



## Riva Star

### SDI Limited

Version No: 4.1.1.1

Safety Data Sheet according to WHS and ADG requirements

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Initial Date: Not Available

L.GHS.AUS.EN

## SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

### Product Identifier

|                               |                                                                                                                                |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Product name                  | Riva Star                                                                                                                      |
| Synonyms                      | Not Available                                                                                                                  |
| Proper shipping name          | AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 °C in water, with more than 10% but not more than 35% ammonia |
| Other means of identification | Not Available                                                                                                                  |

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

|                          |                                                                                                           |
|--------------------------|-----------------------------------------------------------------------------------------------------------|
| Relevant identified uses | (Riva Star is comprised of Riva Star Step 1 and Riva Star Step 2) for use as a tooth desensitising agent. |
|--------------------------|-----------------------------------------------------------------------------------------------------------|

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

|                         |                                                   |                                                                        |                                         |
|-------------------------|---------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------|
| Registered company name | SDI Limited                                       | SDI Brazil Industria E Comercio Ltda                                   | SDI Germany GmbH                        |
| Address                 | 3-15 Brunston Street VIC Bayswater 3153 Australia | Rua Dr. Virgilio de Carvalho Pinto, 612 São Paulo CEP 05415-020 Brazil | Hansestrasse 85 Cologne D-51149 Germany |
| Telephone               | +61 3 8727 7111 (Business Hours)                  | +55 11 3092 7100                                                       | +49 0 2203 9255 0                       |
| Fax                     | +61 3 8727 7222                                   | +55 11 3092 7101                                                       | +49 0 2203 9255 200                     |
| Website                 | www.sdi.com.au                                    | www.sdi.com.au                                                         | www.sdi.com.au                          |
| Email                   | info@sdi.com.au                                   | brasil@sdi.com.au                                                      | germany@sdi.com.au                      |

|                         |                                                     |
|-------------------------|-----------------------------------------------------|
| Registered company name | SDI (North America) Inc.                            |
| Address                 | 1279 Hamilton Parkway IL Itasca 60143 United States |
| Telephone               | +1 630 361 9200 (Business hours)                    |
| Fax                     | Not Available                                       |
| Website                 | Not Available                                       |
| Email                   | USA.Canada@sdi.com.au                               |

### Emergency telephone number

|                                   |                      |               |               |
|-----------------------------------|----------------------|---------------|---------------|
| Association / Organisation        | SDI Limited          | Not Available | Not Available |
| Emergency telephone numbers       | +61 3 8727 7111      | Not Available | Not Available |
| Other emergency telephone numbers | raycahill@sdi.com.au | Not Available | Not Available |

|                                   |                 |
|-----------------------------------|-----------------|
| Association / Organisation        | Not Available   |
| Emergency telephone numbers       | +61 3 8727 7111 |
| Other emergency telephone numbers | Not Available   |

## SECTION 2 HAZARDS IDENTIFICATION

### Classification of the substance or mixture

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

|                               |                                                                                                                                |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Poisons Schedule              | Not Applicable                                                                                                                 |
| Classification <sup>[1]</sup> | Metal Corrosion Category 1, Skin Corrosion/Irritation Category 1B, Acute Aquatic Hazard Category 1                             |
| Legend:                       | 1. Classification by vendor; 2. Classification drawn from HSIS; 3. Classification drawn from EC Directive 1272/2008 - Annex VI |

### Label elements

Continued...

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|                    |                                                                                                                                                                     |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GHS label elements |   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|             |               |
|-------------|---------------|
| SIGNAL WORD | <b>DANGER</b> |
|-------------|---------------|

## Hazard statement(s)

|      |                                          |
|------|------------------------------------------|
| H290 | May be corrosive to metals.              |
| H314 | Causes severe skin burns and eye damage. |
| H400 | Very toxic to aquatic life.              |

## Precautionary statement(s) Prevention

|      |                                                                            |
|------|----------------------------------------------------------------------------|
| P260 | Do not breathe dust/fume/gas/mist/vapours/spray.                           |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P234 | Keep only in original container.                                           |
| P273 | Avoid release to the environment.                                          |

