

# MANNITOL

## ROWE SCIENTIFIC

Chemwatch: 10216

Version No: 9.1

Safety Data Sheet according to Work Health and Safety Regulations (Hazardous Chemicals) 2023 and ADG requirements

Chemwatch Hazard Alert Code: 1

Initial Date: 12/05/2005

Revision Date: 20/01/2026

Print Date: 20/01/2026

L.GHS.AUS.EN.E

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

#### Product Identifier

|                               |                |
|-------------------------------|----------------|
| Product name                  | MANNITOL       |
| Chemical Name                 | Not Available  |
| Synonyms                      | CM0643; CM0644 |
| Chemical formula              | C6H14O6        |
| Other means of identification | Not Available  |
| CAS number                    | 69-65-8        |

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

|                          |  |
|--------------------------|--|
| Relevant identified uses | Used in the manufacture of dry electrolytic condensers, mannitol hexanitrate artificial resins and plasticizers; in pharmacy as a diluent for solids and liquids. Used in analytical chemistry for boron determinations; in the food industry as an anticaking agent, free-flow agent, flavouring, lubricant and release agent, stabilizer, thickener and nutritive sweetener. |
|--------------------------|--|

#### Details of the manufacturer or importer 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="https://rowe.com.au/">https://rowe.com.au/</a> |
| Email                   | rowewa@rowe.com.au                                      |

#### Emergency telephone number

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

### SECTION 2 Hazards identification

#### Classification of the substance or mixture

|                               |   |
|-------------------------------|---|
| Poisons Schedule              | Not Applicable  |
| Classification <sup>[1]</sup> | Non hazardous   |
| 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) | Not Applicable |
| Signal word         | Not Applicable |

#### Hazard statement(s)

Not Applicable

#### Precautionary statement(s) Prevention

Not Applicable

#### Precautionary statement(s) Response

Not Applicable

#### Precautionary statement(s) Storage

Not Applicable

#### Precautionary statement(s) Disposal

Not Applicable

No further product hazard information.

### SECTION 3 Composition / information on ingredients

**Substances**

| CAS No  | %[weight] | Name            |
|---------|-----------|-----------------|
| 69-65-8 | >98       | <u>mannitol</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

**Mixtures**

See section above for composition of Substances

**SECTION 4 First aid measures****Description of first aid measures**

|                     |  |
|---------------------|--|
| <b>Eye Contact</b>  | <p>If this product comes in contact with eyes:</p> <ul style="list-style-type: none"> <li>▶ Wash out immediately with water.</li> <li>▶ If irritation continues, seek medical attention.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul> |
| <b>Skin Contact</b> | <p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul>   |
| <b>Inhalation</b>   | <ul style="list-style-type: none"> <li>▶ If dust is inhaled, remove from contaminated area.</li> <li>▶ Encourage patient to blow nose to ensure clear passage of breathing.</li> <li>▶ If irritation or discomfort persists seek medical attention.</li> </ul>   |
| <b>Ingestion</b>    | <ul style="list-style-type: none"> <li>▶ Immediately give a glass of water.</li> <li>▶ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.</li> </ul>  |

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

Treat symptomatically.

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

- ▶ Water spray or fog.
- ▶ Foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.

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

|                             |  |
|-----------------------------|--|
| <b>Fire Incompatibility</b> | ▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result |
|-----------------------------|--|

