SURAJ AIR (INDIA) PRIVATE LIMITED.
CIN: U24239KA2008PTC048191
(An ISO 9001: 2015 Certified Company)

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Material Safety Data Sheet

AMMONIA IN AQUEOUS SOLUTION

Section 1 - Identification

Product Name	:	Ammonia Solution
Synonyms	:	Ammonium Hydroxide, Aqua Ammonia, Ammonia in Aqueous Solution
Trade Name	:	Ammonia in Aqueous Solution
Chemical Formula	:	NH_4OH
Molecular Weight	:	35.05
CAS No.	:	1336-21-6
UN No.	:	2672
Manufacturer	:	Suraj Air (India) Private Limited
Address	:	Plot No. 10 A2, KIADB Industrial Area, Hoskote- 562114
Emergency Contact No.	:	+91 96060 80830 +91 96060 80831 +91 96060 80839

Section 2 - Hazards Identification

Status	:	This material is considered hazardous as per Dangerous Goods (Classification, Packaging and Labelling) Rules, 2013		
Risk Classification No.	:	2.3		
Health Rating	:	3	-	Severe (Poison)
Flammability Rating	:	1	-	Slight
Reactivity Rating	:	2	-	Moderate
Contact Rating	:	3	-	Severe (Corrosive)

Label Elements

Hazard Pictograms	:	
Signal Word	:	Danger

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Hazard Statements	:	• Causes severe skin burns and eye damage. • May cause respiratory irritation. • Very toxic to aquatic life.
Precautionary Statements		
General	:	• Wear protective gloves/protective clothing/eye protection/face protection. • Wash thoroughly after handling. • Do not eat, drink, or smoke when using this product. • Use only outdoors or in a well-ventilated area. • Do not release to the environment. • Do not breath vapor. • If medical advice is needed, have product container or label at hand.
Response	:	• Collect Spillage. • Seek medical assistance immediately. • If In Eyes - Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. • If On Skin (Or Hair) - Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. • If Inhaled - Remove victim to fresh air and keep at rest in a position comfortable for breathing. • If Swallowed - Rinse mouth. Do Not induce vomiting.

Section 3 - Information on Ingredients/ Composition

Ingredient	CAS No.	Percentage	Hazardous
Ammonia	1336-21-6	20-30	Yes
Water	7732-18-5	70-80	No

Section 4 - First Aid Measures

Eye Contact:
Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately. Immediate action is critical to minimize possibility of blindness.

Inhalation:
Remove to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Call a physician immediately.

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Skin Contact:
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

Ingestion:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Section 5 - Fire Fighting Measures

Fire:
Auto-ignition temperature: 651°C(1204°F)
Flammable limits in air: 16 to 25% by volume

Explosion:
Flammable vapors may accumulate in confined spaces.

Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire.

Special Information:
In the event of a fire, wear full protective clothing and approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.

Section 6 - Accidental Release Measures

Ventilate area of leak/ spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment. Contain and recover liquid when possible. Residues from spills can be diluted with water.

Section 7 - Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from incompatibilities. Protect from direct sunlight. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8 - Exposure Controls/Personal Protection

Effects of various concentration of ammonia vapor in air

Vapor Concentration (ppm)	General Effect	Exposure Period
1 to 5	Odor detectable by most person	Prolonged repeated exposure produces no injury
25	No adverse effect for	Maximum allowable concentration for 8 hour work day and 40 hour work week, to

	average worker	which it is believed that nearly all workers may be repeatedly exposed, day after day for lifetime without adverse effect.
35	No adverse effect for average worker	Exposure longer than 15 minute and should not occur more than 4 times per day, with least 60 minutes between successive exposures
400 to 700	Nose & throat irritation. Eye irritation with tearing.	Infrequent short (1/2 hour) exposure ordinarily produces no serious effect
2000 to 3000	Conclusive coughing Severe eye irritation	No permissible exposure. May be fatal after short exposure.
5000 to 10,000	Respirator spasm. Rapid asphyxia	No permissible exposure. Rapidly fatal

Engineering Controls: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection: Face shield. Full suit. Vapor respirator (be sure to use an approved/certified respirator or equivalent). Gloves. Boots.

Personal Protection in Case of a Large Spill: Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Consult a specialist BEFORE handling this product.

