

# Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia)

## ROWE SCIENTIFIC

Chemwatch Hazard Alert Code: 3

Chemwatch: 4847-83

Version No: 7.2.10.8

Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

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S.GHS.AUS.EN

### SECTION 1 Identification of the substance / mixture and of the company / undertaking

#### Product Identifier

|                               |                                                            |
|-------------------------------|------------------------------------------------------------|
| Product name                  | Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia) |
| Chemical Name                 | Not Applicable                                             |
| Synonyms                      | CA4201; CA4202; CA4207; CA4552; CA6172; CA6413             |
| Chemical formula              | Not Applicable                                             |
| Other means of identification | Not Available                                              |

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

|                          |                     |
|--------------------------|---------------------|
| Relevant identified uses | Laboratory reagent. |
|--------------------------|---------------------|

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

|                         |                                                       |
|-------------------------|-------------------------------------------------------|
| Registered company name | ROWE SCIENTIFIC                                       |
| Address                 | 11 Challenge Boulevard Wangara WA 6065 Australia      |
| Telephone               | +61 8 9302 1911                                       |
| Fax                     | +61 8 9302 1905                                       |
| Website                 | <a href="http://rowe.com.au/">http://rowe.com.au/</a> |
| Email                   | rowewa@rowe.com.au                                    |

#### Emergency telephone number

|                                   |                          |
|-----------------------------------|--------------------------|
| Association / Organisation        | ROWE SCIENTIFIC          |
| Emergency telephone numbers       | +61 8 9302 1911 (24 Hrs) |
| Other emergency telephone numbers | Not Available            |

### SECTION 2 Hazards identification

#### Classification of the substance or mixture

**HAZARDOUS CHEMICAL. NON-DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.**

|                               |                                                                                                                                     |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Poisons Schedule              | S5                                                                                                                                  |
| Classification <sup>[1]</sup> | Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 1                                                  |
| Legend:                       | 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI |

#### Label elements

|                     |                                                                                     |
|---------------------|-------------------------------------------------------------------------------------|
| Hazard pictogram(s) |  |
| Signal word         | Danger                                                                              |

## Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia)

## Hazard statement(s)

|      |                            |
|------|----------------------------|
| H315 | Causes skin irritation.    |
| H318 | Causes serious eye damage. |

## Precautionary statement(s) Prevention

|      |                                                                                  |
|------|----------------------------------------------------------------------------------|
| P280 | Wear protective gloves, protective clothing, eye protection and face protection. |
| P264 | Wash all exposed external body areas thoroughly after handling.                  |

## Precautionary statement(s) Response

|                |                                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------|
| 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/physician/first aider.                                                                   |
| P302+P352      | IF ON SKIN: Wash with plenty of water.                                                                                           |
| P332+P313      | If skin irritation occurs: Get medical advice/attention.                                                                         |
| P362+P364      | Take off contaminated clothing and wash it before reuse.                                                                         |

## Precautionary statement(s) Storage

Not Applicable

## Precautionary statement(s) Disposal

Not Applicable

## SECTION 3 Composition / information on ingredients

## Substances

See section below for composition of Mixtures

## Mixtures

| CAS No    | %[weight] | Name           |
|-----------|-----------|----------------|
| 1336-21-6 | <5        | <u>ammonia</u> |
| 7732-18-5 | >95       | <u>water</u>   |

**Legend:** 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; \* EU IOELVs available

## SECTION 4 First aid measures

## Description of first aid measures

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eye Contact  | <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>Wash out immediately with fresh running water.</li> <li>Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li> <li>Seek medical attention without delay; if pain persists or recurs seek medical attention.</li> <li>Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>                                    |
| Skin Contact | <p>If skin contact occurs:</p> <ul style="list-style-type: none"> <li>Immediately remove all contaminated clothing, including footwear.</li> <li>Flush skin and hair with running water (and soap if available).</li> <li>Seek medical attention in event of irritation.</li> </ul>                                                                                                                                                                                                                                                                                    |
| Inhalation   | <ul style="list-style-type: none"> <li>If fumes or combustion products are inhaled remove from contaminated area.</li> <li>Lay patient down. Keep warm and rested.</li> <li>Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.</li> <li>Transport to hospital, or doctor, without delay.</li> </ul> |
| Ingestion    | <ul style="list-style-type: none"> <li>If swallowed do <b>NOT</b> induce vomiting.</li> <li>If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>Observe the patient carefully.</li> <li>Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> </ul>                           |

Continued...

## Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia)

- Seek medical advice.

**Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

For acute or short term repeated exposures to ammonia and its solutions:

- Mild to moderate inhalation exposures produce headache, cough, bronchospasm, nausea, vomiting, pharyngeal and retrosternal pain and conjunctivitis. Severe inhalation produces laryngospasm, signs of upper airway obstruction (stridor, hoarseness, difficulty in speaking) and, in excessively, high doses, pulmonary oedema.
- Warm humidified air may soothe bronchial irritation.
- Test all patients with conjunctival irritation for corneal abrasion (fluorescein stain, slit lamp exam)
- Dyspneic patients should receive a chest X-ray and arterial blood gases to detect pulmonary oedema.

**SECTION 5 Firefighting measures****Extinguishing media**

- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

**Special hazards arising from the substrate or mixture**

|                             |             |
|-----------------------------|-------------|
| <b>Fire Incompatibility</b> | None known. |
|-----------------------------|-------------|

**Advice for firefighters**

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fire Fighting</b>         | <ul style="list-style-type: none"> <li>▸ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▸ Wear breathing apparatus plus protective gloves in the event of a fire.</li> <li>▸ Prevent, by any means available, spillage from entering drains or water courses.</li> <li>▸ Use fire fighting procedures suitable for surrounding area.</li> <li>▸ <b>DO NOT</b> approach containers suspected to be hot.</li> <li>▸ Cool fire exposed containers with water spray from a protected location.</li> <li>▸ If safe to do so, remove containers from path of fire.</li> <li>▸ Equipment should be thoroughly decontaminated after use.</li> </ul> |
| <b>Fire/Explosion Hazard</b> | <ul style="list-style-type: none"> <li>▸ Non combustible.</li> <li>▸ Not considered a significant fire risk, however containers may burn.</li> </ul> <p>Decomposition may produce toxic fumes of:<br/>nitrogen oxides (NOx)<br/>May emit poisonous fumes.</p>                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>HAZCHEM</b>               | Not Applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**SECTION 6 Accidental release measures****Personal precautions, protective equipment and emergency procedures**

See section 8

**Environmental precautions**

See section 12

**Methods and material for containment and cleaning up**

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Minor Spills</b> | <ul style="list-style-type: none"> <li>▸ Clean up all spills immediately.</li> <li>▸ Avoid breathing vapours and contact with skin and eyes.</li> <li>▸ Control personal contact with the substance, by using protective equipment.</li> <li>▸ Contain and absorb spill with sand, earth, inert material or vermiculite.</li> <li>▸ Wipe up.</li> <li>▸ Place in a suitable, labelled container for waste disposal.</li> </ul>                                                                                                                                                                                                                                                                                                                          |
| <b>Major Spills</b> | <p>Moderate hazard.</p> <ul style="list-style-type: none"> <li>▸ Clear area of personnel and move upwind.</li> <li>▸ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▸ Wear breathing apparatus plus protective gloves.</li> <li>▸ Prevent, by any means available, spillage from entering drains or water course.</li> <li>▸ Stop leak if safe to do so.</li> <li>▸ Contain spill with sand, earth or vermiculite.</li> <li>▸ Collect recoverable product into labelled containers for recycling.</li> <li>▸ Neutralise/decontaminate residue (see Section 13 for specific agent).</li> <li>▸ Collect solid residues and seal in labelled drums for disposal.</li> <li>▸ Wash area and prevent runoff into drains.</li> </ul> |

Continued...

## Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia)

- ▶ After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- ▶ If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## SECTION 7 Handling and storage

### Precautions for safe handling

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safe handling     | <ul style="list-style-type: none"> <li>▶ <b>DO NOT</b> allow clothing wet with material to stay in contact with skin</li> <li>▶ Limit all unnecessary personal contact.</li> <li>▶ Wear protective clothing when risk of exposure occurs.</li> <li>▶ Use in a well-ventilated area.</li> <li>▶ Avoid contact with incompatible materials.</li> <li>▶ When handling, <b>DO NOT</b> eat, drink or smoke.</li> <li>▶ Keep containers securely sealed when not in use.</li> <li>▶ Avoid physical damage to containers.</li> <li>▶ Always wash hands with soap and water after handling.</li> <li>▶ Work clothes should be laundered separately.</li> <li>▶ Use good occupational work practice.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> <li>▶ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.</li> </ul> |
| Other information | <ul style="list-style-type: none"> <li>▶ Store in original containers.</li> <li>▶ Keep containers securely sealed.</li> <li>▶ Store in a cool, dry, well-ventilated area.</li> <li>▶ Store away from incompatible materials and foodstuff containers.</li> <li>▶ Protect containers against physical damage and check regularly for leaks.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

### Conditions for safe storage, including any incompatibilities

|                         |                                                                                                                                                                                                                                                                                            |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Suitable container      | <ul style="list-style-type: none"> <li>▶ Polyethylene or polypropylene container.</li> <li>▶ Packing as recommended by manufacturer.</li> <li>▶ Check all containers are clearly labelled and free from leaks.</li> <li>▶ Glass container is suitable for laboratory quantities</li> </ul> |
| Storage incompatibility | None known                                                                                                                                                                                                                                                                                 |



X — Must not be stored together

O — May be stored together with specific preventions

+ — May be stored together

Note: Depending on other risk factors, compatibility assessment based on the table above may not be relevant to storage situations, particularly where large volumes of dangerous goods are stored and handled. Reference should be made to the Safety Data Sheets for each substance or article and risks assessed accordingly.

## SECTION 8 Exposure controls / personal protection

### Control parameters

#### Occupational Exposure Limits (OEL)

#### INGREDIENT DATA

Not Available

#### Emergency Limits

| Ingredient | TEEL-1 | TEEL-2  | TEEL-3    |
|------------|--------|---------|-----------|
| ammonia    | 61 ppm | 330 ppm | 2,300 ppm |

| Ingredient | Original IDLH | Revised IDLH  |
|------------|---------------|---------------|
| ammonia    | Not Available | Not Available |
| water      | Not Available | Not Available |

#### Occupational Exposure Banding

Continued...

## Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia)

| Ingredient    | Occupational Exposure Band Rating                                                                                                                                                                                                                                                                                                                                  | Occupational Exposure Band Limit |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| ammonia       | E                                                                                                                                                                                                                                                                                                                                                                  | ≤ 0.1 ppm                        |
| <b>Notes:</b> | Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health. |                                  |

## Exposure controls

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Appropriate engineering controls                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.<br>The basic types of engineering controls are:<br>Process controls which involve changing the way a job activity or process is done to reduce the risk.<br>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure.                                                                         |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Type of Contaminant:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Air Speed:                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | solvent, vapours, degreasing etc., evaporating from tank (in still air).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.25-0.5 m/s<br>(50-100 f/min)  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.5-1 m/s<br>(100-200 f/min.)   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1-2.5 m/s<br>(200-500 f/min.)   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.5-10 m/s<br>(500-2000 f/min.) |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Within each range the appropriate value depends on:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Lower end of the range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Upper end of the range          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1: Room air currents minimal or favourable to capture                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1: Disturbing room air currents |
| 2: Contaminants of low toxicity or of nuisance value only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2: Contaminants of high toxicity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                 |
| 3: Intermittent, low production.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3: High production, heavy use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                 |
| 4: Large hood or large air mass in motion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4: Small hood-local control only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                 |
| Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                 |
| Personal protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                 |
| Eye and face protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"><li>▶ Safety glasses with side shields.</li><li>▶ Chemical goggles.</li><li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]</li></ul> |                                 |
| Skin protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | See Hand protection below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                 |
| Hands/feet protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"><li>▶ Wear chemical protective gloves, e.g. PVC.</li><li>▶ Wear safety footwear or safety gumboots, e.g. Rubber</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                 |
| Body protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | See Other protection below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 |

## Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia)

## Other protection

- ▶ Overalls.
- ▶ P.V.C apron.
- ▶ Barrier cream.
- ▶ Skin cleansing cream.
- ▶ Eye wash unit.

## Respiratory protection

Type K-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

| Required minimum protection factor | Maximum gas/vapour concentration present in air p.p.m. (by volume) | Half-face Respirator | Full-Face Respirator |
|------------------------------------|--------------------------------------------------------------------|----------------------|----------------------|
| up to 10                           | 1000                                                               | K-AUS / Class1 P2    | -                    |
| up to 50                           | 1000                                                               | -                    | K-AUS / Class 1 P2   |
| up to 50                           | 5000                                                               | Airline *            | -                    |
| up to 100                          | 5000                                                               | -                    | K-2 P2               |
| up to 100                          | 10000                                                              | -                    | K-3 P2               |
| 100+                               |                                                                    |                      | Airline**            |

\* - Continuous Flow \*\* - Continuous-flow or positive pressure demand

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO<sub>2</sub>), G = Agricultural chemicals, K = Ammonia(NH<sub>3</sub>), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

## SECTION 9 Physical and chemical properties

## Information on basic physical and chemical properties

| Appearance                                   | Clear, colourless alkaline liquid with ammonia odour; mixes with water. |                                         |                |
|----------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------|----------------|
| Physical state                               | Liquid                                                                  | Relative density (Water = 1)            | Not Available  |
| Odour                                        | Not Available                                                           | Partition coefficient n-octanol / water | Not Available  |
| Odour threshold                              | Not Available                                                           | Auto-ignition temperature (°C)          | Not Applicable |
| pH (as supplied)                             | >10                                                                     | Decomposition temperature               | Not Available  |
| Melting point / freezing point (°C)          | Not Available                                                           | Viscosity (cSt)                         | Not Available  |
| Initial boiling point and boiling range (°C) | Not Available                                                           | Molecular weight (g/mol)                | Not Applicable |
| Flash point (°C)                             | Not Applicable                                                          | Taste                                   | Not Available  |
| Evaporation rate                             | Not Available                                                           | Explosive properties                    | Not Available  |
| Flammability                                 | Not Applicable                                                          | Oxidising properties                    | Not Available  |
| Upper Explosive Limit (%)                    | Not Applicable                                                          | Surface Tension (dyn/cm or mN/m)        | Not Available  |
| Lower Explosive Limit (%)                    | Not Applicable                                                          | Volatile Component (%vol)               | Not Available  |
| Vapour pressure (kPa)                        | Not Available                                                           | Gas group                               | Not Available  |
| Solubility in water                          | Miscible                                                                | pH as a solution (%)                    | Not Available  |
| Vapour density (Air = 1)                     | Not Available                                                           | VOC g/L                                 | Not Available  |

## SECTION 10 Stability and reactivity

|                    |                                                                                                                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity         | See section 7                                                                                                                                                                                        |
| Chemical stability | <ul style="list-style-type: none"> <li>▶ Unstable in the presence of incompatible materials.</li> <li>▶ Product is considered stable.</li> <li>▶ Hazardous polymerisation will not occur.</li> </ul> |

## Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia)

|                                           |               |
|-------------------------------------------|---------------|
| <b>Possibility of hazardous reactions</b> | See section 7 |
| <b>Conditions to avoid</b>                | See section 7 |
| <b>Incompatible materials</b>             | See section 7 |
| <b>Hazardous decomposition products</b>   | See section 5 |

## SECTION 11 Toxicological information

## Information on toxicological effects

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Inhaled</b>      | <p>There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.</p> <p>The highly irritant properties of ammonia vapour result as the gas dissolves in mucous fluids and forms irritant, even corrosive solutions.</p> <p>Inhalation of the ammonia fumes causes coughing, vomiting, reddening of lips, mouth, nose, throat and conjunctiva while higher concentrations can cause temporary blindness, restlessness, tightness in the chest, pulmonary oedema (lung damage), weak pulse and cyanosis.</p> <p>Inhalation of high concentrations of vapour may cause breathing difficulty, tightness in chest, pulmonary oedema and lung damage. Brief exposure to high concentrations &gt; 5000 ppm may cause death due to asphyxiation (suffocation) or fluid in the lungs.</p> <p>Prolonged or regular minor exposure to the vapour may cause persistent irritation of the eyes, nose and upper respiratory tract. Massive ammonia exposures may produce chronic airway hyperactivity and asthma with associated pulmonary function changes. The average nasal retention of ammonia by human subjects was found to be 83%.</p> |
| <b>Ingestion</b>    | <p>Accidental ingestion of the material may be damaging to the health of the individual.</p> <p>Large doses of ammonia or injected ammonium salts may produce diarrhoea and may be sufficiently absorbed to produce increased production of urine and systemic poisoning. Symptoms include weakening of facial muscle, tremor, anxiety, reduced muscle and limb control.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Skin Contact</b> | <p>The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.</p> <p>The material may accentuate any pre-existing dermatitis condition</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Eye</b>          | If applied to the eyes, this material causes severe eye damage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Chronic</b>      | <p>Prolonged or repeated minor exposure to ammonia gas/vapour may cause long-term irritation to the eyes, nose and upper airway. Repeated exposure or prolonged contact may produce skin inflammation and conjunctivitis. Other effects may include ulcers in the mouth and disturbances to the bronchi and gastrointestinal tract. In animals, repeated exposure to sublethal levels produces adverse effects on the airways, liver, kidneys and spleen, as well as eye irritation and clouding of the cornea.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia) | TOXICITY                                                                                                                                                                                                                     | IRRITATION                    |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
|                                                            | Not Available                                                                                                                                                                                                                | Not Available                 |
| ammonia                                                    | TOXICITY                                                                                                                                                                                                                     | IRRITATION                    |
|                                                            | Inhalation(Rat) LC50; 2000 ppm4h <sup>[2]</sup>                                                                                                                                                                              | Eye (rabbit): 0.25 mg SEVERE  |
|                                                            | Oral(Rat) LD50; ~350-370 mg/kg <sup>[2]</sup>                                                                                                                                                                                | Eye (rabbit): 1 mg/30s SEVERE |
| water                                                      | TOXICITY                                                                                                                                                                                                                     | IRRITATION                    |
|                                                            | Oral(Rat) LD50; >90000 mg/kg <sup>[2]</sup>                                                                                                                                                                                  | Not Available                 |
| <b>Legend:</b>                                             | 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances |                               |

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AMMONIA</b>             | <p>The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.</p> <p>Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production.</p> |
| <b>AMMONIA &amp; WATER</b> | No significant acute toxicological data identified in literature search.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia)

|                                   |   |                          |   |
|-----------------------------------|---|--------------------------|---|
| Acute Toxicity                    | ✗ | Carcinogenicity          | ✗ |
| Skin Irritation/Corrosion         | ✓ | Reproductivity           | ✗ |
| Serious Eye Damage/Irritation     | ✓ | STOT - Single Exposure   | ✗ |
| Respiratory or Skin sensitisation | ✗ | STOT - Repeated Exposure | ✗ |
| Mutagenicity                      | ✗ | Aspiration Hazard        | ✗ |

