

ALFAAL13168

Ammonium hydroxide, 28% NH3

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

产品说明: 氢氧化铵
Product Description: Ammonium hydroxide, 28% NH3

Cat No. : L13168
Synonyms Ammonia solution; Ammonium hydrate; Ammonia water

Supplier Avocado Research Chemicals Ltd.
(Part of Thermo Fisher Scientific)
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CHEMTREC Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

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Recommended Use Laboratory chemicals.
Uses advised against No Information available

SECTION 2. HAZARD IDENTIFICATION

Physical State
Liquid

Appearance
Colorless

Odor
Ammonia-like

Emergency Overview

Causes severe skin burns and eye damage. May cause respiratory irritation. Very toxic to aquatic life.

Classification of the substance or mixture

Skin Corrosion/Irritation	Category 1 B
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity - (single exposure)	Category 3
Acute aquatic toxicity	Category 1

Label Elements



Signal Word

Danger

Hazard Statements

Ammonium hydroxide, 28% NH3

H314 - Causes severe skin burns and eye damage
H335 - May cause respiratory irritation
H400 - Very toxic to aquatic life

Precautionary Statements**Prevention**

P264 - Wash face, hands and any exposed skin thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves/protective clothing/eye protection/face protection

Response

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 or 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 or doctor
P362 + P364 - Take off contaminated clothing and wash it before reuse

Storage

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

Disposal

P501 - Dispose of contents/ container to an approved waste disposal plant

Physical and Chemical Hazards

None identified.

Health Hazards

Corrosive. Causes skin and eye burns. Causes serious eye damage. May cause respiratory irritation.

Environmental hazards

Very toxic to aquatic life. Will likely be mobile in the environment due to its water solubility. The product is water soluble, and may spread in water systems.

This product does not contain any known or suspected endocrine disruptors.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No	Weight %
Ammonium hydroxide	1336-21-6	100

SECTION 4. FIRST AID MEASURES**Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek immediate medical attention/advice.

Skin Contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. In the case of skin irritation or allergic reactions see a physician. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

Inhalation

If not breathing, give artificial respiration. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention.

Ingestion

Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Get medical attention.

Most important symptoms and effects

Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Ammonium hydroxide, 28% NH₃**Self-Protection of the First Aider**

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

Notes to Physician

Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES**Suitable Extinguishing Media**

Water mist may be used to cool closed containers. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Extinguishing media which must not be used for safety reasons

No information available.

Specific Hazards Arising from the Chemical

Do not allow run-off from fire-fighting to enter drains or water courses.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 6. ACCIDENTAL RELEASE MEASURES**Personal Precautions**

Ensure adequate ventilation.

Environmental Precautions

Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Prevent product from entering drains. Keep in suitable, closed containers for disposal. Provide adequate ventilation. Sweep up and shovel into suitable containers for disposal. Do not flush into surface water or sanitary sewer system.

Refer to protective measures listed in Sections 8 and 13.

SECTION 7. HANDLING AND STORAGE**Handling**

Avoid contact with eyes. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Do not breathe (dust, vapor, mist, gas). Wash thoroughly after handling. Use only in well-ventilated areas. Keep containers dry and tightly closed to avoid moisture absorption and contamination.

Storage

Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from acids. Keep away from oxidizing agents. Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

Specific Use(s)

Use in laboratories

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Control Parameters**

Ammonium hydroxide, 28% NH3

Exposure Controls**Engineering Measures**

Ventilation systems. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

Personal protective equipment

Eye Protection Goggles Face protection shield (European standard - EN 166)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Neoprene	See manufacturers recommendations	-	EN 374	(minimum requirement)

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure

Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Recommended Filter type: Inorganic gases and vapours filter Type B Grey or Ammonia and organic ammonia derivatives filter Type K Green conforming to EN14387

Small scale/Laboratory use Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141
When RPE is used a face piece Fit Test should be conducted

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls Prevent product from entering drains. Do not allow material to contaminate ground water system. Local authorities should be advised if significant spillages cannot be contained.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colorless	
Physical State	Liquid	
Odor	Ammonia-like	
Odor Threshold	No data available	
pH	12.0	Alkaline
Melting Point/Range	-2.9 °C / 26.8 °F	
Softening Point	No data available	
Boiling Point/Range	No information available	
Flash Point	No information available	Method - No information available

