



PRODUCT: AMMONIA SOLUTION $\geq 10\%$ - $\leq 35\%$ (AMLI) REVISION: 13 DATED: 20/09/2023 PAGE 1 OF 8

PRODUCT SPECIFICATION		
Product Name	Ammonia Solution ≥10% conc ≤35%	
Alternative Name	Aqueous Ammonia, Ammonia Liquor, Ammonium Hydroxide	
Specification Reference	AMLI/11 (23/05/0083200)	
SALES SPECIFICATION		
PROPERTIES	GUARANTEE CHARACTERISTICS	TYPICAL ANALYSIS
Ammonia Content	33.0% - 34.0%	33.5 % m/m
Specific Gravity at 15.5°C	0.884 to 0.887	0.885
Chloride as Cl	≤ 2 ppm m/m	
Turbidity	≤ 3 NTU	
Residue on Evaporation	≤ 25 ppm m/m	
Residue on Ignition	≤ 10 ppm m/m	
<u>GRADE</u>	<u>ASSAY</u>	<u>SPECIFIC GRAVITY</u>
890	32% +/- 1.5%	890 +/- 0.005
900	28.5% +/- 1.5%	900 +/- 0.005
910	25% +/- 1.5%	910 +/- 0.005
925	20.2% +/- 1.5%	925 +/- 0.005
928	19% +/- 1.5%	928 +/- 0.005
938	16% +/- 1.5%	938 +/- 0.005
960	10% +/- 1.7%	960 +/- 0.005

Further information

Ammonia loses strength with time and the greater the temperature the greater the reduction in strength. Strength and Specific Gravity quoted will apply at the time of delivery and one month from that delivery.

NOTES

Exclusion of Liability

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Health and Safety

A Material Safety Data Sheet has been issued describing the health, safety and environmental properties of this product, identifying the potential hazards and giving advice on the handling precautions and emergency procedures. This must be consulted fully before handling, storage and use.



PRODUCT: AMMONIA SOLUTION $\geq 10\%$ - $\leq 35\%$ (AMLI) REVISION: 13 DATED: 20/09/2023 PAGE 2 OF 8

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

1.1 Product Identifier

Product Name Ammonia Solution $\geq 10\%$ $\leq$ conc to $\leq 35\%$.
Alternative names Ammonia liquor, Ammonium hydroxide, Aqueous ammonia, Aqua ammonia.
Chemical Formula NH_4OH .
CAS Number 1336-21-6.
EINECS Number 215-647-6.
REACH Registration Number 01-2119488876-14 -XXXX

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

Identified use(s) See Section: 7.3
Uses advised against The use of the substance should be limited to those specified in the CSR.

1.3 Details of the supplier of the safety data sheet

Tennants Distribution Limited
Hazelbottom Road
Cheetham
Manchester
M8 0GR
Tel: 44(0)161 205 4454
Fax: 44(0) 161 203 4298
Email: msds@tennantsdistribution.com

1.4 Emergency telephone number

Tel: 44(0)844 335 0001 (24 hours)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Regulation (EC) No. 1272/2008 (CLP)

Skin Corr. 1B; Causes severe skin burns and eye damage.
STOT SE 3; May cause respiratory irritation.
Aquatic acute 1; Very toxic to aquatic life.

2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)
Product Name Aqueous Ammonia

Hazard Pictogram



Signal Word(s)

Danger.

Hazard Statements:

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

Precautionary Statements

P260, P264, P271, P273, P280, P312, P310, P321, P363
P391, P301, + P330 + P331. P303 + P361 + P353, P304 +
P340, P305 + P351 + P338, P403 + P233, P405, P501.

2.3 Other hazards

Ammonia vapour is flammable in air in the range 16% - 25% v/v.

Additional information

For full text of H/P phrases see section 16.



PRODUCT: AMMONIA SOLUTION $\geq 10\%$ - $\leq 35\%$ (AMLI) REVISION: 13 DATED: 20/09/2023 PAGE 3 OF 8

3. COMPOSITION/INFORMATION ON INGREDIENTS

Solution of ammonia in water. A clear colourless liquid evolving ammonia vapour.

Mixture

EC Classification No. 1272/2008

Hazardous Ingredients(s)	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard pictogram(s) and Hazard Statement(s)
Ammonia Solution	25 - 35	1336-21-6	215-647-6	01-2119488876-14-0024	GHS05, Skin Corr.1B;H314 GHS07, STOT SE 3; H335, GHS09, Aquatic Acute 1; H400.

3.2 Additional Information

For full text of H/P phrases see section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. If not breathing, give artificial resuscitation. Get medical attention immediately.