**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.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water courses.</li> <li>▶ Use water delivered as a fine spray to control fire and cool adjacent 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>▶ Combustible solid which burns but propagates flame with difficulty; it is estimated that most organic dusts are combustible (circa 70%) - according to the circumstances under which the combustion process occurs, such materials may cause fires and / or dust explosions.</li> <li>▶ Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions).</li> <li>▶ Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust (420 micron or less) may burn rapidly and fiercely if ignited - particles exceeding this limit will generally not form flammable dust clouds; once initiated, however, larger particles up to 1400 microns diameter will contribute to the propagation of an explosion.</li> <li>▶ In the same way as gases and vapours, dusts in the form of a cloud are only ignitable over a range of concentrations; in principle, the concepts of lower explosive limit (LEL) and upper explosive limit (UEL) are applicable to dust clouds but only the LEL is of practical use; - this is because of the inherent difficulty of achieving homogeneous dust clouds at high temperatures (for dusts the LEL is often called the "Minimum Explosible Concentration", MEC).</li> <li>▶ When processed with flammable liquids/vapors/mists, ignitable (hybrid) mixtures may be formed with combustible dusts. Ignitable mixtures will increase the rate of explosion pressure rise and the Minimum Ignition Energy (the minimum amount of energy required to ignite dust clouds - MIE) will be lower than the pure dust in air mixture. The Lower Explosive Limit (LEL) of the vapour/dust mixture will be lower than the individual LELs for the vapors/mists or dusts.</li> <li>▶ A dust explosion may release of large quantities of gaseous products; this in turn creates a subsequent pressure rise of explosive force capable of damaging plant and buildings and injuring people.</li> <li>▶ Usually the initial or primary explosion takes place in a confined space such as plant or machinery, and can be of sufficient force to damage or rupture the plant. If the shock wave from the primary explosion enters the surrounding area, it will disturb any settled dust layers, forming a second dust cloud, and often initiate a much larger secondary explosion. All large scale explosions have resulted from chain reactions of this type.</li> <li>▶ Dry dust can be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.</li> <li>▶ Build-up of electrostatic charge may be prevented by bonding and grounding.</li> <li>▶ Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.</li> <li>▶ All movable parts coming in contact with this material should have a speed of less than 1-meter/sec.</li> <li>▶ A sudden release of statically charged materials from storage or process equipment, particularly at elevated temperatures and/ or pressure, may result in ignition especially in the absence of an apparent ignition source.</li> <li>▶ One important effect of the particulate nature of powders is that the surface area and surface structure (and often moisture content) can vary widely from sample to sample, depending of how the powder was manufactured and handled; this means that it is virtually impossible to use flammability data published in the literature for dusts (in contrast to that published for gases and vapours).</li> </ul> |

Continued...

|                |   |
|----------------|---|
|                | <ul style="list-style-type: none"> <li>▶ Autoignition temperatures are often quoted for dust clouds (minimum ignition temperature (MIT)) and dust layers (layer ignition temperature (LIT)); LIT generally falls as the thickness of the layer increases.</li> </ul> <p>Combustion products include:</p> <ul style="list-style-type: none"> <li>▶ carbon monoxide (CO)</li> <li>▶ carbon dioxide (CO<sub>2</sub>)</li> <li>▶ other pyrolysis products typical of burning organic material.</li> </ul> |
| <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 waste regularly and abnormal spills immediately.</li> <li>▶ Avoid breathing dust and contact with skin and eyes.</li> <li>▶ Wear protective clothing, gloves, safety glasses and dust respirator.</li> <li>▶ Use dry clean up procedures and avoid generating dust.</li> <li>▶ Vacuum up or sweep up. <b>NOTE:</b> Vacuum cleaner must be fitted with an exhaust micro filter (H-Class HEPA type) (consider explosion-proof machines designed to be grounded during storage and use). H-Class HEPA filtered industrial vacuum cleaners should <b>NOT</b> be used on wet materials or surfaces.</li> <li>▶ Dampen with water to prevent dusting before sweeping.</li> <li>▶ Place in suitable containers for disposal.</li> </ul> |
| <b>Major Spills</b> | <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>▶ Control personal contact with the substance, by using protective equipment and dust respirator.</li> <li>▶ Prevent spillage from entering drains, sewers or water courses.</li> <li>▶ Avoid generating dust.</li> <li>▶ Sweep, shovel up. Recover product wherever possible.</li> <li>▶ Put residues in labelled plastic bags or other containers for disposal.</li> <li>▶ If contamination of drains or waterways occurs, advise emergency services.</li> </ul>   |

