumes, or mists.
P264 Wash affected body parts thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves, eye protection, face and respiratory protection

Response

- P303 P352 P332 IF ON SKIN (or hair): Wash with plenty of water. If skin irritation occurs: Get medical advice /
P313 P362 P364 attention. Take off contaminated clothing and wash it before reuse.
P304 P340 P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a
POISON CENTER or doctor.
P305 P351 P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present
P310 and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage

- P403 Store in a well-ventilated place.
P233 Keep container tightly closed.
P405 Store locked up.

Hazards Not Otherwise Classified

Not available

Supplemental Information

Not available

Section 03 Composition / Information on Ingredients

Hazardous Ingredients:

Chemical name	Common name(s)	CAS number	Concentration (w/w%)
Ammonia	Ammonia	7664-41-7	2.5-3.5%
Ammonium hydroxide ((NH ₄)(OH))	Aqua ammonia	1336-21-6	5.1-7.2%

Section 04 First-Aid Measures

Description of necessary first-aid measures

- Inhalation** Take precautions to ensure your own safety before attempting a rescue (wear appropriate protective equipment, use the buddy system). Remove source of exposure or move person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.
- Ingestion** Rinse mouth. Get medical advice / attention if you feel unwell or are concerned.
- Skin contact** Avoid direct contact. Wear chemical protective clothing, if necessary. Take off immediately contaminated clothing, shoes and leather goods. Rinse skin with lukewarm, gently flowing water / shower for 15 to 20 minutes. Get medical advice / attention. Wash contaminated clothing before re-use, or discard.
- Eye contact** Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for 30 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a POISON CENTER or doctor.

Most important symptoms and effects, both acute and delayed

- Inhalation** May cause respiratory irritation.
Ingestion May cause discomfort or nausea.

Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Further information	For further information see Section 11 Toxicological Information.

Section 05 Fire Fighting Measures

Suitable extinguishing media	Extinguish fire using extinguishing agents suitable for the surrounding fire.
Unsuitable extinguishing media	Water jets are not recommended in fires involving chemicals.
Specific hazards arising from the chemical	In the event of a fire oxides of nitrogen may be released. Ammonia gas can ignite in range of 16-25% by volume.
Special protective equipment for fire-fighters	Wear NIOSH-approved self-contained breathing apparatus and chemical-protective clothing.

Section 06 Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures	Wear appropriate personal protective equipment (See Section 08 Exposure Controls and Personal Protection). Stay upwind, ventilate area. Do not breathe vapours, fumes, or mists.
Environmental Precautions	Prevent material from entering waterways, sewers or confined spaces. Notify local health and wildlife officials. Notify operators of nearby water intakes.
Methods and Materials for Containment and Cleaning Up	SMALL SPILLS: Stop or reduce leak if safe to do so. Clean up spill with non-reactive absorbent and place in suitable, covered, labeled containers. Flush area with water. Contaminated absorbent material may pose the same hazards as the spilled product. LARGE SPILLS: Contact fire and emergency services and supplier for advice.

Section 07 Handling and Storage

Precautions for Safe Handling	Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure. Prevent the release of vapours, fumes, or mists into the workplace air. Inspect containers for damage or leaks before handling. If the original label is damaged or missing replace with a workplace label. Have suitable emergency equipment for fires, spills and leaks readily available. Never return contaminated material to its original container.
Conditions for Safe Storage	Store in a cool, dry, well-ventilated area, away from heat sources and incompatible materials. Always store in original labeled container. Keep containers tightly closed when not in use and when empty. Empty containers may contain hazardous residues. Protect label and keep it visible.
Incompatibilities	Acids, such as sulphuric, nitric, hydrochloric, phosphoric, fluosilicic (HFSA), sulphonic, acetic, citric, oxalic, and formic. Oxidizing agents, such as oxygen, hydrogen peroxide, sulphuric and nitric acids, hypochlorites and permanganates. Hypochlorites, metal salts.

