CODE: 5000

Ammonium Hydroxide ACS

Safety Data Sheet

according to the Hazardous Products Regulation (February 11, 2015)

Date of issue: 01/17/2017 Revision date: 09/26/2018 Version No.:2.0

FCAT# 351275212

SECTION 1: Identification

1.1. Product identifier

Product form	:	Substance
Trade name	:	Ammonium Hydroxide ACS
Type of product	:	Solution,Group
CAS No	:	1336-21-6
Product code	:	5000

1.2. Recommended use and restrictions on use

Recommended uses and restrictions	:	Laboratory chemicals Industrial use of reactive processing aids

1.3. Supplier

Amplex Chemical Products Ltd.
600 Avenue Delmar
H9R 4A8 Pointe Claire - Canada
T 514-630-3309 - F 514-630-5951
info@regentchem.com - http://www.regentchem.com/

Distributed by:
fisher scientific
part of Thermo Fisher Scientific
112 Colonnade Road, Ottawa ON, K2E 7L6
1-800-234-7437

1.4. Emergency telephone number

Emergency number	:	Terrapure Environmental 1-800-567-7455(24/24)

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Classification (GHS-CA)

Skin corrosion/irritation, Category 1A	H314
Serious eye damage/eye irritation, Category 1	H318
Specific target organ toxicity — Single exposure, Category 3, Narcosis	H336

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-CA labelling

Hazard pictograms (GHS-CA) :

GHS05 GHS07

Signal word (GHS-CA) : Danger

Hazard statements (GHS-CA) : H314 - Causes severe skin burns and eye damage
H336 - May cause drowsiness or dizziness

Precautionary statements (GHS-CA) : P260 - Do not breathe mist/vapours/spray
P264 - Wash hands, forearms and face thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear gloves/protective clothing/eye protection/face protection
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
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
P321 - Specific treatment (Treat symptomatically)
P363 - Wash contaminated clothing before reuse
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up

P501 - Dispose of contents / container to a hazardous or special waste collection point in accordance with municipal, provincial and federal regulations.

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-CA)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Chemical name/Synonyms	Product identifier	% wt/wt	Classification (GHS-CA)
ammonium hydroxide, solution, (Main constituent)	Ammonia	(CAS No) 1336-21-6	28 - 30	Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT SE 3, H336

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact : Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.

First-aid measures after eye contact : Rinse immediately with plenty of water for 15 minutes. Cover eyes aseptically. Do not apply neutralizing agents. Take victim to an ophthalmologist.

First-aid measures after ingestion : Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Immediately consult a doctor/medical service. Call Poison Information Centre. Take the container/vomit to the doctor/hospital. Ingestion of large quantities: immediately to hospital.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/injuries after inhalation : Dry/sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Nausea. Headache. EXPOSURE TO HIGH CONCENTRATIONS: Possible oedema of the upper respiratory tract. Possible inflammation of the respiratory tract. Possible laryngeal spasm/oedema. FOLLOWING SYMPTOMS MAY APPEAR LATER: Risk of lung oedema. Risk of pneumonia. Respiratory difficulties. Possible esophageal perforation.

Symptoms/injuries after skin contact : Caustic burns/corrosion of the skin.

Symptoms/injuries after eye contact : Irritation of the eye tissue. Permanent eye damage.

Symptoms/injuries after ingestion : Risk of aspiration pneumonia. Nausea. Vomiting. AFTER ABSORPTION OF HIGH QUANTITIES: Blue/grey discolouration of the skin. Blood in stool. Blood in vomit. Possible esophageal perforation. FOLLOWING SYMPTOMS MAY APPEAR LATER: Shock.

Chronic symptoms : ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Coughing. Irritation of the respiratory tract. Irritation of the eye tissue. Redness of the eye tissue. Possible inflammation of the respiratory tract. Respiratory difficulties. Affection of the nasal septum.

4.3. Immediate medical attention and special treatment, if necessary

Other medical advice or treatment : Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

Suitable extinguishing media : Adapt extinguishing media to the environment.

5.2. Unsuitable extinguishing media

Unsuitable extinguishing media : No unsuitable extinguishing media known.