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

## SECTION 7 Handling and storage

### Precautions for safe handling

|                          |  |
|--------------------------|--|
| <b>Safe handling</b>     | <ul style="list-style-type: none"> <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 eat, drink or smoke.</b></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> <li>▶ Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions)</li> <li>▶ Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame.</li> <li>▶ Establish good housekeeping practices.</li> <li>▶ Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds.</li> <li>▶ Use continuous suction at points of dust generation to capture and minimise the accumulation of dusts. Particular attention should be given to overhead and hidden horizontal surfaces to minimise the probability of a "secondary" explosion. According to NFPA Standard 654, dust layers 1/32 in.(0.8 mm) thick can be sufficient to warrant immediate cleaning of the area.</li> <li>▶ Do not use air hoses for cleaning.</li> <li>▶ Minimise dry sweeping to avoid generation of dust clouds. Vacuum dust-accumulating surfaces and remove to a chemical disposal area. Vacuums with explosion-proof motors should be used.</li> <li>▶ Control sources of static electricity. Dusts or their packages may accumulate static charges, and static discharge can be a source of ignition.</li> <li>▶ Solids handling systems must be designed in accordance with applicable standards (e.g. NFPA including 654 and 77) and other national guidance.</li> <li>▶ Do not empty directly into flammable solvents or in the presence of flammable vapors.</li> <li>▶ The operator, the packaging container and all equipment must be grounded with electrical bonding and grounding systems. Plastic bags and plastics cannot be grounded, and antistatic bags do not completely protect against development of static charges.</li> </ul> <p>Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.</p> <ul style="list-style-type: none"> <li>▶ <b>Do NOT cut, drill, grind or weld such containers.</b></li> <li>▶ In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.</li> </ul> |
| <b>Other information</b> | <p>Store between 15 and 25 deg.C.</p> <ul style="list-style-type: none"> <li>▶ Store in original containers.</li> <li>▶ Keep containers securely sealed.</li> <li>▶ Store in a cool, dry area protected from environmental extremes.</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> <p>For major quantities:</p> <ul style="list-style-type: none"> <li>▶ Consider storage in banded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams).</li> <li>▶ Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.</li> </ul>  |

**Conditions for safe storage, including any incompatibilities**

|                                |   |
|--------------------------------|---|
| <b>Suitable container</b>      | <ul style="list-style-type: none"> <li>▶ Lined metal can, lined metal pail/ can.</li> <li>▶ Plastic pail.</li> <li>▶ Polyliner drum.</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> |
| <b>Storage incompatibility</b> | <p>Avoid contamination of water, foodstuffs, feed or seed.</p> <ul style="list-style-type: none"> <li>▶ Avoid reaction with oxidising agents</li> </ul>   |


**SECTION 8 Exposure controls / personal protection****Control parameters****Occupational Exposure Limits (OEL)****INGREDIENT DATA**

Not Available

**MATERIAL DATA**

Airborne particulate or vapour must be kept to levels as low as is practicably achievable given access to modern engineering controls and monitoring hardware. Biologically active compounds may produce idiosyncratic effects which are entirely unpredictable on the basis of literature searches and prior clinical experience (both recent and past). 32maa