## Precautionary statement(s) Response

|                |                                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------|
| P301+P330+P331 | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.                                                                               |
| P303+P361+P353 | IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.                       |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P310           | Immediately call a POISON CENTER or doctor/physician.                                                                            |
| P363           | Wash contaminated clothing before reuse.                                                                                         |
| P390           | Absorb spillage to prevent material damage.                                                                                      |
| P391           | Collect spillage.                                                                                                                |
| P304+P340      | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.                                 |

## Precautionary statement(s) Storage

|      |                  |
|------|------------------|
| P405 | Store locked up. |
|------|------------------|

## Precautionary statement(s) Disposal

|      |                                                                     |
|------|---------------------------------------------------------------------|
| P501 | Dispose of contents/container in accordance with local regulations. |
|------|---------------------------------------------------------------------|

## SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

## Substances

See section below for composition of Mixtures

## Mixtures

| CAS No        | %[weight] | Name                                              |
|---------------|-----------|---------------------------------------------------|
|               |           | each 0.05ml capsule of Riva Star Step 1 contains: |
| 7775-41-9     | 35-40     | <u>silver(I) fluoride</u>                         |
| 1336-21-6     | 15-20     | <u>ammonia</u>                                    |
| 7732-18-5     | balance   | <u>water</u>                                      |
|               |           | Riva Star Step 2 contains:                        |
| Not Available | 100       | Ingredients determined not to be hazardous        |

## 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>▶ Immediately hold eyelids apart and flush the eye continuously with 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>▶ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</li> <li>▶ Transport to hospital or doctor without delay.</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>▶ Seek medical attention.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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## Ingestion

- ▶ If swallowed do **NOT** induce vomiting.
- ▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- ▶ Observe the patient carefully.
- ▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- ▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- ▶ Seek medical advice.

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

Treat symptomatically.

## SECTION 5 FIREFIGHTING MEASURES

## Extinguishing media

- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.

## Special hazards arising from the substrate or mixture

## Fire Incompatibility

None known.

## Advice for firefighters

## Fire Fighting

- ▶ Alert Fire Brigade and tell them location and nature of hazard.
- ▶ Wear full body protective clothing with breathing apparatus.
- ▶ Prevent, by any means available, spillage from entering drains or water course.
- ▶ Use fire fighting procedures suitable for surrounding area.
- ▶ **Do not approach containers suspected to be hot.**
- ▶ Cool fire exposed containers with water spray from a protected location.
- ▶ If safe to do so, remove containers from path of fire.
- ▶ Equipment should be thoroughly decontaminated after use.

## Fire/Explosion Hazard

- ▶ Non combustible.
  - ▶ Not considered to be a significant fire risk.
  - ▶ Acids may react with metals to produce hydrogen, a highly flammable and explosive gas.
  - ▶ Heating may cause expansion or decomposition leading to violent rupture of containers.
  - ▶ May emit corrosive, poisonous fumes. May emit acid smoke.
- Decomposition may produce toxic fumes of; nitrogen oxides (NOx) ammonia

## SECTION 6 ACCIDENTAL RELEASE MEASURES

## Personal precautions, protective equipment and emergency procedures

## Minor Spills

- ▶ Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material.
- ▶ Check regularly for spills and leaks.
- ▶ Clean up all spills immediately.
- ▶ Avoid breathing vapours and contact with skin and eyes.
- ▶ Control personal contact with the substance, by using protective equipment.
- ▶ Contain and absorb spill with sand, earth, inert material or vermiculite.
- ▶ Wipe up.
- ▶ Place in a suitable, labelled container for waste disposal.

## Major Spills

- ▶ Clear area of personnel and move upwind.
- ▶ Alert Fire Brigade and tell them location and nature of hazard.
- ▶ Wear full body protective clothing with breathing apparatus.
- ▶ Prevent, by any means available, spillage from entering drains or water course.
- ▶ Stop leak if safe to do so.
- ▶ Contain spill with sand, earth or vermiculite.
- ▶ Collect recoverable product into labelled containers for recycling.
- ▶ Neutralise/decontaminate residue (see Section 13 for specific agent).
- ▶ Collect solid residues and seal in labelled drums for disposal.
- ▶ Wash area and prevent runoff into drains.
- ▶ 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

- ▶ Avoid all personal contact, including inhalation.
- ▶ Wear protective clothing when risk of exposure occurs.
- ▶ Use in a well-ventilated area.
- ▶ Avoid contact with moisture.
- ▶ Avoid contact with incompatible materials.
- ▶ **When handling, DO NOT eat, drink or smoke.**
- ▶ Keep containers securely sealed when not in use.
- ▶ Avoid physical damage to containers.
- ▶ Always wash hands with soap and water after handling.
- ▶ Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- ▶ Use good occupational work practice.
- ▶ Observe manufacturer's storage and handling recommendations contained within this SDS.
- ▶ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Continued...

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## Other information

Do not store in direct sunlight.  
Store in a dry and well ventilated-area, away from heat and sunlight.

## Conditions for safe storage, including any incompatibilities

## Suitable container

► **DO NOT repack.** Use containers supplied by manufacturer only.

## Storage incompatibility

► Avoid contact with copper, aluminium and their alloys.

## SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

## Control parameters

## OCCUPATIONAL EXPOSURE LIMITS (OEL)

## INGREDIENT DATA

| Source                       | Ingredient         | Material name                     | TWA                           | STEL                          | Peak          | Notes         |
|------------------------------|--------------------|-----------------------------------|-------------------------------|-------------------------------|---------------|---------------|
| Australia Exposure Standards | silver(I) fluoride | Silver, soluble compounds (as Ag) | 0.01 mg/m <sup>3</sup>        | Not Available                 | Not Available | Not Available |
| Australia Exposure Standards | ammonia            | Ammonia                           | 17 mg/m <sup>3</sup> / 25 ppm | 24 mg/m <sup>3</sup> / 35 ppm | Not Available | Not Available |

## EMERGENCY LIMITS

| Ingredient | Material name      | TEEL-1        | TEEL-2        | TEEL-3        |
|------------|--------------------|---------------|---------------|---------------|
| ammonia    | Ammonium hydroxide | 61 ppm        | 330 ppm       | 2300 ppm      |
| ammonia    | Ammonia            | Not Available | Not Available | Not Available |

| Ingredient                                 | Original IDLH                     | Revised IDLH         |
|--------------------------------------------|-----------------------------------|----------------------|
| silver(I) fluoride                         | N.E. mg/m <sup>3</sup> / N.E. ppm | 10 mg/m <sup>3</sup> |
| ammonia                                    | 500 ppm                           | 300 ppm              |
| water                                      | Not Available                     | Not Available        |
| Ingredients determined not to be hazardous | Not Available                     | Not Available        |

## MATERIAL DATA

## 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.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

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 special circumstances. If risk of overexposure exists, wear approved respirator. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection. Provide adequate ventilation in warehouses and enclosed 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 (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 (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 (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 (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



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|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Eye and face protection</b> | <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> |
| <b>Skin protection</b>         | See Hand protection below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Hands/feet protection</b>   | <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> <li>▶ Rubber Gloves</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Body protection</b>         | See Other protection below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Other protection</b>        | No special equipment needed when handling small quantities.<br><b>OTHERWISE:</b> <ul style="list-style-type: none"> <li>▶ Overalls.</li> <li>▶ Barrier cream.</li> <li>▶ Eyewash unit.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Thermal hazards</b>         | Not Available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

**Respiratory protection**

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

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator |
|------------------------------------|----------------------|----------------------|------------------------|
| up to 5 x ES                       | AK-AUS / Class 1     | -                    | AK-PAPR-AUS / Class 1  |
| up to 25 x ES                      | Air-line*            | AK-2                 | AK-PAPR-2              |
| up to 50 x ES                      | -                    | AK-3                 | -                      |
| 50+ x ES                           | -                    | Air-line**           | -                      |