Ammonium hydroxide, 28% NH3

Evaporation Rate	No data available	
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	No data available	
Vapor Pressure	< 112.5 mmHg @ 20 °C	
Vapor Density	0.6 (Air = 1.0)	(Air = 1.0)
Specific Gravity / Density	0.98	
Bulk Density	Not applicable	Liquid
Water Solubility	Soluble	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/water)		
Autoignition Temperature	No data available	
Decomposition Temperature	No data available	
Viscosity	No data available	
Explosive Properties	No information available	
Oxidizing Properties	No information available	

Molecular Weight 35.05

SECTION 10. STABILITY AND REACTIVITY

Stability	Stable under normal conditions.
Hazardous Reactions	No information available.
Hazardous Polymerization	Hazardous polymerization does not occur.
Conditions to Avoid	Excess heat.
Materials to avoid	No information available.

Hazardous Decomposition Products Nitrogen oxides (NOx). Ammonia.

SECTION 11. TOXICOLOGICAL INFORMATION

Product Information No acute toxicity information is available for this product

(a) acute toxicity;

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium hydroxide	LD50 > 350 mg/kg (Rat)		

(b) skin corrosion/irritation; Category 1 B

(c) serious eye damage/irritation; Category 1

(d) respiratory or skin sensitization;

Respiratory	No data available
Skin	No data available

(e) germ cell mutagenicity; No data available

(f) carcinogenicity; No data available

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; No data available

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(h) STOT-single exposure; Category 3
Results / Target organs Respiratory system

(i) STOT-repeated exposure; No data available
Target Organs No information available.

(j) aspiration hazard; No data available

Symptoms / effects, both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Ammonium hydroxide	0.53 mg/l LC50 96h 0.75 - 3.4 mg/l LC50 96h 8.2 mg/L LC50 96h	EC50: 0.66 mg/L/48h	-	-

Persistence and Degradability**Persistence**

Soluble in water, Persistence is unlikely, based on information available.

Degradation in sewage treatment plant

Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

Bioaccumulative Potential

Bioaccumulation is unlikely

Mobility in soil

The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility Highly mobile in soils

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

Persistent Organic Pollutant

This product does not contain any known or suspected substance

Ozone Depletion Potential

This product does not contain any known or suspected substance

SECTION 13. DISPOSAL CONSIDERATIONS

Waste from Residues/Unused Products

Should not be released into the environment. Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging

Dispose of this container to hazardous or special waste collection point.

Other Information

Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Large amounts will affect pH and harm aquatic organisms. Solutions with high pH-value must be neutralized before discharge. Do not let this chemical enter the environment.

SECTION 14. TRANSPORT INFORMATION

Ammonium hydroxide, 28% NH3

Road and Rail Transport

UN-No UN2672
 Proper Shipping Name AMMONIA SOLUTION
 Hazard Class 8
 Packing Group III

IMDG/IMO

UN-No UN2672
 Proper Shipping Name AMMONIA SOLUTION
 Hazard Class 8
 Packing Group III

IATA

UN-No UN2672
 Proper Shipping Name AMMONIA SOLUTION
 Hazard Class 8
 Packing Group III

Special Precautions for User No special precautions required

SECTION 15. REGULATORY INFORMATION**International Inventories**

X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

Component	The Inventory of Hazardous Chemicals (2015 Edition)	List of dangerous goods GB 12268 - 2012	TCSI	IECSC	EINECS	TSCA	DSL	PICCS	ENCS	ISHL	AICS	KECL
Ammonium hydroxide	X	-	X	X	215-647-6	X	X	X	X	X	X	KE-01688

National Regulations**SECTION 16. OTHER INFORMATION**

Prepared By Health, Safety and Environmental Department
Revision Date 06-Mar-2024
Revision Summary New emergency telephone response service provider.

Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Chemical incident response training.

Legend

Ammonium hydroxide, 28% NH3

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

ENCS - Japanese Existing and New Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit

ACGIH - American Conference of Governmental Industrial Hygienists

DNEL - Derived No Effect Level

RPE - Respiratory Protective Equipment

LC50 - Lethal Concentration 50%

NOEC - No Observed Effect Concentration

PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

PNEC - Predicted No Effect Concentration

LD50 - Lethal Dose 50%

EC50 - Effective Concentration 50%

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road

OECD - Organisation for Economic Co-operation and Development

BCF - Bioconcentration factor

IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code

MARPOL - International Convention for the Prevention of Pollution from Ships

ATE - Acute Toxicity Estimate

VOC - (Volatile Organic Compound)

Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet