Ammonium hydroxide solution

05002-2.5L

Version 1.2 | Revision Date 07/11/2023 | Print Date 07/12/2023

SECTION 1. IDENTIFICATION

Product name	:	Ammonium hydroxide solution
Number	:	000000015205
Product Use Description	:	Laboratory chemicals
Manufacturer or supplier's details	:	Honeywell International Inc. 1953 South Harvey Street Muskegon, MI 49442
For more information call	:	1-800-368-0050 +1-231-726-3171(Monday-Friday, 9:00am-5:00pm)
In case of emergency call	:	**Medical: 1-800-498-5701 or +1-303-389-1414**
	:	**Transportation (CHEMTREC): 1-800-424-9300 or +1-703-527-3887**
	:	
	:	(24 hours/day, 7 days/week)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Form	:	liquid
Color	:	colourless
Odor	:	ammoniacal

Classification of the substance or mixture

Classification of the substance or mixture	:	Skin corrosion, Category 1B Serious eye damage, Category 1 Specific target organ toxicity - single exposure, Category 3, Respiratory system

GHS Label elements, including precautionary statements

Symbol(s) :

Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.
May cause respiratory irritation.

Precautionary statements : **Prevention:**
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.

Response:
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER/ doctor.
Wash contaminated clothing before reuse.

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

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : H5NO

Chemical nature : Mixture

Chemical name	CAS-No.	Concentration
Water	7732-18-5	>=70.00 - <90.00 %
Ammonium hydroxide	1336-21-6	>=25.00 - <50.00 %

SECTION 4. FIRST AID MEASURES

Inhalation : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Use oxygen as required, provided a qualified operator is present. Call a physician immediately.

Skin contact : Wash off immediately with soap and plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Protect unharmed eye. If symptoms persist, call a physician.

Ingestion : A person suspected to have swallowed the substance who is conscious should be given water to drink. Take to a doctor immediately together with this card

Notes to physician

Most important symptoms/effects, acute and delayed : No information available.

Indication of immediate medical attention and : Inhaled corrosive substances can lead to a toxic oedema of the lungs. Treat symptomatically.

special treatment needed, if necessary

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray Foam Carbon dioxide (CO2) Dry powder
Specific hazards during firefighting	:	Ammonia gas may be liberated at high temperatures. Vapours may form explosive mixtures with air.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus and protective suit. No unprotected exposed skin areas.
Further information	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Wear personal protective equipment. Immediately evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Remove all sources of ignition. Do not breathe vapours or spray mist. Do not get in eyes, on skin, or on clothing.
Environmental precautions	:	Prevent further leakage or spillage if safe to do so. Discharge into the environment must be avoided. Do not flush into surface water or sanitary sewer system. Do not allow run-off from fire fighting to enter drains or water courses.
Methods and materials for containment and cleaning up	:	Ventilate the area. Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13).

SECTION 7. HANDLING AND STORAGE

Handling

Precautions for safe handling	:	Wear personal protective equipment. Use only in well-ventilated areas. Keep container tightly closed. Do not smoke. Do not swallow. Do not breathe vapours or spray mist. Do not get in eyes, on skin, or on clothing.
Advice on protection against fire and explosion	:	Keep away from heat and sources of ignition. Ammonia gas may be liberated at high temperatures. Vapours may form explosive mixture with air. The product itself does not burn.

Storage

Conditions for safe storage, including any incompatibilities	:	Keep containers tightly closed in a dry, cool and well-ventilated place. Store in original container. Keep away from heat and sources of ignition.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective measures	:	Ensure that eyewash stations and safety showers are close to the workstation location. Legal requirements are to be considered in regard of the selection, use and care of personal protective equipment. Do not breathe vapours or spray mist.
Engineering measures	:	Use with local exhaust ventilation.
Eye protection	:	Face-shield Safety goggles
Hand protection	:	Impervious gloves Gloves must be inspected prior to use. Replace when worn.

