# SAFETY DATA SHEET
according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 03/24/2020 Version 1.3

## SECTION 1.Identification

### Product identifier

| | |
|---|---|
| Product number | AX1303 |
| Product name | Ammonium Hydroxide GR ACS |

### Relevant identified uses of the substance or mixture and uses advised against

| | |
|---|---|
| Identified uses | Reagent for analysis |

### Details of the supplier of the safety data sheet

| | |
|---|---|
| Company | EMD Millipore Corporation \| 400 Summit Drive \| Burlington \| Massachusetts 01803 \| United States of America \| General Inquiries: +1 800-645-5476 \| Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)<br>MilliporeSigma is a business of Merck KGaA, Darmstadt, Germany. |
| **Emergency telephone** | 800-424-9300 CHEMTREC (USA)<br>+1-703-527-3887 CHEMTREC (International)<br>24 Hours/day; 7 Days/week |

## SECTION 2. Hazards identification

### GHS Classification

Skin corrosion, Category 1B, H314
Serious eye damage, Category 1, H318
Specific target organ systemic toxicity - single exposure, Category 3, Respiratory system, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

### GHS-Labeling

*Hazard pictograms*

*Signal Word*
Danger

*Hazard Statements*
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

*Precautionary Statements*
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective 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/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/doctor.
P321 Specific treatment (see supplemental first aid instructions on this label).
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 an approved waste disposal plant.

**Other hazards**

None known.

## SECTION 3. Composition/information on ingredients

Chemical nature Aqueous ammoniacal solution.

**Hazardous ingredients**

*Chemical name (Concentration)*
CAS-No.
*ammonia solution (>= 10 % - < 30 % )*
1336-21-6
Exact percentages are being withheld as a trade secret.

## SECTION 4. First aid measures

**Description of first-aid measures**

*General advice*
First aider needs to protect himself.

*Inhalation*
After inhalation: fresh air. Call in physician.

*Skin contact*
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

*Eye contact*
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

*Ingestion*
After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately. Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

**Most important symptoms and effects, both acute and delayed**
Irritation and corrosion, bronchitis, Cough, Shortness of breath, gastric pain, Unconsciousness, Bloody vomiting, Nausea, collapse, shock, Convulsions, Lung edema, death
Risk of blindness!

**Indication of any immediate medical attention and special treatment needed**
No information available.

## SECTION 5. Fire-fighting measures

**Extinguishing media**

*Suitable extinguishing media*
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

*Unsuitable extinguishing media*
For this substance/mixture no limitations of extinguishing agents are given.

**Special hazards arising from the substance or mixture**
Not combustible.
Ammonia solution itself is not flammable, but can form an ignitable ammonia/air-mixture by outgassing.
Ambient fire may liberate hazardous vapors.
Fire may cause evolution of:
nitrogen oxides

**Advice for firefighters**

*Special protective equipment for fire-fighters*
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*
Cool closed containers exposed to fire with water spray. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

## SECTION 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

### Environmental precautions

Do not empty into drains.

### Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.
Observe possible material restrictions (see sections 7 and 10).
Take up with liquid-absorbent and neutralizing material (e.g. Chemizorb® $OH^-$, Art. No. 101596). Dispose of properly. Clean up affected area.

## SECTION 7. Handling and storage

### Precautions for safe handling

Observe label precautions.

### Conditions for safe storage, including any incompatibilities

*Requirements for storage areas and containers*
No metal or light-weight-metal containers.

Tightly closed.

Store at room temperature.

## SECTION 8. Exposure controls/personal protection

### Exposure limit(s)

*Components*

| Basis | Value | Threshold limits | Remarks |
|---|---|---|---|
| *ammonia solution 1336-21-6* | | | |
| ACGIH | Time Weighted Average (TWA): | 25 ppm | |
| | Short Term Exposure Limit (STEL): | 35 ppm | |
| NIOSH/GUIDE | Recommended exposure limit (REL): | 25 ppm<br>18 mg/m³ | |
| | Short Term Exposure Limit (STEL): | 35 ppm<br>27 mg/m³ | |
| OSHA_TRANS | PEL: | 50 ppm<br>35 mg/m³ | |
| Z1A | Short Term Exposure Limit (STEL): | 35 ppm<br>27 mg/m³ | |

**Engineering measures**
Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

**Individual protection measures**
Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

*Hygiene measures*
Immediately change contaminated clothing. Apply skin- protective barrier cream.
Wash hands and face after working with substance.