5.3. Specific hazards arising from the hazardous product

Fire hazard : DIRECT FIRE HAZARD. Non combustible.

Explosion hazard : INDIRECT EXPLOSION HAZARD. Reactions with explosion hazards: see "Reactivity Hazard".

5.4. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat. Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

No additional information available

6.2. Methods and materials for containment and cleaning up

For containment : Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Dilute toxic gases/vapours with water spray. Take account of toxic/corrosive precipitation water.

Methods for cleaning up : Damaged/cooled tanks must be emptied. Take up liquid spill into absorbent material, e.g.: sand/earth or powdered limestone. Scoop absorbed substance into closing containers. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Take collected spill to manufacturer/competent authority. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

6.3. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection"

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Use corrosionproof equipment. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Keep away from naked flames/heat. Observe strict hygiene. Keep container tightly closed. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Exhaust gas must be neutralised.

7.2. Conditions for safe storage, including any incompatibilities

Heat and ignition sources : KEEP SUBSTANCE AWAY FROM: heat sources.

Maximum storage period : 365 days

Storage temperature : < 38 °C

Storage area : Store at ambient temperature. Keep out of direct sunlight. Store in a dark area. Keep container in a well-ventilated place. Keep locked up. Provide for a tub to collect spills. Meet the legal requirements.

Prohibitions on mixed storage : KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. halogens.

Special rules on packaging : SPECIAL REQUIREMENTS: closing. clean. opaque. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials : SUITABLE MATERIAL: synthetic material. glass. MATERIAL TO AVOID: aluminium. copper. tin. zinc. nickel. bronze.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ammonium Hydroxide ACS (1336-21-6)		
Canada (ON)	STEL(mg/m³)	35 ppm
Canada (ON)	TWA (mg/m³)	25ppm

8.2. Appropriate engineering controls

No additional information available

8.3. Individual protection measures/Personal protective equipment

Materials for protective clothing : GIVE EXCELLENT RESISTANCE: butyl rubber. GIVE GOOD RESISTANCE: neoprene. nitrile rubber. viton. tetrafluoroethylene. GIVE LESS RESISTANCE: PVC. GIVE POOR RESISTANCE: natural rubber. polyethylene. PVA.

Hand protection : Gloves.

Eye protection : Safety glasses.

Skin and body protection : Head/neck protection. Corrosion-proof clothing.

Respiratory protection : Gas mask with filter type K. High vapour/gas concentration: self-contained respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Very volatile solution, colorless, ammonia in water, pungent odor

Molecular mass : 35.05 g/mol

Colour : Colourless.

Odour : Irritating/pungent odour.

Odour threshold : 5 - 50 ppm

pH	:	11.7 (3.5 % solution)
pH solution	:	3.5 %
Relative evaporation rate (butylacetate=1)	:	No data available
Relative evaporation rate (ether=1)	:	No data available
Melting point	:	No data available
Freezing point	:	-60°C
Boiling point	:	-38-100°C
Flash point	:	Not applicable
Auto-ignition temperature	:	630°C
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapour pressure	:	0.758 bar
Vapour pressure at 50 °C	:	No data available
Relative vapour density at 20 °C	:	0.6
Relative density	:	0.88 - 0.91
Relative density of saturated gas/air mixture	:	No data available
Density	:	No data available
Relative gas density	:	No data available
Solubility	:	Water: Complete
Log Pow	:	-1.3
Log Kow	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, kinematic (calculated value) (40 °C)	:	No data available
Explosive properties	:	No data available
Oxidising properties	:	No data available
Explosive limits	:	No data available
Lower explosive limit (LEL)	:	15 %(V)
Upper explosive limit (UEL)	:	30.2 %(V)

9.2. Other information

Minimum ignition energy	:	Not applicable
VOC content	:	Not applicable
Other properties	:	Clear. Physical properties depending on the concentration. Volatile. Substance has basic reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	:	The product is not reactive under normal conditions of use, storage and transport.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under normal conditions of use.
Conditions to avoid	:	Keep away from heat and sources of ignition.
Incompatible materials	:	oxidizing agents, heavy metals, heavy metal salts, halogens, nitromethane, acids, acid anhydrides, acid chlorides, dimethyl sulfate, calcium, propylene oxide.
Hazardous decomposition products	:	Amomonia gas can be released at high temperature.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	:	Not classified
Acute toxicity (dermal)	:	Not classified
Acute toxicity (inhalation)	:	Not classified