**Legend:** ✗ – Data either not available or does not fill the criteria for classification  
 ✓ – Data available to make classification

## SECTION 12 Ecological information

## Toxicity

| Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia) | Endpoint                                                                                                                                                                                                                                                                                                                                                                                  | Test Duration (hr) | Species       | Value         | Source        |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|---------------|---------------|
|                                                            | Not Available                                                                                                                                                                                                                                                                                                                                                                             | Not Available      | Not Available | Not Available | Not Available |
| ammonia                                                    | Endpoint                                                                                                                                                                                                                                                                                                                                                                                  | Test Duration (hr) | Species       | Value         | Source        |
|                                                            | LC50                                                                                                                                                                                                                                                                                                                                                                                      | 96h                | Fish          | 33.3mg/L      | 4             |
|                                                            | EC50(ECx)                                                                                                                                                                                                                                                                                                                                                                                 | 96h                | Crustacea     | 0.83mg/L      | 5             |
| water                                                      | Endpoint                                                                                                                                                                                                                                                                                                                                                                                  | Test Duration (hr) | Species       | Value         | Source        |
|                                                            | Not Available                                                                                                                                                                                                                                                                                                                                                                             | Not Available      | Not Available | Not Available | Not Available |
| <b>Legend:</b>                                             | Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data |                    |               |               |               |

**DO NOT** discharge into sewer or waterways.

## Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|------------|-------------------------|------------------|
| water      | LOW                     | LOW              |

## Bioaccumulative potential

| Ingredient | Bioaccumulation                       |
|------------|---------------------------------------|
|            | No Data available for all ingredients |

## Mobility in soil

| Ingredient | Mobility                              |
|------------|---------------------------------------|
|            | No Data available for all ingredients |

## SECTION 13 Disposal considerations

## Waste treatment methods

| Product / Packaging disposal | <ul style="list-style-type: none"> <li>Recycle wherever possible or consult manufacturer for recycling options.</li> <li>Consult State Land Waste Management Authority for disposal.</li> <li>Bury residue in an authorised landfill.</li> <li>Recycle containers if possible, or dispose of in an authorised landfill.</li> </ul> |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SECTION 14 Transport information

## Labels Required

| Marine Pollutant | NO |
|------------------|----|
|------------------|----|

Continued...

## HAZCHEM

Not Applicable

**Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS****Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS****Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS****Transport in bulk according to Annex II of MARPOL and the IBC code**

Not Applicable

**Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code**

| Product name | Group         |
|--------------|---------------|
| ammonia      | Not Available |
| water        | Not Available |

**Transport in bulk in accordance with the ICG Code**

| Product name | Ship Type     |
|--------------|---------------|
| ammonia      | Not Available |
| water        | Not Available |

**SECTION 15 Regulatory information****Safety, health and environmental regulations / legislation specific for the substance or mixture****ammonia is found on the following regulatory lists**

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6

Australian Inventory of Industrial Chemicals (AIIC)

**water is found on the following regulatory lists**

Australian Inventory of Industrial Chemicals (AIIC)

**National Inventory Status**

| National Inventory                              | Status                                                                                                                                                                                                    |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Australia - AIIC / Australia Non-Industrial Use | Yes                                                                                                                                                                                                       |
| Canada - DSL                                    | Yes                                                                                                                                                                                                       |
| Canada - NDSL                                   | No (ammonia; water)                                                                                                                                                                                       |
| China - IECSC                                   | Yes                                                                                                                                                                                                       |
| Europe - EINEC / ELINCS / NLP                   | Yes                                                                                                                                                                                                       |
| Japan - ENCS                                    | Yes                                                                                                                                                                                                       |
| Korea - KECI                                    | Yes                                                                                                                                                                                                       |
| New Zealand - NZIoC                             | Yes                                                                                                                                                                                                       |
| Philippines - PICCS                             | Yes                                                                                                                                                                                                       |
| USA - TSCA                                      | Yes                                                                                                                                                                                                       |
| Taiwan - TCSI                                   | Yes                                                                                                                                                                                                       |
| Mexico - INSQ                                   | Yes                                                                                                                                                                                                       |
| Vietnam - NCI                                   | Yes                                                                                                                                                                                                       |
| Russia - FBEPH                                  | Yes                                                                                                                                                                                                       |
| <b>Legend:</b>                                  | Yes = All CAS declared ingredients are on the inventory<br>No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing (see specific ingredients in brackets) |