*Eye/face protection*
Tightly fitting safety goggles

*Hand protection*

full contact:

| | |
|---|---|
| Glove material: | butyl-rubber |
| Glove thickness: | 0.7 mm |
| Break through time: | 480 min |

splash contact:

| | |
|---|---|
| Glove material: | Nitrile rubber |
| Glove thickness: | 0.40 mm |
| Break through time: | 240 min |

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 898 Butoject® (full contact), KCL 730 Camatril® -Velours (splash contact).
The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.
This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

*Other protective equipment:*
protective clothing

*Respiratory protection*
required when vapors/aerosols are generated.
Recommended Filter type: Filter K (acc. to DIN 3181) for $NH_3$
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are performed according to the instructions of the producer.
These measures have to be properly documented.

## SECTION 9. Physical and chemical properties

| | |
|---|---|
| Physical state | liquid |
| Color | colorless |
| Odor | stinging<br>ammoniacal |
| Odor Threshold | 0.03 - 0.05 ppm<br>Ammonia |
| pH | > 12<br>at 68 °F (20 °C)<br>strongly alkaline |
| Melting point | ca. -98 °F (-72 °C) |
| Boiling point/boiling range | ca. 90 °F (32 °C) |
| Flash point | Not applicable |
| Evaporation rate | No information available. |

| | |
|---|---|
| Flammability (solid, gas) | No information available. |
| Lower explosion limit | 15.4 %(V) |
| Upper explosion limit | 33.6 %(V) |
| Vapor pressure | 635 hPa<br>at 68 °F (20 °C) |
| Relative vapor density | No information available. |
| Density | 0.90 g/cm3<br>at 68 °F (20 °C) |
| Relative density | No information available. |
| Water solubility | at 68 °F (20 °C)<br>soluble |
| Partition coefficient: n-octanol/water | log Pow: -1.38<br>(experimental)<br>(anhydrous substance) Bioaccumulation is not expected. |
| Autoignition temperature | No information available. |
| Decomposition temperature | No information available. |
| Viscosity, dynamic | No information available. |
| Explosive properties | Not classified as explosive. |
| Oxidizing properties | none |
| Minimum ignition energy | 380 - 680 mJ |

## SECTION 10. Stability and reactivity

**Reactivity**

See below

**Chemical stability**

Ammonia solution itself is not flammable, but can form an ignitable ammonia/air-mixture by outgassing.

**Possibility of hazardous reactions**

A risk of explosion and/or of toxic gas formation exists with the folllowing substances:

Oxidizing agents, Mercury, Oxygen, silver compounds, nitrogen trichloride, hydrogen peroxide, silver, antimony hydride, halogens, Acids, Calcium, Chlorine, Chlorites, auric salts, perchlorates, sodium hypochlorite, mercury compounds, halogen oxides

Heavy metals, Heavy metal salts, Acid chlorides, Acid anhydrides

Risk of ignition or formation of inflammable gases or vapors with:

Boranes, Boron, Oxides of phosphorus, Nitric acid, silicon compounds, chromium(VI) oxide, chromyl chloride

Exothermic reaction with:

Acetaldehyde, Acrolein, Barium, boron compounds, Bromine, halogen-halogen compounds, hydrogen bromide, silane, Hydrogen chloride gas, halogen compounds, dimethylsulfate, nitrogen oxides, Fluorine, Hydrogen fluoride, chlorates, carbon dioxide

Ethylene oxide, polymerizable

**Conditions to avoid**

Heating.

**Incompatible materials**

Aluminum, Lead, Nickel, silver, Zinc, Copper, metal alloys, various metals

**Hazardous decomposition products**

in the event of fire: See section 5.

