Extended SAFETY DATA SHEET

Ammonia, Aqua solution

This Safety Data Sheet contains information concerning the potential risks to those involved in handling, transporting and working with the material, as well as describing potential risks to the consumer and the environment. This information must be made available to those who may come into contact with the material or are responsible for the use of the material. This Safety Data Sheet is prepared in accordance with formatting described in the CLP Regulation (EC) No 1272/2008.

Section 1. Identification of the substance and of the company/undertaking

1.1 Product / preparation identifier

Preparation / mixture name	Ammonia, aqua solution above 25 %
Chemical Name and formula:	Ammonia, Aqua solution, NH_4OH
Trade name:	Ammonia water
CAS Number:	n.a.
EINECS Number:	n.a.
REACH Registration No.:	**water solution of ammonia**
ID No/CLP Appendix VI, Table 3.1:	ammonia:007-001-01-2, remark B

1.2 Relevant identified uses of the substances and of the company/undertaking

Used as an intermediate in the manufacture of nitric acid, alkalis, dyes, pharmaceuticals, cosmetics, vitamins, synthetic textile fibres and plastics, an auxiliary agent in processing and non-processing aids, such as in photochemical processes, refrigerant systems, insulation products, inks and toners, coatings, thinners and paint removers and as a processing aid in chemical industries, as an extraction agent in NOx, SOx reduction, processing aid in nutrition, neutralising agent, textile dye, washing and cleaning products and textile treatment. Also used in pulp/paper treatment, leather treatment, wood and metal surface treatment, the treatment of rubber/latex and the manufacture of semiconductors/electronics. In a professional capacity, it is used as a laboratory chemical, as a refrigerant in cooling systems, as a water treatment chemical, as fertiliser, coating, and paint thinner or remover and as a photochemical. It is also used as a cleaning product, leather or other surface treatment product, pH regulator or neutralisation agent and as a process aid for nutrition. Consumer use of ammonia is in coating, paints, thinners and removers, used in fillers, putties and plasters, use of washing and cleaning products and also used in cosmetic and personal care products.

1.3 Details of the supplier of the safety data sheet

Manufacturer

Company name:	AGROPOLYCHIM JSCo
Address:	BULGARIA 9160 DEVNYA INDUSTRIAL ZONE
E-mail of the person, responsible for eSDS:	m.tsvetkova@agropolychim.bg Miroslava Tsvetkova, dipl. Eng.
Tel:	+359 / 519 97 419
Fax:	+359 / 519 9 33 63

1.4 Emergency telephone number

Country	Contact Number	Specific Information
Bulgaria- Medical Institute Pirogov, Toxicology centre	+359 2 9154 409	7 days/week, 24 hours/day
At the company site	+359 519 97 419	7 days/week, 24 hours/day

2.1 Classification of the substance – water solution of Ammonia with concentration above 25%, Appendix VI/CLP

Classification, App. VI / CLP	Skin Corrosion, category 1B STOT single exposition, category 3 Aquatic acute toxicity, category 1	H314 H335 H400

Physicochemical hazards: None.

Human health: Acutely toxic following inhalation exposure. Causes severe burns and damage to the skin when applied to human skin. Following inhalation exposure at low concentration, coughing, irritation of the respiratory tract, eye irritation and lacrymation, wet noses and nasal discharge occur Inhalation at higher concentration can cause burning of the nose, throat and respiratory tract and bronchiolar and alveolar oedema, dyspnoea, bronchospasm and respiratory distress may also occur. No mutagenic activity is expected. There is no evidence of carcinogenicity following exposure. No adverse reproductive effects are likely to occur following exposure. In a neurotoxicity study conducted on human volunteers investigating developmental toxicity/teratogenicity, no effect on spontaneous abortion was observed

Environment: Considered as acute toxic to aquatic life.
Please see Section 16 for full text of each classification.

2.2 Label elements

Regulation (EC) No 1272/2008:

Signal world: WARNING

Hazard Statements

H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.
H400 Acute toxic to aquatic life.
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Precautionary statements:

P210 Keep away from heat/sparks/open flames/hot surfaces – No Smoking.
P273 Avoid release to the environment.
P280 Wear protective gloves / protective clothing / eye protection / face protection.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

2.3 Other hazards

PBT:	Not considered to be a PBT

Section 3. Composition

Name	CAS Number	EINECS Number	% Composition	Classification according to Regulation EC No. 1272/2008
Anhydrous, Ammonia	7664-41-7	231-235-3	min 25 %	Flam. Gas 2., H221 Press. Gas, H280 Acute Tox 3., H331 Skin Corr. 1B, H314 Aquatic Acute 1., H400 **Specific conc. limits: ≥ 25%** Skin Corr. 1B, H314 STOT single exposition 3, H335 Aquatic acute toxicity 1, H400 **>= 5.0 < 25** Skin Corr. 1B STOT single exposition 3 **>=2.5-<5.0%** Skin irritation 2 Aquatic chronic toxicity 3 **>=1.0-<2.5 %** Skin irritation 2

See section 16 for full description of the text of each classification.