**Exposure controls**

| <b>Appropriate engineering controls</b>   | <p>Enclosed local exhaust ventilation is required at points of dust, fume or vapour generation. HEPA terminated local exhaust ventilation should be considered at point of generation of dust, fumes or vapours. Barrier protection or laminar flow cabinets should be considered for laboratory scale handling. A fume hood or vented balance enclosure is recommended for weighing/ transferring quantities exceeding 500 mg. When handling quantities up to 500 gram in either a standard laboratory with general dilution ventilation (e.g. 6-12 air changes per hour) is preferred. Quantities up to 1 kilogram may require a designated laboratory using fume hood, biological safety cabinet, or approved vented enclosures. Quantities exceeding 1 kilogram should be handled in a designated laboratory or containment laboratory using appropriate barrier/ containment technology. Manufacturing and pilot plant operations require barrier/ containment and direct coupling technologies. Barrier/ containment technology and direct coupling (totally enclosed processes that create a barrier between the equipment and the room) typically use double or split butterfly valves and hybrid unidirectional airflow/ local exhaust ventilation solutions (e.g. powder containment booths). Glove bags, isolator glove box systems are optional. HEPA filtration of exhaust from dry product handling areas is required. Fume-hoods and other open-face containment devices are acceptable when face velocities of at least 1 m/s (200 feet/minute) are achieved. Partitions, barriers, and other partial containment technologies are required to prevent migration of the material to uncontrolled areas. For non-routine emergencies maximum local and general exhaust are necessary. 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.</p> |                      |                        |   |   |   |  |  |                                  |                               |   |                                  |
|---|--|----------------------|------------------------|---|---|---|--|--|----------------------------------|-------------------------------|---|----------------------------------|
|   | <table border="1"> <thead> <tr> <th>Type of Contaminant:</th> <th>Air Speed:</th> </tr> </thead> <tbody> <tr> <td>solvent, vapours, etc. evaporating from tank (in still air)</td> <td>0.25-0.5 m/s (50-100 f/min.)</td> </tr> <tr> <td>aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers (released at low velocity into zone of active generation)</td> <td>0.5-1 m/s (100-200 f/min.)</td> </tr> <tr> <td>direct spray, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)</td> <td>1-2.5 m/s (200-500 f/min.)</td> </tr> </tbody> </table>  | Type of Contaminant: | Air Speed:             | solvent, vapours, 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 (released at low velocity into zone of active generation) | 0.5-1 m/s (100-200 f/min.)                                 | direct spray, 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.)       |                               |   |                                  |
| Type of Contaminant:  | Air Speed:   |                      |                        |   |   |   |  |  |                                  |                               |   |                                  |
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| direct spray, 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.)   |                      |                        |   |   |   |  |  |                                  |                               |   |                                  |
|   | <p>Within each range the appropriate value depends on:</p> <table border="1"> <thead> <tr> <th>Lower end of the range</th> <th>Upper end of the range</th> </tr> </thead> <tbody> <tr> <td>1: Room air currents minimal or favourable to capture</td> <td>1: Disturbing room air currents</td> </tr> <tr> <td>2: Contaminants of low toxicity or of nuisance value only.</td> <td>2: Contaminants of high toxicity</td> </tr> <tr> <td>3: Intermittent, low production.</td> <td>3: High production, heavy use</td> </tr> <tr> <td>4: Large hood or large air mass in motion</td> <td>4: Small hood-local control only</td> </tr> </tbody> </table>  |                      | 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 |
| 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   |                      |                        |   |   |   |  |  |                                  |                               |   |                                  |
|   | <p>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 1-2.5 m/s (200-500 f/min.) for extraction of gases discharged 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.</p> <p>The need for respiratory protection should also be assessed where incidental or accidental exposure is anticipated: Dependent on levels of contamination, PAPR, full face air purifying devices with P2 or P3 filters or air supplied respirators should be evaluated.</p> <p>The following protective devices are recommended where exposures exceed the recommended exposure control guidelines by factors of:</p> <p>10; high efficiency particulate (HEPA) filters or cartridges<br/> 10-25; loose-fitting (Tyvek or helmet type) HEPA powered-air purifying respirator.<br/> 25-50; a full face-piece negative pressure respirator with HEPA filters<br/> 50-100; tight-fitting, full face-piece HEPA PAPR<br/> 100-1000; a hood-shroud HEPA PAPR or full face-piece supplied air respirator operated in pressure demand or other positive pressure mode.</p>  |                      |                        |   |   |   |  |  |                                  |                               |   |                                  |
| <b>Individual protection measures, such as personal protective equipment</b>  |   |                      |                        |   |   |   |  |  |                                  |                               |   |                                  |
| <b>Eye and face protection</b>  | <p>When handling very small quantities of the material eye protection may not be required. For laboratory, larger scale or bulk handling or where regular exposure in an occupational setting occurs:</p> <ul style="list-style-type: none"> <li>▶ Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent]</li> <li>▶ Face shield. Full face shield may be required for supplementary but never for primary protection of eyes.</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</li> </ul>  |                      |                        |   |   |   |  |  |                                  |                               |   |                                  |