Skin contact

IF ON SKIN (or hair): Immediately remove/take off all contaminated clothing and shoes. Flush skin with water for at least 15 minutes. Get medical attention immediately. Wash contaminated clothing and shoes before reuse.

Eye contact

IF IN EYES: Rinse cautiously with water for several minutes keeping eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion

IF SWALLOWED: Rinse mouth. Drink copious quantities of water. Do NOT induce vomiting. Get medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

Following severe exposure the patient should be kept under medical review for at least 48 hours as delayed pulmonary oedema may develop.

4.3 Indication of any immediate medical attention and special treatment needed

Administer oxygen if necessary. In the case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for at least 48 hours.

5. FIRE FIGHTING MEASURES

Vapour: Combustible but not readily ignited.

5.1 Extinguishing Media

Suitable Extinguishing Media	As appropriate for surrounding fire.
Unsuitable Extinguishing Media	None known.

5.2 Special hazards arising from the substance or mixture

Combustion or thermal decomposition will evolve toxic and irritant vapours.

5.3 Advice for fire-fighters

Notify police and fire brigade as soon as possible. Contain fire control water for later disposal. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep fire exposed containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Evacuate surrounding areas. Provided it is safe to do so, isolate the source of the

leak. Wear appropriate personal protective equipment, avoid direct contact with vapour, mist or split material. Provide adequate ventilation, and wear appropriate respirator when ventilation is inadequate.

For emergency responders

If specialised clothing is required to deal with a release, take note of information in section 8 on suitable materials. See 'non-emergency personnel' above.

6.2 Environmental precautions

Avoid contact of spilt material and runoff with soil waterways, drains and sewers where possible. Spillages or uncontrolled discharges into watercourses must be alerted to the appropriate regulatory body.

6.3 Methods and material for containment and cleaning up

**PRODUCT: AMMONIA SOLUTION $\geq 10\%$ - $\leq 35\%$ (AMLI) REVISION: 13 DATED: 20/09/2023 PAGE 4 OF 8**

Small release	Stop leak if without significant risk. Dilute with water and mop up, or absorb spillages onto sand, earth or any suitable adsorbent material and place in an appropriate waste container. Dispose of via licensed waste contractor.
Large release	Stop leak if without significant risk. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Use water spray to 'knock down' vapour. Wash spillages into an effluent treatment plant or proceed as follows. Contain or collect spillage with non-combustible, adsorbent material e.g. sand, earth, vermiculite or diatomaceous earth then place into container for disposal via a licensed waste disposal. Contaminated adsorbent material may pose the same hazard as the spilt product

6.4 Reference to other sections

See section :1 for emergency contact information.

See section: 13 for waste disposal.

See also section 8.

7. HANDLING AND STORAGE**7.1 Precautions for safe handling**

Use only outdoors or in a well-ventilated area. Do not breathe gas. Avoid contact with skin and eyes. Wear protective Gloves/protective clothing/eye protection/face protection. Wear appropriate respirator when ventilation is inadequate.

See also section : 8. Wash hands thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Store locked up. Store in a well-ventilated place protected from direct sunlight. Keep container tightly closed. Keep away from: Acids. Use appropriate containment to avoid environmental contamination.

Storage Temperature Ambient

Storage Life Stable under normal conditions.

Incompatible materials Copper, copper alloy, Zinc, zinc alloy.

Appropriate packaging Stainless steel, Mild steel, Polyethylene, Polypropylene

7.3 Specific end use(s)

Professional uses of anhydrous and aqueous ammonia Use as a laboratory chemical, refrigerant in cooling systems, water treatment chemical, fertiliser, coating, paint thinner or paint remover, photochemical.

Professional uses of anhydrous and aqueous ammonia. Use as a cleaning product, pH regulatory or neutralisation agent, process aid for nutrition.

Consumer use of aqueous ammonia. Use in coatings, paints, thinners and removers; use in fillers, putties and plasters, Use of washing and cleaning products, use in cosmetic & personal care products.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1 Control parameters****8.1.1 Workplace Exposure Limit (UK HSE EH40)**

Substance.	CAS Number	LTEL(8 hr TWA ppm)	LTEL(8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note:
Ammonia	1336-21-6	25	18	35	25	EH40 WEL 10/2007

8.1.2 Biological limit value

Not established.

8.1.3 PNECs and DNELs

By analogy with similar materials: Anhydrous ammonia.