Section 08 Exposure Controls and Personal Protection

Exposure limits

Safety Data Sheet

Ammonium Hydroxide Solution 3%, Tech. Grade
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Component	Regulation	Type of listing	Value
Ammonia	ACGIH	TWA	25 ppm
		STEL / Ceiling	35 ppm

Engineering controls

Ventilation Requirements	Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided in accordance with all fire codes and regulatory requirements. Supply sufficient replacement air to make up for air removed by exhaust systems.
Other	A soak hose and eyewash station or emergency shower and eyewash station should be available, tested, and be in close proximity to the product being handled in accordance with provincial regulations.

Protective equipment

The following are recommendations only. It is the responsibility of the employer / user to conduct a hazard assessment of the process in which this product being used and determine the proper engineering controls and PPE for their process. Additional regulatory and safety information should be sought from local authorities and, if needed, a professional industrial hygienist.

Eye and face protection	Where there is potential eye or face exposure, tightly fitting safety goggles and a face shield or a full face respirator or similar protective equipment which protects the wearer's face and eyes are recommended. Contact lenses are not recommended; they may contribute to severe eye injury.
Hand and body protection	Disposable latex or nitrile gloves are recommended to prevent incidental contact. Butyl rubber, neoprene, or PVC skin protection is recommended for extended contact. Leather gloves are not recommended for chemical protection. Refer to manufacturer's specifications for breakthrough times and permeability information; note that breakthrough times and permeability vary with temperature, application and age of material. Continued use of contaminated safety gear or clothing is not recommended; wash before reuse or discard.
Respiratory protection	In case of insufficient ventilation wear suitable respiratory equipment.

NIOSH respirator recommendations for: Ammonia

Up to: 250 ppm

(APF = 10) Any chemical cartridge respirator with cartridge(s) providing protection against Ammonia

(APF = 10) Any supplied-air respirator

Up to: 300 ppm

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

(APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against Ammonia

(APF = 50) Any chemical cartridge respirator with a full facepiece and cartridge(s) providing protection against Ammonia

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against Ammonia

(APF = 50) Any self-contained breathing apparatus with a full facepiece.

(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against Ammonia
Any appropriate escape-type, self-contained breathing apparatus

Thermal hazards Not available

Section 09 Physical and Chemical Properties

Appearance

Physical state Liquid
Colour Clear, colourless
Odour Pungent
Odour threshold 0.04 ppm

Property

pH 10.6-11.6 (0.02-1.7% solution)
Melting point / freezing point -3.9 °C
Initial boiling point and boiling range 84 °C
Flash point Not available
Evaporation rate Not available
Flammability Not applicable
Upper flammable limit 25% (ammonia)
Lower flammable limit 16% (Ammonia)
Vapour pressure 556.35 mmHg
Vapour density 0.6
Relative density Not applicable
Solubility Soluble in water
Partition coefficient: n-octanol/water -1.14 @ 25 °C
Auto-ignition temperature 651 °C (ammonia vapour)
Decomposition temperature Not available
Viscosity Not available
Specific gravity 0.90 g/mL @ 26 °C
Particle characteristics Not applicable

Section 10 Stability and Reactivity

Reactivity Reacts violently with acids.
Stability This product is stable if stored according to the recommendations in Section 07.
Possibility of hazardous reactions Hazardous polymerization is not known to occur.
Conditions to avoid Avoid contact with incompatible materials.

Safety Data Sheet

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Incompatible materials	Acids, such as sulphuric, nitric, hydrochloric, phosphoric, fluorosilicic (HFSA), sulphonic, acetic, citric, oxalic, and formic. Oxidizing agents, such as oxygen, hydrogen peroxide, sulphuric and nitric acids, hypochlorites and permanganates. Hypochlorites, metal salts.
Hazardous decomposition products	Thermal decomposition may produce oxides of nitrogen.