|                              |  |
|------------------------------|--|
|                              | 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].   |
| <b>Skin protection</b>       | See Hand protection below  |
| <b>Hands/feet protection</b> | <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.</p> <p>Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:</p> <ul style="list-style-type: none"> <li>· frequency and duration of contact,</li> <li>· chemical resistance of glove material,</li> <li>· glove thickness and</li> <li>· dexterity</li> </ul> <p>Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).</p> <ul style="list-style-type: none"> <li>· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.</li> <li>· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.</li> <li>· Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.</li> <li>· Contaminated gloves should be replaced.</li> </ul> <p>As defined in ASTM F-739-96 in any application, gloves are rated as:</p> <ul style="list-style-type: none"> <li>· Excellent when breakthrough time &gt; 480 min</li> <li>· Good when breakthrough time &gt; 20 min</li> <li>· Fair when breakthrough time &lt; 20 min</li> <li>· Poor when glove material degrades</li> </ul> <p>For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended.</p> <p>It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.</p> <p>Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers technical data should always be taken into account to ensure selection of the most appropriate glove for the task.</p> <p>Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:</p> <ul style="list-style-type: none"> <li>· Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.</li> <li>· Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential</li> </ul> <p>Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.</p> <ul style="list-style-type: none"> <li>▶ Rubber gloves (nitrile or low-protein, powder-free latex, latex/ nitrile). Employees allergic to latex gloves should use nitrile gloves in preference.</li> <li>▶ Double gloving should be considered.</li> <li>▶ PVC gloves.</li> <li>▶ Change gloves frequently and when contaminated, punctured or torn.</li> <li>▶ Wash hands immediately after removing gloves.</li> <li>▶ Protective shoe covers. [AS/NZS 2210]</li> <li>▶ Head covering.</li> </ul> <p>Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.</p> <ul style="list-style-type: none"> <li>▶ polychloroprene.</li> <li>▶ nitrile rubber.</li> <li>▶ butyl rubber.</li> <li>▶ fluorocautchouc.</li> <li>▶ polyvinyl chloride.</li> </ul> <p>Gloves should be examined for wear and/ or degradation constantly.</p> |
| <b>Body protection</b>       | See Other protection below   |
| <b>Other protection</b>      | <ul style="list-style-type: none"> <li>▶ For quantities up to 500 grams a laboratory coat may be suitable.</li> <li>▶ For quantities up to 1 kilogram a disposable laboratory coat or coverall of low permeability is recommended. Coveralls should be buttoned at collar and cuffs.</li> <li>▶ For quantities over 1 kilogram and manufacturing operations, wear disposable coverall of low permeability and disposable shoe covers.</li> <li>▶ For manufacturing operations, air-supplied full body suits may be required for the provision of advanced respiratory protection.</li> <li>▶ Eye wash unit.</li> <li>▶ Ensure there is ready access to an emergency shower.</li> <li>▶ For Emergencies: Vinyl suit</li> </ul>  |

### Respiratory protection

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

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator |
|------------------------------------|----------------------|----------------------|------------------------|
| up to 10 x ES                      | P1<br>Air-line*      | -                    | PAPR-P1                |
| up to 50 x ES                      | Air-line**           | P2                   | PAPR-P2                |
| up to 100 x ES                     | -                    | P3                   | -                      |
|                                    |                      | Air-line*            | -                      |
| 100+ x ES                          | -                    | Air-line**           | PAPR-P3                |

\* - Negative pressure demand \*\* - Continuous flow

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)

· Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.

· The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).

- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)
- Use approved positive flow mask if significant quantities of dust becomes airborne.
- Try to avoid creating dust conditions.

Class P2 particulate filters are used for protection against mechanically and thermally generated particulates or both.

P2 is a respiratory filter rating under various international standards, Filters at least 94% of airborne particles

Suitable for:

- Relatively small particles generated by mechanical processes eg. grinding, cutting, sanding, drilling, sawing.
- Sub-micron thermally generated particles e.g. welding fumes, fertilizer and bushfire smoke.
- Biologically active airborne particles under specified infection control applications e.g. viruses, bacteria, COVID-19, SARS