Section 9 - Physical Properties & Chemical Properties

Physical Properties

Appearance	:	Clear, colorless solution
Odor	:	Extremely pungent Ammonia odor.
Solubility	:	Soluble in water.
Specific Gravity	:	0.888 to 0.992
pH	:	11.6 (1.0N)
Auto ignition temperature	:	651 °C
Minimum ignition energy	:	100 mJ

Chemical Properties

Corrosivity	:	Corrosive to copper, copper-alloys &galvanized surface
Incompatibilities	:	Mercury, halogens, calcium, silver nitrate, silver oxide, silver permanganate, hypochlorite, dimethyl sulfate, propylene oxide, nitromethane, oleum, beta-propiolactone.
Light sensitivity	:	No
Stability	:	Stable under ordinary conditions of use and storage
Decomposition	:	Above solubility temperature it decomposes to form ammonia and water. At 450-500°C it again decomposes to form nitrogen and hydrogen.
Polymerization	:	Will not occur

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Section 10 – Stability and Reactivity

Reactivity	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur
Conditions to avoid	No specific data
Incompatible materials	Yellow Metals (brass & copper)
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11 -Toxicological Information

Acute oral toxicity (LD50): 350 mg/kg [Rat].

Chronic Effects on Humans:
MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. [Ammonium hydroxide]. May cause damage to the following organs: mucous membranes, skin, and eyes.

Section 12 - Ecological Information

Environmental Fate:
This material is not expected to significantly bio-accumulate.

Environmental Toxicity:
This material is expected to be very toxic to aquatic life.

Section 13 - Disposal Considerations

Waste disposal of ammonia and materials containing ammonia depends to a great extent upon local conditions. Be sure that all central, state, and local regulations regarding health and pollution are followed.

If not prohibited, waste may be disposed of by diluting with large quantities of water and washing into sewers.

Section 14 - Transport Information

DOT Classification: Class 8: Corrosive material
Identification: : Ammonia in aqueous solution UN No.: 2672 PG: III
Special Provisions for Transport: Not available.

Section 15 - REGULATORY INFORMATION

Regulatory Overview:
Ammonia (NH_3) in aqueous solution is classified under the Indian regulatory framework as a hazardous chemical. It is regulated under several key legislations, including but not limited to:

- The Environment (Protection) Act, 1986
- The Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2016
- The Manufacture, Storage, and Import of Hazardous Chemicals Rules, 1989
- The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996

Safety, Health, and Environmental Regulations:

Occupational Safety and Health: Ammonia is recognized as a hazardous substance under the Factories Act, 1948. Employers are required to comply with provisions related to handling, storage, and transportation of hazardous chemicals, ensuring workplace safety and health.

Environmental Protection: Discharge of ammonia solutions into water bodies is strictly regulated under the Water (Prevention and Control of Pollution) Act, 1974, and the relevant amendments. Disposal should be in compliance with local regulatory requirements and pollution control norms.

Transportation: Transportation of ammonia in aqueous solution is subject to the provisions of the Motor Vehicles Act, 1988, and the rules framed thereunder. Proper labeling, packaging, and transportation practices as per Indian Standards (IS 6792) should be followed.

Storage and Handling Requirements: Ammonia in aqueous solution should be stored in a cool, dry, well-ventilated area away from direct sunlight and incompatible substances.
Storage containers should be tightly sealed and labeled according to IS 6928 standards.
Personnel handling ammonia solutions must be trained in safe handling practices, emergency procedures, and use of personal protective equipment (PPE).

Emergency Response and First Aid: In case of accidental exposure or spillage, immediately evacuate the affected area and restrict access.
Provide adequate ventilation and wear appropriate PPE, including chemical-resistant gloves and eye protection.
In case of ingestion, do not induce vomiting. Seek medical attention immediately.
In case of contact with skin or eyes, rinse thoroughly with water for at least 15 minutes. Seek medical attention if irritation persists.

Disposal Considerations: Dispose of ammonia solutions according to Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2016, and as per local regulatory requirements.
Do not discharge into drains or water bodies without proper treatment and authorization.

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Section 16 - Other Information

Date of Issue	15-July-2024
Necessity of Specific Training	Annually
Disclaimer	To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its associates, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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Approved By	Reviewed By	Prepared By
Executive Officer	Manager	Assistant Manager