Section 11 Toxicological Information

Acute Toxicity (LD50 / LC50 values)

Component	Route	Species	Value	Exposure time
Ammonium Hydroxide	Oral	Rat	350 mg/kg bw	
Ammonia	Inhalation	Rat	9.8-13.8 mg/L	60 minutes

Toxic Health Effect Summary

Chemical characteristics	No known effects
Skin	Causes skin irritation.
Ingestion	May cause discomfort or nausea.
Inhalation	May cause respiratory irritation.
Eye contact	Causes serious eye damage.
Sensitization	This product and its components at their listed concentration have no known sensitizing effects.
Mutagenicity	This product and its components at their listed concentration have no known mutagenic effects.
Carcinogenicity	This product and its components at their listed concentration have no known carcinogenic effects.
Reproductive toxicity	This product and its components at their listed concentration have no known reproductive effects.
Specific organ toxicity	This product and its components at their listed concentration have no known effects on specific organs.
Aspiration hazard	Not available
Synergistic materials	Not available

Section 12 Ecological Information

Ecotoxicity

Component	Type	Species	Value	Exposure Time
Ammonia	LC50	Fish	0.068 mg/L	96 hours
	EC50	Aquatic invertebrates	101 mg/L	48 hours
	EC50	Algae	2700 mg/L	72 hours

Biodegradability	The domestic substance list categorizes ammonium hydroxide as persistent.
Bioaccumulation	The domestic substance list categorizes ammonium hydroxide as non-bioaccumulative.
Mobility	This product is water soluble, is not predicted to adsorb to soil and may contaminate ground water. This product will evaporate and may be spread via wind.

Other adverse effects The domestic substance list categorizes ammonium hydroxide as inherently toxic to aquatic organisms.

Section 13 Disposal Considerations

Waste From Residues / Unused Products Dispose in accordance with all federal, provincial, and local regulations including the Canadian Environmental Protection Act.

Contaminated Packaging Do not remove label, follow label warnings even after the container is empty. Empty containers should be recycled or disposed of at an approved waste handling facility.

Section 14 Transport Information

UN number This product does not meet the definition of dangerous goods per Part 2 of Transport of Dangerous Goods Regulations

UN proper shipping name and description Not available

Transport hazard class(es) Not available

Packing group Not available

Excepted quantities Not available

Environmental hazards Listed as a marine pollutant under Canadian TDG Regulations, schedule III.

Special precautions No special precautions

Transport in bulk ERAP index: not available

MARPOL 73/78 and IBC Code:
This product is not listed in Chapter 17 of the IBC Code.

Additional information Secure containers (full or empty) during shipment and ensure all caps, valves, or closures are secured in the closed position.

TDG PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 16 of this SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and published test data regarding the classification of this product are listed in the references at section 16 of this SDS.

Section 15 Regulatory Information.

NOTE: THE PRODUCT LISTED ON THIS SAFETY DATA SHEET HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN HAZARDOUS PRODUCTS REGULATIONS. THIS SAFETY DATA SHEET CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

All components of this product appear on the domestic substance list.

This product is listed in the National Pollutant Release Inventory (NPRI). Reporting threshold: 10 tonnes manufactured, processed or otherwise used.

Section 16 Other Information

Date of latest revision: December 11, 2024

Note: The responsibility to provide a safe workplace remains with the buyer / user. The buyer / user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the buyer / user to comply with all applicable laws and regulations regarding handling, using, reselling and shipping this product.

Attention: Receiver of the chemical goods / SDS coordinator

As part of our commitment to the RDC Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service center.

References:

- 1) *NIOSH Pocket Guide to Chemical Hazards*; U.S. Department of Health and Human Services, <https://www.cdc.gov/niosh/npg/default.html>
- 2) *WorkSafe BC E-Limit*; Workers' Compensation Board of British Columbia, <https://elimit.online.worksafebc.com/>
- 3) *ECHA - Registered Substance Dossier*; European Chemicals Agency, <https://echa.europa.eu/registration-dossier/-/registered-dossier/15557>
- 4) *Transportation of Dangerous Goods Regulations*; Transport Canada, <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2001-286/index.html>
- 5) Globally Harmonized System of Classification and Labeling of Chemicals (GHS) *Seventh revised edition*
- 6) International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) 2007 Edition
- 7) The ACS Style Guide