



Safety Data Sheet

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Section 1 - Identification

1.1 Product Identifier

Product Name : Ammonia Solution

CAS No. : 1336-21-6

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

Identified uses : Reagent for analysis, Chemical production

Uses advised against : This product is not intended for consumer use.

1.3 Details of the supplier of the safety data sheet

Company : 9920 Pacific Heights Blvd
Suit 150
San Diego
California -92121

1.4 Emergency Telephone number

Emergency phone : +1 (858) 245-0283

Section 2: Hazard Identification

2.1 Classification of the substance or the mixture

Skin corrosion	Sub-Category 1B	H314:Causes severe skin burns and eye damage.
Serious eye damage	Category 1	H318:Causes serious eye damage.
Specific target organ toxicity -single exposure	Category 3	H335:HMay cause respiratory irritation.
Short-term (acute) aquatic hazard	Category 1	H400:Very toxic to aquatic life.
Long-term (chronic) aquatic hazard	Category 1	H410:Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Label according Regulation (EC) 1272/2008

Pictogram



Signal Word:
DANGER

Hazard statements

- | | |
|------|---|
| H314 | Causes severe skin burns and eye damage. |
| H335 | May cause respiratory irritation. |
| H410 | Very toxic to aquatic life with long lasting effects. |

Precautionary statements

- | | |
|----------------|--|
| P261 | Avoid breathing mist or vapors. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/ protective clothing/ eye protection/ face protection. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |

Supplemental Hazard Statements	none
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Reduced Labelling (<= 125 ml)

Pictogram



Signal Word:
DANGER

Hazard statements

H314 Causes severe skin burns and eye damage.

Precautionary statements

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Section 3: Composition/information on ingredients

3.1 Substance

Formula	:	NH ₃
Molecular weight	:	35.05 g/mol
CAS-No.	:	1336-21-6
EC-No.	:	215-647-6
Index-No.	:	007-001-01-2

Section 4: First aid measures

4.1 Description of first aid measures

General advice

First aiders need to protect themselves.

If inhaled

After inhalation: fresh air. Call in physician.

In case of skin contact

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

In case of eye contact

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

If swallowed

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

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11.

4.3 Indications of any immediate medical attention and special treatment needed

No data available.

Section 5: Firefighting measures

5.1 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.

5.2 Special hazard arising from the substance or mixture

Nitrogen oxides (NO_x)

Not combustible.

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

Ambient fire may liberate hazardous vapours.

Fire may cause evolution of:
nitrogen oxides

5.3 Advice for firefighters

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

5.4 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

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

6.2 Environment precautions

Do not let product enter drains. Risk of explosion.

6.3 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 neutralising material (e.g. Chemizorb® OH⁻, Merck Art. No. 101596). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

Section 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Observe label precautions.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

No metal or light-weight-metal containers.
Tightly closed.
Recommended storage temperature see product label.

Storage class

Storage class (TRGS 510): 8B: Non-combustible, corrosive hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

Section 8: Exposure controls – Personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure Controls

Personal protective equipment

Eye/face protection

Tightly fitting safety goggles

Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact

Material: butyl-rubber

Minimum layer thickness: 0,7 mm

Break through time: 480 min

Material tested: Butoject® (KCL 898)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0,40 mm

Break through time: 240 min

Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

Body Protection

protective clothing

Respiratory protection

Recommended Filter type: Filter K (acc. to DIN 3181) for NH₃

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

Control of environmental exposure

Do not empty into drains.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: liquid
Color	: colourless
Odor	: stinging
Melting point/freezing point	: Melting point: -57.5 °C
Initial boiling point and boiling range	: 37.7 °C at 1.013 hPa
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits	: Upper explosion limit: 33.6 %(V) Lower explosion limit: 15.4 %(V)
Flash point	: No data available
Autoignition temperature	: No data available

Decomposition temperature	: No data available
pH	: ca.12 at 20 °C
Viscosity	: Viscosity, kinematic: No data available Viscosity, dynamic: No data available
Water solubility	: at 20 °C soluble
Partition coefficient: n-octanol/water	: log Pow: -1.38 - (anhydrous substance), (Lit.), Bioaccumulation is not expected.
Vapor pressure	: 483 hPa at 20 °C
Density	: 0.903 g/cm ³ at 20 °C
Relative density	No data available
Relative vapour density	: No data available
Particle characteristics	: No data available
Explosive properties	: No data available
Oxidizing properties	: none

9.2 Other safety information

Minimum ignition energy	: 380 - 680 mJ
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Section 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

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

10.3 Possibility of hazardous reactions

A risk of explosion and/or of toxic gas formation exists with the following 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 vapours 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
polymerisable

10.4 Conditions to avoid

Heating.