Skin and body protection : Protective suit

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

Hygiene measures : Keep working clothes separately.
Separate rooms are required for washing, showering and changing clothes.
Take off all contaminated clothing immediately.
Wash hands before breaks and at the end of workday.
When using do not eat or drink.

Exposure Guidelines

Components	CAS-No.	Value	Control parameters	Update	Basis
Ammonium hydroxide	1336-21-6	REL : Recommended exposure limit (REL):	18 mg/m3 (25 ppm)	2019	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Ammonium hydroxide	1336-21-6	PEL : Permissible exposure limit	35 mg/m3 (50 ppm)	01 2017	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
Ammonium hydroxide	1336-21-6	STEL : Short term exposure limit	27 mg/m3 (35 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Ammonium hydroxide	1336-21-6	STEL : Short term exposure limit	(35 ppm)	01 2021	ACGIH:US. ACGIH Threshold Limit Values, as amended

Ammonium hydroxide	1336-21-6	STEL : Short term exposure limit	27 mg/m3 (35 ppm)	2019	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards, as amended

Ammonium hydroxide	1336-21-6	TWA : Time weighted average	(25 ppm)	01 2021	ACGIH:US. ACGIH Threshold Limit Values, as amended

Ammonium hydroxide	1336-21-6	STEL : Short term exposure limit	27 mg/m3 (35 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended

Ammonium hydroxide	1336-21-6	PEL : Permissible exposure limit	35 mg/m3 (50 ppm)	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	:	liquid
Color	:	colourless
Odor	:	ammoniacal
Odor threshold	:	Note: No data available
pH	:	Note: alkaline, (undiluted)
Melting point/range	:	-92 °C
Initial boiling point and boiling range	:	ca. 32 °C at 1,013 hPa

Flash point	:	Note: Not applicable
Evaporation rate	:	Note: No data available
Flammability	:	Not applicable
Lower explosion limit	:	15 %(V)
Upper explosion limit	:	30.2 %(V)
Vapor pressure	:	1,900 hPa at 50 °C(122 °F) 837 hPa at 20 °C(68 °F)
Vapor density	:	Note: No data available
Density	:	ca. 0.89 g/cm3 at 20 °C
Water solubility	:	Note: completely miscible
Partition coefficient: n-octanol/water	:	Note: No data available
Ignition temperature	:	630 °C
Decomposition temperature	:	Note: No decomposition if used as directed.
Viscosity, dynamic	:	Note: No data available
Viscosity, kinematic	:	Note: No data available

Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Molecular weight	:	35.05 g/mol
Bulk density	:	Note: Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	Hazardous polymerisation does not occur.
Conditions to avoid	:	Keep away from heat and sources of ignition.
Incompatible materials	:	Acids Halogens
Hazardous decomposition products	:	Ammonia gas may be liberated at high temperatures.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	Note: Toxicity is determined by the corrosivity of the product.
Acute inhalation toxicity	:	Note: Toxicity is determined by the corrosivity of the product.
Acute dermal toxicity	:	Note: Toxicity is determined by the corrosivity of the product.
Skin irritation	:	Species: Rabbit Result: Causes burns. Method: OECD Test Guideline 404

Eye irritation	:	Species: Rabbit Result: Risk of serious damage to eyes.
Sensitisation	:	Species: Guinea pig Classification: non-sensitizing
Repeated dose toxicity	:	Species: Rat Application Route: Inhalation Exposure time: 50 d NOAEL: 0.035 mg/l
Genotoxicity in vitro	:	Test Method: Ames test Result: negative Method: OECD Test Guideline 471
Genotoxicity in vivo	:	Test Method: Micronucleus test Species: Mouse Method: OECD Test Guideline 474 Test substance: REACH dossier “read-across” Result: negative
Reproductive toxicity	:	Species: Rat Application Route: Oral NOAEL: 408 mg/kg bw/d Method: OECD Test Guideline 422
Teratogenicity	:	Species: RabbitApplication Route: Oral Note: Did not show teratogenic effects in animal experiments.
Further information	:	Note: The data on toxicology refer to the active ingredient.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish	:	LC50: 0.89 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout)
	:	Lowest Observed Effect Concentration: 0.022 mg/l Exposure time: 73 d Species: Oncorhynchus mykiss (rainbow trout) Test substance: REACH dossier “read-across”
Toxicity to daphnia and other aquatic invertebrates	:	LC50: 101 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)
Toxicity to algae	:	static test EC50: 2,700 mg/l Exposure time: 18 d Species: Chlorella vulgaris (Fresh water algae)