DNEL	Oral	Inhalation	Dermal
Industry-Long Term-local effects	-	14.0 mg/m ³	-
Industry-Long Term-Systemic effects	-	47.6 mg/m ³	6.8mg/kgbw/day
Industry –Short Term –Local effects	-	36.0 mg/m ³	-
Industry-Short Term-Systemic effects	-	47.6mg/m ³	6.8mg/kgbw/day
Professional -Long Term –Local effects	-	-	-
Professional-Long Term –Systemic effects	-	-	-
Professional-Short Term –Local effects	-	-	-
Professional-Short Term – Systemic effects	-	-	-
Consumer – Long Term –Local effects	-	2.8mg/m ³	-



PRODUCT: AMMONIA SOLUTION $\geq 10\%$ - $\leq 35\%$ (AMLI) REVISION: 13 DATED: 20/09/2023 PAGE 5 OF 8

Consumer – Long Term – Systemic effects	6.8mg/kg bw/day	23.8mg/m ³	6.8mg/kgbw/day
Consumer – Short Term – Local effects	-	7.2mg/m ³	-
Consumer – Short Term-Systemic effects	6.8mg/kg bw/day	23.8mg/m ³	6.5mg/kgbw/day
	PNEC		
Aquatic Compartment (Fresh water)	0.0011 mg/l.		
Marine Compartment	0.0011 mg/l.		
Terrestrial Compartment	No Data.		
Atmospheric Compartment	No Data.		
8.2 Exposure controls			
8.2.1 Appropriate engineering controls	Use with local exhaust ventilation or breathing protection.		
8.2.2 Personal protection equipment			
Eye/face protection	Goggles giving complete protection to eyes.		
Skin protection (Hand protection/Other)	Impervious gloves and boots: PVC, Butyl rubber.		
Respiratory protection	A suitable respirator must always be worn. A suitable mask with Filter type K (EN141 or EN405) may be appropriate.		
Thermal hazards	Not applicable.		
8.2.3 Environmental Exposure Controls	Avoid release to the environment		
9. PHYSICAL AND CHEMICAL PROPERTIES			
9.1 Information on basic physical and chemical properties			
Appearance	Liquid		
Colour	Clear Colourless. (<5 Hazen Units).		
Odour	Pungent.		
Odour Threshold (ppm)	Detectable to most people at levels as low as 5ppm.		
pH (Value)	14.		
Freezing Point (°C)	-55°C-100°C.		
Boiling point/boiling range (°C):	38°C-20°C.		
Flash point (°C)	None found.		
Evaporation rate	Not available.		
Flammability (Solid, gas)	Flammable.		
Flammable Limits (v/v)	16% - 25%		
Vapour Pressure (Pascal)	48700 – 10000 @ 20°C.		
Vapour Density (Air=1)	Not available.		
Density (g/ml)	0.904 – 0.89 @ at 20°C.		
Bulk Density (g/ml)	Not applicable.		
Solubility (Water)	Miscible.		
Solubility (Other)	Not available.		
Partition Coefficient (n-Octanol/water)	Log Pow – 1.14.		
Auto Ignition Temperature (°C)	651°C (Vapour.)		
Decomposition Temperature (°C)	Not available.		
Viscosity (mPa.s)	1.1 @27°C.		
Explosive properties	Not explosive.		
Oxidising properties	Not oxidising.		
9.2 Other information	No information available.		
10. STABILITY AND REACTIVITY			
10.1 Reactivity			
Stable under normal conditions			
10.2 Chemical stability			
Stable under recommended storage and handling conditions			
10.3 Possibility of hazardous reactions			
Can react violently if in contact with acids, alkalis, halogens, reducing agents and heavy metals			
10.4 Conditions to avoid			
Keep away from incompatible materials			