^ - Full-face

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**

|                                                     |                                              |                                                |                |
|-----------------------------------------------------|----------------------------------------------|------------------------------------------------|----------------|
| <b>Appearance</b>                                   | Clear, colourless liquid with ammonia odour. |                                                |                |
| <b>Physical state</b>                               | Liquid                                       | <b>Relative density (Water = 1)</b>            | 1.2            |
| <b>Odour</b>                                        | Not Available                                | <b>Partition coefficient n-octanol / water</b> | Not Available  |
| <b>Odour threshold</b>                              | Not Available                                | <b>Auto-ignition temperature (°C)</b>          | Not Available  |
| <b>pH (as supplied)</b>                             | Not Available                                | <b>Decomposition temperature</b>               | Not Available  |
| <b>Melting point / freezing point (°C)</b>          | Not Available                                | <b>Viscosity (cSt)</b>                         | Not Available  |
| <b>Initial boiling point and boiling range (°C)</b> | Not Available                                | <b>Molecular weight (g/mol)</b>                | Not Applicable |
| <b>Flash point (°C)</b>                             | Not Available                                | <b>Taste</b>                                   | Not Available  |
| <b>Evaporation rate</b>                             | Not Available                                | <b>Explosive properties</b>                    | Not Available  |
| <b>Flammability</b>                                 | Not Available                                | <b>Oxidising properties</b>                    | Not Available  |
| <b>Upper Explosive Limit (%)</b>                    | Not Available                                | <b>Surface Tension (dyn/cm or mN/m)</b>        | Not Available  |
| <b>Lower Explosive Limit (%)</b>                    | Not Available                                | <b>Volatile Component (%vol)</b>               | Not Available  |
| <b>Vapour pressure (kPa)</b>                        | Not Available                                | <b>Gas group</b>                               | Not Available  |
| <b>Solubility in water (g/L)</b>                    | Not Available                                | <b>pH as a solution (1%)</b>                   | Not Available  |
| <b>Vapour density (Air = 1)</b>                     | Not Available                                | <b>VOC g/L</b>                                 | Not Available  |

**SECTION 10 STABILITY AND REACTIVITY**

|                                           |                                                                           |
|-------------------------------------------|---------------------------------------------------------------------------|
| <b>Reactivity</b>                         | See section 7                                                             |
| <b>Chemical stability</b>                 | Product is considered stable and hazardous polymerisation will not occur. |
| <b>Possibility of hazardous reactions</b> | See section 7                                                             |
| <b>Conditions to avoid</b>                | See section 7                                                             |
| <b>Incompatible materials</b>             | See section 7                                                             |

Continued...

**Hazardous decomposition products**

See section 5

**SECTION 11 TOXICOLOGICAL INFORMATION****Information on toxicological effects**

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Inhaled</b>      | Limited evidence or practical experience suggests that the material may produce irritation of the respiratory system, in a significant number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Ingestion</b>    | The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion. Accidental ingestion of the material may be damaging to the health of the individual.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Skin Contact</b> | The material can produce chemical burns following direct contact with the skin. Open cuts, abraded or irritated skin should not be exposed to this material. Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Eye</b>          | The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Chronic</b>      | Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. Repeated or prolonged exposure to acids may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue. Gastrointestinal disturbances may also occur. Chronic exposures may result in dermatitis and/or conjunctivitis. The impact of inhaled acidic agents on the respiratory tract depends upon a number of interrelated factors. These include physicochemical characteristics, e.g., gas versus aerosol; particle size (small particles can penetrate deeper into the lung); water solubility (more soluble agents are more likely to be removed in the nose and mouth). Given the general lack of information on the particle size of aerosols involved in occupational exposures to acids, it is difficult to identify their principal deposition site within the respiratory tract. Acid mists containing particles with a diameter of up to a few micrometers will be deposited in both the upper and lower airways. They are irritating to mucous epithelia, they cause dental erosion, and they produce acute effects in the lungs (symptoms and changes in pulmonary function). Asthmatics appear to be at particular risk for pulmonary effects. |

|                           |                                                                                                                                                                                                                               |                               |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| <b>Riva Star</b>          | <b>TOXICITY</b>                                                                                                                                                                                                               | <b>IRRITATION</b>             |
|                           | Not Available                                                                                                                                                                                                                 | Not Available                 |
| <b>silver(I) fluoride</b> | <b>TOXICITY</b>                                                                                                                                                                                                               | <b>IRRITATION</b>             |
|                           | Not Available                                                                                                                                                                                                                 | Not Available                 |
| <b>ammonia</b>            | <b>TOXICITY</b>                                                                                                                                                                                                               | <b>IRRITATION</b>             |
|                           | Inhalation (rat) LC50: 2000 ppm/4h <sup>[2]</sup>                                                                                                                                                                             | Eye (rabbit): 0.25 mg SEVERE  |
|                           | Oral (rat) LD50: 350 mg/kgE <sup>[2]</sup>                                                                                                                                                                                    | Eye (rabbit): 1 mg/30s SEVERE |
| <b>water</b>              | <b>TOXICITY</b>                                                                                                                                                                                                               | <b>IRRITATION</b>             |
|                           | 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>SILVER(I) FLUORIDE</b>            | Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. 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. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. No significant acute toxicological data identified in literature search.                                                                                                                                                                              |                               |   |
| <b>AMMONIA</b>                       | No significant acute toxicological data identified in literature search.<br><br>The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.<br><br>Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. 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. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. |                               |   |
| <b>WATER</b>                         | No significant acute toxicological data identified in literature search.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                               |   |
| <b>Acute Toxicity</b>                | ☐                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Carcinogenicity</b>        | ☐ |
| <b>Skin Irritation/Corrosion</b>     | ☑                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Reproductivity</b>         | ☐ |
| <b>Serious Eye Damage/Irritation</b> | ☐                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>STOT - Single Exposure</b> | ☐ |