**SECTION 16 Other information**

## Revision Date

14/11/2019

Continued...

## Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia)

Initial Date 09/08/2012

## SDS Version Summary

| Version  | Date of Update | Sections Updated               |
|----------|----------------|--------------------------------|
| 7.1.1.1  | 14/11/2019     | Synonyms, Name                 |
| 7.1.2.1  | 27/04/2021     | Regulation Change              |
| 7.1.3.1  | 04/05/2021     | Regulation Change              |
| 7.1.4.1  | 07/05/2021     | Regulation Change              |
| 7.1.5.1  | 11/05/2021     | Regulation Change              |
| 7.1.5.2  | 30/05/2021     | Template Change                |
| 7.1.5.3  | 04/06/2021     | Template Change                |
| 7.1.5.4  | 05/06/2021     | Template Change                |
| 7.1.6.4  | 08/06/2021     | Regulation Change              |
| 7.1.6.5  | 09/06/2021     | Template Change                |
| 7.1.6.6  | 11/06/2021     | Template Change                |
| 7.1.6.7  | 15/06/2021     | Template Change                |
| 7.1.7.7  | 18/06/2021     | Regulation Change              |
| 7.1.8.7  | 22/06/2021     | Regulation Change              |
| 7.1.8.8  | 05/07/2021     | Template Change                |
| 7.1.9.8  | 14/07/2021     | Regulation Change              |
| 7.1.10.8 | 20/07/2021     | Regulation Change              |
| 7.2.10.8 | 22/07/2021     | Classification, Synonyms, Name |

## Other information

## Ingredients with multiple cas numbers

| Name    | CAS No                |
|---------|-----------------------|
| ammonia | 1336-21-6, 14798-03-9 |

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

## Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average  
PC—STEL: Permissible Concentration-Short Term Exposure Limit  
IARC: International Agency for Research on Cancer  
ACGIH: American Conference of Governmental Industrial Hygienists  
STEL: Short Term Exposure Limit  
TEEL: Temporary Emergency Exposure Limit.  
IDLH: Immediately Dangerous to Life or Health Concentrations  
ES: Exposure Standard  
OSF: Odour Safety Factor  
NOAEL :No Observed Adverse Effect Level  
LOAEL: Lowest Observed Adverse Effect Level  
TLV: Threshold Limit Value  
LOD: Limit Of Detection  
OTV: Odour Threshold Value  
BCF: BioConcentration Factors  
BEI: Biological Exposure Index  
AII: Australian Inventory of Industrial Chemicals  
DSL: Domestic Substances List  
NDSL: Non-Domestic Substances List  
IECSC: Inventory of Existing Chemical Substance in China  
EINECS: European INventory of Existing Commercial chemical Substances  
ELINCS: European List of Notified Chemical Substances

Continued...

**Rowe Scientific Ammonium Hydroxide Solution (1-5% ammonia)**

NLP: No-Longer Polymers

ENCS: Existing and New Chemical Substances Inventory

KECI: Korea Existing Chemicals Inventory

NZIoC: New Zealand Inventory of Chemicals

PICCS: Philippine Inventory of Chemicals and Chemical Substances

TSCA: Toxic Substances Control Act

TCSI: Taiwan Chemical Substance Inventory

INSQ: Inventario Nacional de Sustancias Químicas

NCI: National Chemical Inventory

FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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