Section 4. First Aid Measures

4.1 Description of first aid measures

Inhalation
In case of accident by inhalation: remove casualty to fresh air and keep at rest. Oxygen or artificial respiration if needed. Victim to lie down in the recovery position, cover and keep him warm. Call a doctor immediately. Take victim immediately to hospital.

Skin contact
Call a doctor immediately. Take victim immediately to hospital. Take off contaminated clothing and shoes immediately. Wash off with plenty of water. Immediately apply calcium gluconate gel 2.5% and massage into the affected area using rubber gloves; continue to massage while repeatedly applying gel until 15 minutes after pain is relieved. If fingers/finger nails are touched, even if there is no pain, dip them in a bath of 5% calcium gluconate for 15 to 20 minutes. Keep warm and in a quiet place.

Accidental eye contact
Immediate medical attention is required. Take victim immediately to hospital. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Rinse the eyes with a calcium gluconate 1% solution in physiological serum (10 ml of calcium gluconate 10% in 90 ml of physiological serum). In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).

Ingestion
Call a physician immediately. Take victim immediately to hospital. If victim is conscious: - If swallowed, rinse mouth with water (only if the person is conscious). Give to drink a 1% aqueous calcium gluconate solution. Do NOT induce vomiting. Artificial respiration and/or oxygen may be necessary.
If victim is unconscious but breathing: Oxygen or artificial respiration if needed.

4.2 Most important symptoms and effects, both acute and delayed

No information available.

4.3 Indication of any immediate attention and special treatment needed

The treatment with calcium gluconate is specific for ammonia anhydrous.

Section 5. Firefighting Measures

5.1 Extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Suitable media may include water spray, dry chemical, fog or foam.

5.2 Special hazards arising from the substance or mixture

The product is not flammable. Not combustible. Heating can release hazardous gases. Gives off hydrogen by reaction with metals. Contact with water may produce heat release and presents risks of splashing. Hazardous decomposition products include Hydrogen fluoride, Ammonia and Nitrogen oxides (NOx).

5.3 Advice for fire-fighters

Wear self-contained breathing apparatus and protective suit. Fire fighters must wear fire resistant personnel protective equipment. Wear chemical resistant oversuit.
Cool containers / tanks with water spray. Keep from any possible contact with contaminated water. Approach from upwind. Suppress (knock down) gases/vapours/mists with a water spray jet. After the fire, proceed rapidly with cleaning of surfaces exposed to the fumes in order to limit equipment damage.

Section 6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Approach from upwind. Isolate the area. Wear self-contained breathing apparatus in confined spaces, in cases where the oxygen level is depleted, or in case of significant emissions. Prevent further leakage or spillage if safe to do so. Ammonia vapours can be controlled with water spray. Keep from any possible contact with contaminated water. Keep away from incompatible products.

6.2 Environmental precautions

If the product contaminates rivers and lakes or drains inform respective authorities. Do not flush into surface water or sanitary sewer system**.**

6.3 Method for cleaning up

Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Keep in properly labelled containers. Keep in suitable, closed containers for disposal

6.4 Reference to other sections

Refer to section 8 of SDS for personal protection details.

Section 7. Handling and Storage

7.1 Precautions for safe handling

Use a suitable hand truck designed for cylinder movement. Secure cylinder at all times when in use. Use a pressure reducing regulator or a control valve to safely discharge gas from the cylinder. Contact supplier

if any doubt or issues. Use a check valve to prevent reverse into cylinder. Handle small quantities under a lab hood. Use only in well-ventilated areas. Use only equipment and materials which are compatible with the product. Keep away from incompatible products.

7.2 Condition for safe storage, including any incompatibilities

Keep container closed. Keep away from heat and sources of ignition. Keep in a cool, well-ventilated place. Keep away from incompatible products.

7.3 Specific end use(s)

No further details. Local regulations may require specific equipment for storage or use.