Continued...

## Riva Star

|                                   |   |                          |   |
|-----------------------------------|---|--------------------------|---|
| Respiratory or Skin sensitisation | ☐ | STOT - Repeated Exposure | ☐ |
| Mutagenicity                      | ☐ | Aspiration Hazard        | ☐ |

Legend: ✗ – Data available but does not fill the criteria for classification  
✓ – Data required to make classification available  
☐ – Data Not Available to make classification

## SECTION 12 ECOLOGICAL INFORMATION

## Toxicity

| Ingredient | Endpoint | Test Duration (hr) | Species                       | Value        | Source |
|------------|----------|--------------------|-------------------------------|--------------|--------|
| ammonia    | LC50     | 96                 | Fish                          | 15mg/L       | 4      |
| ammonia    | NOEC     | 72                 | Fish                          | 3.5mg/L      | 4      |
| water      | EC50     | 384                | Crustacea                     | 199.179mg/L  | 3      |
| water      | EC50     | 96                 | Algae or other aquatic plants | 8768.874mg/L | 3      |
| water      | LC50     | 96                 | Fish                          | 897.520mg/L  | 3      |

Legend: Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - 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

Very toxic to aquatic organisms.

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

## Persistence and degradability

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

## Bioaccumulative potential

| Ingredient | Bioaccumulation      |
|------------|----------------------|
| ammonia    | LOW (LogKOW = 0.229) |
| water      | LOW (LogKOW = -1.38) |

## Mobility in soil

| Ingredient | Mobility         |
|------------|------------------|
| ammonia    | LOW (KOC = 14.3) |
| water      | LOW (KOC = 14.3) |

## SECTION 13 DISPOSAL CONSIDERATIONS

## Waste treatment methods

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product / Packaging disposal | <ul style="list-style-type: none"> <li><b>DO NOT</b> allow wash water from cleaning or process equipment to enter drains.</li> <li>It may be necessary to collect all wash water for treatment before disposal.</li> <li>In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.</li> <li>Where in doubt contact the responsible authority.</li> </ul> <p>Consult State Land Waste Management Authority for disposal.<br/> Bury residue in an authorised landfill.</p> |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SECTION 14 TRANSPORT INFORMATION

## Labels Required

|                  |                                                                                     |
|------------------|-------------------------------------------------------------------------------------|
|                  |  |
| Marine Pollutant |  |
| HAZCHEM          | 2R                                                                                  |

## Land transport (ADG)

|               |      |
|---------------|------|
| UN number     | 2672 |
| Packing group | III  |

|                                     |                                                                                                                                |                |  |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------|--|
| <b>UN proper shipping name</b>      | AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 °C in water, with more than 10% but not more than 35% ammonia |                |  |
| <b>Environmental hazard</b>         | Not Applicable                                                                                                                 |                |  |
| <b>Transport hazard class(es)</b>   | Class                                                                                                                          | 8              |  |
|                                     | Subrisk                                                                                                                        | Not Applicable |  |
| <b>Special precautions for user</b> | Special provisions                                                                                                             | Not Applicable |  |
|                                     | Limited quantity                                                                                                               | 5 L            |  |