PRODUCT: AMMONIA SOLUTION $\geq 10\%$ - $\leq 35\%$ (AMLI) REVISION: 13 DATED: 20/09/2023 PAGE 6 OF 8

10.5 Incompatible materials Copper, copper alloys, zinc, zinc alloy
10.6 Hazardous decomposition products Nitrogen oxides
11. TOXICOLOGICAL INFORMATION
11.1 Information on toxicological effects Mixture
Acute Toxicity Ingestion: By analogy with similar materials: Ammonium Hydroxide: LD50 Rat: 350 mg/kg bw. Will cause corrosion of and damage to the gastrointestinal tract Inhalation: Fluid build up on the lung (pulmonary oedema) may occur up to 48 hours after exposure and could prove fatal Skin Contact: Causes severe skin burns Eye Contact: Severe irritant to the eye
Skin Corrosion/Irritation Skin Corr. 1B; Causes severe skin burns and eye damage
Serious eye damage/eye irritation Severe irritant to the eye
Respiratory or skin sensitisation It is not a skin sensitizer
Mutagenicity There is no evidence of mutagenic potential
Carcinogenicity No evidence of carcinogenicity. NOAEL (Oral): 67 mg/kg bw/d
Reproductive toxicity Not classified Effects on fertility: NOAEL: 408 mg/kg bw/d Developmental toxicity: NOAEL: 100 mg/kg bw/d. NOAEC: 25 mg/m ³
STOT – Single exposure: STOT SE 3; May cause respiratory irritation STOT – Repeated exposure Not classified. NOAEL (Oral): 68 mg/kg bw/d. NOAEL
Further information Aspiration Hazard: Not classified
12. ECOLOGICAL INFORMATION
12.1 Toxicity Aquatic Acute 1: Very toxic to aquatic life. By analogy with similar materials: Un-ionised ammonia Fish (fresh water): LC50 0.80 mg/l Fish (fresh water): NOEC: 1.2 mg/l Aquatic invertebrates: LC50 (Daphnia magna): 101 mg/l Aquatic invertebrates: NOEC (Daphnia magna): 0.79 mg/l Algae (fresh water): 2700 mg/l
12.2 Persistence and degradability The product is biodegradable. Unlikely to persist
12.3 Bio accumulative potential The product has no potential for bioaccumulation
12.4 Mobility in soil The product is soluble in water
12.5 Results of PBT and vPvB assessment Not classified as PBT or vPvB
12.6 Other adverse effects None anticipated



PRODUCT: AMMONIA SOLUTION $\geq 10\%$ - $\leq 35\%$ (AMLI) REVISION: 13 DATED: 20/09/2023 PAGE 7 OF 8

13. DISPOSAL CONSIDERATIONS	
13.1 Waste treatment methods	
Re-use/recycling of waste highly recommended. Dispose of contents/container to: Licensed recycler, reclaimer or incinerator. Disposal should be in accordance with local, state or national regulations	
13.2 Additional information	
WGK class 2 (official)	
14. TRANSPORT INFORMATION	
14.1 UN Number	UN2672
14.2 Proper Shipping Name	AMMONIA SOLUTION
14.3 Transport hazard class	8
14.4 Packing group	III
14.5 Environmental	Yes. Environmentally Hazardous (Aquatic Environment)
14.6 Special precautions for users	No data available
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	
No information available	
Additional Information	
Emergency Action Code: 2R	
ADR Hazard Identification Number: 80	
Limited Quantity: LQ7	
Special Provisions: 543	
Tunnel Code (E)	
15. REGULATORY INFORMATION	
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	
Control of Explosive Precursors and Poisons Regulations 2023: This product is classified as a reportable poison.	
15.2 Chemical safety assessment	
Not available	
16. OTHER INFORMATION	
Legend	
LTEL –	Long term exposure limit
STEL –	Short Term Exposure Limit
STOT –	Specific Target Organ Toxicity
DNEL –	Derived No Effect Level
PNEL –	Predicted NO Effect Concentration
PBT –	PBT: Persistent, Bioaccumulative and Toxic
CSR –	Chemical Safety Report
NOAEL –	No Observable Adverse Effect Level
NOEC –	No Observable Effect Concentration
Skin Corr. 1B –	Skin corrosion/irritation Category 1B
STOT SE 3 –	Specific target organ toxicity – Single exposure Category 3
Aquatic Acute 1 –	Hazardous to the aquatic environment. Acute Category 1
Hazard Statement(s) and Precautionary statement(s)	
H314	Causes severe skin burns and eye damage
H335	May cause respiratory irritation
H400	Very toxic to aquatic life
P260	Do not breathe gas
P264	Wash hands thoroughly after handling
P271	Use only outdoors in a well ventilated area
P273	Avoid release to the environment
P280	Wear protective clothing/eye protection/face protection
P312	Call a POISON CENTRE or doctor if you feel unwell
P321	Specific treatment (see on the label)
P363	Wash contaminated clothing before reuse
P391	Collect spillage
P304 + P340	If INHALED: Remove victim to fresh air and keep at rest in a position comfortable for

**PRODUCT: AMMONIA SOLUTION $\geq 10\%$ - $\leq 35\%$ (AMLI) REVISION: 13 DATED: 20/09/2023 PAGE 8 OF 8**

P403 + P233	Breathing
P301 + P330 + P331	Store in a well ventilated place. Keep container tightly closed
P303 + P361 + P353	If SWALLOWED: rinse mouth. Do NOT induce vomiting
P305 + P351 + P338	IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower
P405	IF IN EYES: Rinse cautiously for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P501	Store locked up
	Dispose of contents/containers to: Send to a licensed recycler, reclaimer or incinerator
Source of key data used to compile the data sheet	
Supplier information	
Modifications from last revision	
Section 15 of this datasheet has been updated.	
Date: 20/09/2023	
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