Elimination information (persistence and degradability)

Bioaccumulation	:	Note: Bioaccumulation is unlikely.
Mobility	:	Note: No data available

Further information on ecology

Ecotoxicology Assessment

Results of PBT assessment
This substance is not considered to be persistent, bioaccumulating and toxic (PBT)., This substance is not considered to be very persistent and very bioaccumulating (vPvB).

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	Observe all Federal, State, and Local Environmental regulations.

SECTION 14. TRANSPORT INFORMATION

DOT	UN/ID No.	:	UN 2672
	Proper shipping name	:	AMMONIA SOLUTION
	Class		8
	Packing group		III
	Hazard Labels		8
IATA	UN/ID No.	:	UN 2672
	Description of the goods	:	AMMONIA SOLUTION
	Class	:	8
	Packaging group	:	III
	Hazard Labels	:	8
	Packing instruction (cargo aircraft)	:	856
	Packing instruction (passenger aircraft)	:	852
	Packing instruction (passenger aircraft)	:	Y841
IMDG	UN/ID No.	:	UN 2672
	Description of the goods	:	AMMONIA SOLUTION
	Class	:	8
	Packaging group	:	III
	Hazard Labels	:	8
	EmS Number	:	F-A, S-B
	Marine pollutant	:	yes

IMDG Code segregation group (SGG18) – ALKALIS,

SECTION 15. REGULATORY INFORMATION

Inventories

US. Toxic Substances Control Act	:	On TSCA Inventory
Australia. Inventory of Industrial Chemicals (AIIC), as amended	:	On the inventory, or in compliance with the inventory
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	:	All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List	:	On the inventory, or in compliance with the inventory
Korea. Existing Chemicals Inventory (KECI)	:	On the inventory, or in compliance with the inventory
Philippines. Inventory of Chemicals and Chemical Substances (PICCS)	:	On the inventory, or in compliance with the inventory
China. Inventory of Existing Chemical Substances (IECSC)	:	On the inventory, or in compliance with the inventory
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	:	On the inventory, or in compliance with the inventory
Taiwan Chemical Substance Inventory (TCSI)	:	On the inventory, or in compliance with the inventory

National regulatory information

US. EPA CERCLA Hazardous Substances (40 CFR 302)	:	The following component(s) of this product is/are subject to release reporting under 40 CFR 302 when release exceeds the Reportable Quantity (RQ): Reportable quantity: 1000 lbs
	:	Ammonium hydroxide 1336-21-6
SARA 302 Components	:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	:	The following components are subject to reporting levels established by SARA Title III, Section 313:
	:	Ammonium hydroxide 1336-21-6
SARA 311/312 Hazards	:	Acute Health Hazard
CERCLA Reportable Quantity	:	3333 lbs

California Prop. 65	:	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Massachusetts RTK	:	Ammonium hydroxide	1336-21-6
New Jersey RTK	:	Ammonium hydroxide	1336-21-6
Pennsylvania RTK	:	Ammonium hydroxide	1336-21-6

SECTION 16. OTHER INFORMATION

		HMIS III	NFPA
Health hazard	:	3*	3
Flammability	:	1	1
Physical Hazard	:	0	
Instability	:		0

* - Chronic health hazard
Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

Further information

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. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.
Previous Issue Date: 07/25/2018
Prepared by Honeywell Performance Materials and Technologies Product Stewardship Group