10.5 Incompatible materials

Aluminum, Lead, Nickel, silver, Zinc, Copper, metal alloys, various metals, Strong oxidizing agents

10.6 Hazardous decomposition products

In the event of fire: see section 5

Section 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Oral: No data available

Acute toxicity estimate Inhalation - 4 h - > 5 mg/l - dust/mist(Calculation method)

Dermal: No data available

Skin corrosion/irritation

Skin - Rabbit

Result: Severe irritations

Remarks: (29% solution)
(RTECS)

Remarks: Dermatitis
Necrosis

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Severe irritations

Remarks: (29% solution)

(RTECS)

Remarks: Mixture causes serious eye damage.

Risk of blindness!

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

Mixture may cause respiratory irritation. - Respiratory system

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated

regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Cough
Shortness of breath
bronchitis
gastric pain
Bloody vomiting
Nausea
collapse
shock
Unconsciousness

Other dangerous properties can not be excluded.
Handle in accordance with good industrial hygiene and safety practice.

Components **ammonia solution**

Acute toxicity

Oral: No data available
LC50 Inhalation - Rat - male - 4 h - 4,9 mg/l - dust/mist
Remarks: (ECHA)
Acute toxicity estimate Inhalation - 4,9 mg/l - dust/mist
(ATE value derived from LD50/LC50 value)
Dermal: No data available

Skin corrosion/irritation

Remarks: Causes skin burns.
Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Section 12: Ecological information

12.1 Toxicity

Mixture

No data available

12.2 Persistence and degradability

Biodegradability Remarks: No data available

12.3 Bioaccumulated potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at

levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

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.

No data available

Components

ammonia solution

Toxicity to fish:- flow-through test LC50 - Pimephales promelas (fathead minnow)
- 0,068 mg/l - 96 h

Remarks: (ECHA)

The value is given in analogy to the following substances: ammonium sulphate

Toxicity to daphnia and other aquatic invertebrates:-static test LC50 - Daphnia magna (Water flea) - 101 mg/l - 48h

Remarks: (ECHA)

Anhydrous

Toxicity to fish(Chronic toxicity):- flow-through test NOEC - Ictalurus punctatus - 0,048 mg/l - 31d

(OECD Test Guideline 215)

Remarks: anhydrous

Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity):-
flow-through test LC50 - Daphnia magna (Water flea) - 4,07
mg/l - 96 h

(US-EPA)

Remarks: The value is given in analogy to the following

substances:

The value is given in analogy to the following substances: ammonium chloride

flow-through test NOEC - Daphnia magna (Water flea) - 0,79

mg/l - 96 h

(US-EPA)

Remarks: The value is given in analogy to the following
substances:

The value is given in analogy to the following substances:
ammonium chloride

Section 13: Disposal considerations

13.1 Waste treatment methods

No data available

Section 14: Transportation information

14.1 UN Number

ADR/RID	2672
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IMDG	2672
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IATA	2672
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14.2 UN proper shipping name

ADR/RID	AMMONIA SOLUTION
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IMDG	AMMONIA SOLUTION
------	------------------

IATA	AMMONIA SOLUTION
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14.3 Transport hazard class(es)

ADR/RID	8
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IMDG	8
------	---

IATA	8
------	---

14.4 Packaging group

ADR/RID	III
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IMDG	III
------	-----

IATA	III
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14.5 Environmental hazards

ADR/RID	yes
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IMDG	yes
------	-----

IATA	no
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14.6 Special precautions for user

Tunnel restriction code	(D/E)
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Further information	No data available
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14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

Section 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

E1 ENVIRONMENTAL HAZARDS

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out

Section 16: Other information

Full text of H-statements

H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Further information

The information and recommendations in this SDS are to the best of our knowledge, information and belief accurate at the time of publication. Although utmost care is been taken in composition of this text, Highpuris LLC cannot be held responsible for any damage resulting from any possible error in this publication.