Section 8. Exposure Controls/Personal Protection

8.1 Control parameters

Anhydrous, Ammonia 99.9%

DNEL/DMEL			Exposure route	Exposure frequency	Critical component	Remark
Worker		Consumer				
Industry	Professional					
No threshold level	No threshold level	No threshold level	oral	short term (acute) long term (repeated)		
No threshold level	No threshold level	No threshold level				
6.8 mg/kg NH_3	6.8 mg/kg NH_3	No threshold level	dermal	short term (acute) long term (repeated)		
No threshold level	No threshold level	No threshold level				
47.6 mg/m^3 NH_3	23.8 mg/m^3 NH_3	No threshold level	inhalation	short term (acute) long term (repeated)		
No threshold level	No threshold level	No threshold level				

Workplace Exposure Limits:

8 hours exposure: 14 mg/m^3 and 20ppm
Short-term exposure: 36 mg/m^3 and 50ppm

Workplace exposure limits

UK – TWA (8 hour reference period): 18 mg/m^3.
UK – 15 minute STEL: 25 mg/m^3.
Bulgaria - TWA (8 hour reference period): 14 mg/m^3

France – VME (8 hour reference period): 7 mg/m^3
France – VLE (short term): 14 mg/m^3

Germany – MAK: 14 mg/m^3

PNEC (freshwater): 0.0011 mg/L for free Ammonia.

8.2 Exposure controls

Provide appropriate exhaust ventilation at machinery. Apply technical measures to comply with the occupational exposure limits.

Use only in an area equipped with a safety shower. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.
Ensure there is exhaust ventilation of the area. Valves, pipelines and vessels are sealed and insulated and sampling is carried out with a closed sample loop.

Respiratory protection

In the case of aerosol or vapours of ammonia use respirator with an approved filter.
Self-contained breathing apparatus in medium confinement/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection. Use only respiratory protection that conforms to international/national standards. Use EU approved respiratory protection.

Hand protection

Protective gloves - impervious chemical resistant: Suitable material: butyl-rubber

Eye protection

Face-shield. Chemical resistant goggles must be worn.

Skin protection

Chemical resistant apron; butyl rubber apron; butyl rubber boots

Section 9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance:	Colourless liquid
Odour:	strong, pungent
Odour threshold:	5 to 25 ppm,
pH:	a`ua solution 1%: 11.7
Melting point/freezing point °C:	-56°C (25% solution)
Initial boiling point and boiling range °C:	n.a.
Flash point:	n.a since it is a gas
Evaporation rate:	n.a since it is a gas

Flammability Flammability of ammonia vapours in air 16-26% v/v (at ambient temperature and pressure). Some aqueous solutions of ammonia, e.g. 26% w/w NH3, have a vapour pressure such that the equilibrium composition in the air can be within the flammability limits.

Vapour pressure:	48 кPa at 20^0C (25% NH_3)
Vapour density	0.596 *g/sm³* (gas ammonia)
Relative density:	n.a.
Density at 20^0C	0.907 g/sm³ (25%)
Solubility:	Totaly soluble in water
Partition Coefficient: n-octanol/water:	n.a. since it is a liquid
Auto-ignition temperature:	651°C (gas ammonia)
Decomposition temperature:	n.a.
Viscosity:	n.a. since it is a gas
Explosive properties:	Not explosive.
Oxidising properties:	Not oxidising

9.2 Other information

No further details

Section 10. Stability and Reactivity

10.1 Reactivity

Stable under normal conditions.

10.2 Chemical stability

Stable under appropriate conditions.

10.3 Possibility of hazardous reactions

Can form unstable or explosive compounds with halogens, nitric acid, hypochlorites , silver, mercury, lead.
Can react violently if in contact with strong acids, nitrogen oxides

10.4 Conditions to avoid

Halogens, nitric acid, hypochlorites , silver, mercury, lead, strong acids and nitrogen oxides

10.5 Incompatible materials

Halogens, nitric acid, hypochlorites, silver, mercury, lead, strong acids and nitrogen oxides

10.6 Hazardous decomposition products

Hydrogen , nitrogen oxides

Section 11. Toxicological Information

11.1 Information on toxicological effects

Acute Toxicity: Very toxic by inhalation.

	Effect dose	Species	Method	Remark
Acute oral toxicity	LD50 350 mg/kg bw	Male Wistar rats	Acute Oral Toxicity	Probit Analysis
Acute dermal toxicity	LD50			Waived due to toxicity of the substance.
Acute inhalative toxicity	LC50 28130 - 13770 mg/m^3	Male and female Wistar rats	Assessment of acute inhalation toxicity in the rat following various exposure periods.	Results are the range from 10 minutes exposure to 60 minutes exposure.

Irritation: Causes severe burns when tested on human skin.