## SECTION 11. Toxicological information

**Information on toxicological effects**

*Likely route of exposure*
Inhalation, Eye contact, Skin contact, Ingestion

*Acute oral toxicity*
LDLO human: 43 mg/kg (29% solution) (RTECS)

Symptoms: gastric pain, Bloody vomiting, If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

*Acute inhalation toxicity*

Symptoms: mucosal irritations, Cough, Shortness of breath, bronchitis, Possible damages:, damage of respiratory tract

*Skin irritation*
Rabbit
Result: Severe irritations
(29% solution) (RTECS)

Dermatitis Necrosis
Mixture causes burns.

*Eye irritation*
Rabbit
Result: Severe irritations
(29% solution) (RTECS)

Mixture causes serious eye damage. Risk of blindness!

*Specific target organ systemic toxicity - single exposure*
May cause respiratory irritation.
Target Organs: Respiratory system

*Specific target organ systemic toxicity - repeated exposure*
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

*Aspiration hazard*
Regarding the available data the classification criteria are not fulfilled.

**Carcinogenicity**

| | |
|---|---|
| IARC | No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. |
| OSHA | No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens. |
| NTP | No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. |
| ACGIH | No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. |

**Further information**
Systemic effects:
Nausea, collapse, shock, Unconsciousness, Convulsions
Lung edema, Possible effects:
death
Other dangerous properties can not be excluded.
Handle in accordance with good industrial hygiene and safety practice.

**Components**

*ammonia solution*
No information available.

## SECTION 12. Ecological information

### Ecotoxicity

No information available.

### Persistence and degradability

*Biodegradability*

Not readily biodegradable.

### Bioaccumulative potential

*Partition coefficient: n-octanol/water*
log Pow: -1.38
(experimental)
(anhydrous substance) Bioaccumulation is not expected.

### Mobility in soil

No information available.

*Additional ecological information*
Biological effects:
Harmful effect due to pH shift.
Forms toxic and corrosive mixtures with water even if diluted.
Discharge into the environment must be avoided.

### Components

*ammonia solution*

Substance does not meets the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

## SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

## SECTION 14. Transport information

### Land transport (DOT)

| | |
|---|---|
| **UN number** | UN 2672 |
| **Proper shipping name** | AMMONIA SOLUTION |
| **Class** | 8 |
| **Packing group** | III |
| **Environmentally hazardous** | -- |

### Air transport (IATA)

| | |
|---|---|
| **UN number** | UN 2672 |
| **Proper shipping name** | AMMONIA SOLUTION |
| **Class** | 8 |
| **Packing group** | III |
| **Environmentally hazardous** | -- |
| **Special precautions for user** | no |

### Sea transport (IMDG)

| | |
|---|---|
| **UN number** | UN 2672 |
| **Proper shipping name** | AMMONIA SOLUTION |
| **Class** | 8 |
| **Packing group** | III |
| **Environmentally hazardous** | -- |
| **Special precautions for user** | yes |
| EmS | F-A S-B |

## SECTION 15. Regulatory information

### United States of America

**SARA 313**

The following components are subject to reporting levels established by SARA Title III, Section 313:

*Components*

| | | |
|---|---|---|
| ammonia solution | 1336-21-6 | *28 %* |

**SARA 302**

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**Clean Water Act**

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

*Components*

ammonia solution

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

*Components*

ammonia solution

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

**DEA List I**

Not listed

**DEA List II**

Not listed

**US State Regulations**

**Massachusetts Right To Know**

*Components*

ammonia solution

**Pennsylvania Right To Know**

*Components*

ammonia solution

**New Jersey Right To Know**

*Components*

ammonia solution

**California Prop 65 Components**

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

**Notification status**

| | |
|---|---|
| TSCA: | All components of the product are listed in the TSCA-inventory. |
| DSL: | All components of this product are on the Canadian DSL |

## SECTION 16. Other information

**Training advice**

Provide adequate information, instruction and training for operators.

**Labeling**
*Hazard pictograms*

*Signal Word*
Danger

*Hazard Statements*
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.
H400 Very toxic to aquatic life.

*Precautionary Statements*
Prevention
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

**Full text of H-Statements referred to under sections 2 and 3.**

| | |
|---|---|
| H314 | Causes severe skin burns and eye damage. |
| H318 | Causes serious eye damage. |
| H335 | May cause respiratory irritation. |

**Key or legend to abbreviations and acronyms used in the safety data sheet**
Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date03/24/2020

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