**Air transport (ICAO-IATA / DGR)**

|                                     |                                                                                                                                                 |                |  |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|
| <b>UN number</b>                    | 2672                                                                                                                                            |                |  |
| <b>Packing group</b>                | III                                                                                                                                             |                |  |
| <b>UN proper shipping name</b>      | Ammonia solution relative density (specific gravity) between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia |                |  |
| <b>Environmental hazard</b>         | Not Applicable                                                                                                                                  |                |  |
| <b>Transport hazard class(es)</b>   | ICAO/IATA Class                                                                                                                                 | 8              |  |
|                                     | ICAO / IATA Subrisk                                                                                                                             | Not Applicable |  |
|                                     | ERG Code                                                                                                                                        | 8L             |  |
| <b>Special precautions for user</b> | Special provisions                                                                                                                              | A64A803        |  |
|                                     | Cargo Only Packing Instructions                                                                                                                 | 856            |  |
|                                     | Cargo Only Maximum Qty / Pack                                                                                                                   | 60 L           |  |
|                                     | Passenger and Cargo Packing Instructions                                                                                                        | 852            |  |
|                                     | Passenger and Cargo Maximum Qty / Pack                                                                                                          | 5 L            |  |
|                                     | Passenger and Cargo Limited Quantity Packing Instructions                                                                                       | Y841           |  |
|                                     | Passenger and Cargo Limited Maximum Qty / Pack                                                                                                  | 1 L            |  |

**Sea transport (IMDG-Code / GGVSee)**

|                                     |                                                                                                                              |                |  |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------|--|
| <b>UN number</b>                    | 2672                                                                                                                         |                |  |
| <b>Packing group</b>                | III                                                                                                                          |                |  |
| <b>UN proper shipping name</b>      | AMMONIA SOLUTION relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia |                |  |
| <b>Environmental hazard</b>         | Marine Pollutant                                                                                                             |                |  |
| <b>Transport hazard class(es)</b>   | IMDG Class                                                                                                                   | 8              |  |
|                                     | IMDG Subrisk                                                                                                                 | Not Applicable |  |
| <b>Special precautions for user</b> | EMS Number                                                                                                                   | F-A, S-B       |  |
|                                     | Special provisions                                                                                                           | Not Applicable |  |
|                                     | Limited Quantities                                                                                                           | 5 L            |  |

**Transport in bulk according to Annex II of MARPOL and the IBC code**

Not Applicable

If packed as Chemical kits the following classification may be considered if all ICAO/IATA transport requirements are met: Chemical Kit UN3316 - Class 9.

**SECTION 15 REGULATORY INFORMATION****Safety, health and environmental regulations / legislation specific for the substance or mixture****SILVER(I) FLUORIDE(7775-41-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

|                                                                        |                                                                                               |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Australia Exposure Standards                                           | Australia Inventory of Chemical Substances (AICS)                                             |
| Australia Hazardous Substances Information System - Consolidated Lists | International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs |

**AMMONIA(1336-21-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

|                                                                        |                                                   |
|------------------------------------------------------------------------|---------------------------------------------------|
| Australia Exposure Standards                                           | Australia Inventory of Chemical Substances (AICS) |
| Australia Hazardous Substances Information System - Consolidated Lists |                                                   |

**WATER(7732-18-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

|                                                   |  |
|---------------------------------------------------|--|
| Australia Inventory of Chemical Substances (AICS) |  |
|---------------------------------------------------|--|

| National Inventory | Status                 |
|--------------------|------------------------|
| Australia - AICS   | Y                      |
| Canada - DSL       | N (silver(I) fluoride) |
| Canada - NDSL      | N (ammonia; water)     |
| China - IECSC      | N (silver(I) fluoride) |

## Riva Star

|                               |                                                                                                                                                                                                        |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Europe - EINEC / ELINCS / NLP | Y                                                                                                                                                                                                      |
| Japan - ENCS                  | N (water)                                                                                                                                                                                              |
| Korea - KECI                  | Y                                                                                                                                                                                                      |
| New Zealand - NZIoC           | Y                                                                                                                                                                                                      |
| Philippines - PICCS           | N (silver(I) fluoride)                                                                                                                                                                                 |
| USA - TSCA                    | Y                                                                                                                                                                                                      |
| <b>Legend:</b>                | <i>Y = All ingredients are on the inventory</i><br><i>N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)</i> |

**SECTION 16 OTHER INFORMATION****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 SDI Limited 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  
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

The information contained in the Safety Data Sheet is based on data considered to be accurate, however, no warranty is expressed or implied regarding the accuracy of the data or the results to be obtained from the use thereof.

Other information:

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