	Exposure time	Species	Evaluation	Method	Remark
Primary irritation to the skin:	n/a	Human	Corrosive	n/a	Skin pH was determined to be 10.
Irritation to eyes	n/a	n/a	Highly irritating	n/a	No study conducted, however, based on the results of the skin irritation, it can be assumed that eye irritation will occur.

Corrosivity: Corrosive to skin.
Sensitisation: Not sensitising.
Repeated dose toxicity:

	Effect dose	Value	Exposure time period	Species	Method	Evaluation	Remark
Sub-acute oral	68 mg/kg bw/d	NOAEL	35 days	Crj: CD(SD) male and female rats	Combined Repeated dose Toxicity Study with the Reproduction/Developmental Toxicity Study	No marked toxicity	
Sub-chronic inhalative	35 or 63 mg/m^3	NOAEC	50 days	Male Wistar rats	Subchronic inhalative toxicity of ammonia in the rat.	No systemic toxicity, however, the primary effect is local irritation of the respiratory tract.	

Carcinogenicity: Not classified.
Mutagenicity: No indication of mutagenicity when tested *in vitro* in the Bacterial Reverse Mutation Assay and *in vivo* using the Micronucleus Assay.
Toxicity for reproduction: No indication of reprotoxicity.

Route of exposure: Inhalation and Oral.

Symptoms related to the physical, chemical and toxicological characteristics:
Skin Corrosive and respiratory and eye irritant.

Section 12. Ecological Information

12.1 Toxicity

Toxic to aquatic organisms.

Aquatic toxicity	Effect dose	Exposure time	Species	Method	Evaluation	Remark
Acute fish toxicity	LC50	96 h	*Onchorynchus mykiss*		0.89 mg/L unionised ammonia.	Result is pH and temperature adjusted.
Acute daphnia toxicity	EC50	48 h	*Daphnia magna*	Freshwater static, equivalent to ASTM E729-80.	101 mg/L	Results based on mortality.
Acute algae toxicity	EC50	18 days	*Chlorella vulgaris*	Freshwater, static	7200 mg/L	Result based on cell number
Chronic fish toxicity	LOEC	73 days	*Onchorynchus mykiss*		0.022 mg/L	Result based on mortality
Chronic daphnia toxicity	NOEC	96 h	*Daphnia magna*	Freshwater flow-through equivalent or similar to EPA OPPTS 850.1300 (Daphnid Chronic Toxicity Test)	0.79 mg/L unionised ammonia	Result based on mortality.

12.2 Persistence and degradability

Not considered to be persistent and is rapidly biodegradable in aquatic systems. In abiotic environments, Ammonia is assimilated by aquatic algae and macrophytes for use as a nitrogen source.

12.3 Bioaccumulative potential

The accumulation of ammonia in biota is not considered of importance in the environment as it does not accumulate in lipid-rich tissues in the same manner as organic chemicals. Ammonia is ubiquitous in the aquatic environment due to the breakdown of plant and animal material and due to animal excretory processes. As a product of normal metabolism, Ammonia is not expected to bioaccumulate.

12.4 Mobility in soil

There is limited mobility in soil expected due to the strong adsorption of ammonium ions to clay minerals and the bacterial oxidation to nitrate. Ammonia in soil is in dynamic equilibrium with nitrate and other substrates in the nitrate cycle.

12.5 Results of PBT and vPvB assessment

This substance is not identified as a PBT substance

12.6 Other adverse effects

No further details

Section 13. Disposal Considerations

13.1 Waste treatment methods

Disposal operations – Disposal should be in accordance with local, state or national legislation.

Disposal of packaging – Empty containers can contain vapour, do not drill cut, grind or weld. Use only approved transporters, recyclers, treatment, storage or disposal facilities. This material and/or its container must be disposed of as hazardous waste.

Please follow all local, regional, national and international laws.

Section 14. Transport Information

14.1 UN number: 2672

14.2 UN proper shipping name: Ammonia, aqua solution

14.3 Transport hazard class(es): 8.

14.4 Packing group: III

14.5 Environmental hazards: Environmentally Hazardous Substance

14.6 Special precautions for user: No information available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable to packaged goods

Section 15. Regulatory Information

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

Directive 96/82EC (Seveso); Regulation 1907/2006 EC REACH

15.2 Chemical safety assessment
A chemical safety assessment has been conducted. In demand the ES's can be provided.

Section 16. Other Information

Chapters 2 and 3 are updated (Classification and Labeling).

Risk phrases used in Section 3

H314 Causes severe skin burns and eye damage.

WARNING!

H335 May cause respiratory irritation.

H400 Acute toxic to aquatic life.

WARNING!

Note: The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.