Ammonium Hydroxide ACS (1336-21-6)		
LD50 oral rat	NOAEL (exposure time 35 days)	≈ 250 mg/kg
LD50 oral rat	LOAEL	≈ 750 mg/kg

Skin corrosion/irritation	:	Causes severe skin burns and eye damage. pH: 11.7 (3.5 % solution)

Serious eye damage/irritation	:	Causes serious eye damage. pH: 11.7 (3.5 % solution)
Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
Specific target organ toxicity (single exposure)	:	Not classified
Specific target organ toxicity (repeated exposure)	:	Not classified
Aspiration hazard	:	Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	:	Dangerous for the environment.
Ecology - air	:	Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
Ecology - water	:	Water pollutant (surface water). Affects the self-cleaning capacity of surface water. Ground water pollutant. Maximum concentration in drinking water: 0.50 mg/l (ammonium) (Directive 98/83/EC). Highly toxic to fishes. Toxic to invertebrates (Daphnia). May cause eutrophication. Highly toxic to plankton. pH shift. Inhibition of activated sludge.

Ammonium Hydroxide ACS (1336-21-6)	
LC50 fish 1	0.16 - 1.1 mg/l (LC50; 96 h)
EC50 Daphnia 1	2.08 mg/l (LC50; 48 h)

12.2. Persistence and degradability

Ammonium Hydroxide ACS (1336-21-6)	
Persistence and degradability	Readily biodegradable in water. Ozonation in water. Biodegradable in the soil. No (test)data on mobility of the components available. Ozonation in the air.

12.3. Bioaccumulative potential

Ammonium Hydroxide ACS (1336-21-6)	
Log Pow	-1.3
Bioaccumulative potential	Bioaccumulation: not applicable.

12.4. Mobility in soil

Ammonium Hydroxide ACS (1336-21-6)	
Log Pow	-1.3

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations	:	Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Remove for physico-chemical/biological treatment. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery. Use appropriate containment to avoid environmental contamination.
Additional information	:	Dispose of contents / container to a hazardous or special waste collection point in accordance with municipal, provincial and federal regulations.

SECTION 14: Transport information

14.1. Basic shipping description

In accordance with TDG

Transportation of Dangerous Goods

UN-No. (TDG)	:	UN2672
Packing group	:	III - Minor Danger
TDG Primary Hazard Classes	:	8 - Class 8 - Corrosives

Transport document description	:	UN2672 AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia, 8, III
Proper Shipping Name (TDG)	:	AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia
Hazard labels (TDG)	:	8 - Corrosive substances

Explosive Limit and Limited Quantity Index	:	5 L
Marine pollutant	:	Yes (IMDG only)

14.2. Transport information/DOT

DOT

UN-No.(DOT)	:	UN2672
Packing group (DOT)	:	III - Minor Danger
Proper Shipping Name (DOT)	:	AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia
Class (DOT)	:	8 - Class 8 - Corrosive material 49 CFR 173.136
Dangerous for the environment	:	No
Marine pollutant	:	Yes (IMDG only)

Other information	:	No supplementary information available.

14.3. Air and sea transport

IMDG

UN-No. (IMDG)	:	2672
Proper Shipping Name (IMDG)	:	AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia
Class (IMDG)	:	8 - Corrosive substances
Packing group (IMDG)	:	III - substances presenting low danger

IATA

UN-No. (IATA)	:	2672
Proper Shipping Name (IATA)	:	AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia
Class (IATA)	:	8 - Corrosives
Packing group (IATA)	:	III - Minor Danger

SECTION 15: Regulatory information

15.1. National regulations

No additional information available

15.2. International regulations

Ammonium Hydroxide ACS (1336-21-6)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

SECTION 16: Other information

Date of issue	:	17/01/2017
Revision date	:	26/09/2018

Full text of H-statements:

H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H336	May cause drowsiness or dizziness

SDS CA Regent