## SECTION 9 Physical and chemical properties

### Information on basic physical and chemical properties

|   |  |  |                |
|---|--|--|----------------|
| <b>Appearance</b>                                     | White orthorhombic needles, crystalline powder or granules; odourless with sweetish taste. Soluble in water (18 g in 100 ml water), slightly soluble in lower alcohols and amines, insoluble in most other organic solvents. Exist as either d- or l-mannitol (stereo-isomers) or dl-mannitol (racemic mixture); d-mannitol is by far the most abundant. |  |                |
| <b>Physical state</b>                                 | Divided Solid  | <b>Relative density (Water = 1)</b>                        | 1.52           |
| <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>                      | 460            |
| <b>pH (as supplied)</b>                               | Not Applicable   | <b>Decomposition temperature (°C)</b>                      | Not Available  |
| <b>Melting point / freezing point (°C)</b>            | 168  | <b>Viscosity (cSt)</b>                                     | Not Applicable |
| <b>Initial boiling point and boiling range (°C)</b>   | 295 @ 0.5 kPa  | <b>Molecular weight (g/mol)</b>                            | 182.17         |
| <b>Flash point (°C)</b>                               | > 149  | <b>Taste</b>   | Not Available  |
| <b>Evaporation rate</b>                               | Not Applicable   | <b>Explosive properties</b>                                | Not Available  |
| <b>Flammability</b>                                   | Not Applicable   | <b>Oxidising properties</b>                                | Not Available  |
| <b>Upper Explosive Limit (%)</b>                      | Not Available  | <b>Surface Tension (dyn/cm or mN/m)</b>                    | Not Applicable |
| <b>Lower Explosive Limit (%)</b>                      | 6.5 dust cloud   | <b>Volatile Component (%vol)</b>                           | Not Applicable |
| <b>Vapour pressure (kPa)</b>                          | Not Applicable   | <b>Gas group</b>   | Not Available  |
| <b>Solubility in water</b>                            | Miscible   | <b>pH as a solution (1%)</b>                               | Not Available  |
| <b>Vapour density (Air = 1)</b>                       | Not Applicable   | <b>VOC g/L</b>   | Not Applicable |
| <b>Heat of Combustion (kJ/g)</b>                      | Not Available  | <b>Ignition Distance (cm)</b>                              | Not Available  |
| <b>Flame Height (cm)</b>                              | Not Available  | <b>Flame Duration (s)</b>                                  | Not Available  |
| <b>Enclosed Space Ignition Time Equivalent (s/m3)</b> | Not Available  | <b>Enclosed Space Ignition Deflagration Density (g/m3)</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   |
| <b>Hazardous decomposition products</b>   | See section 5   |

## SECTION 11 Toxicological information

### Information on toxicological effects

|   |   |
|---|---|
| <b>a) Acute Toxicity</b>                    | Based on available data, the classification criteria are not met. |
| <b>b) Skin Irritation/Corrosion</b>         | Based on available data, the classification criteria are not met. |
| <b>c) Serious Eye Damage/Irritation</b>     | Based on available data, the classification criteria are not met. |
| <b>d) Respiratory or Skin sensitisation</b> | Based on available data, the classification criteria are not met. |
| <b>e) Mutagenicity</b>                      | Based on available data, the classification criteria are not met. |
| <b>f) Carcinogenicity</b>                   | Based on available data, the classification criteria are not met. |
| <b>g) Reproductivity</b>                    | Based on available data, the classification criteria are not met. |
| <b>h) STOT - Single Exposure</b>            | Based on available data, the classification criteria are not met. |
| <b>i) STOT - Repeated Exposure</b>          | Based on available data, the classification criteria are not met. |
| <b>j) Aspiration Hazard</b>                 | Based on available data, the classification criteria are not met. |

**MANNITOL**

|                     |   |
|---------------------|---|
| <b>Inhaled</b>      | <p>The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.</p> <p>Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.</p> <p>If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.</p>   |
| <b>Ingestion</b>    | <p>Diarrhoea may occur and, less frequently, vomiting and nausea. Only small amounts are absorbed from the gastrointestinal tract. These pass directly to the liver to be metabolised ultimately to carbon dioxide.</p> <p>The material has <b>NOT</b> been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.</p> |
| <b>Skin Contact</b> | <p>The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.</p>  |
| <b>Eye</b>          | <p>Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result. The material may produce foreign body irritation in certain individuals.</p>  |
| <b>Chronic</b>      | <p>Intravenous infusion of mannitol has been associated with nausea, vomiting, thirst, headache, dizziness, chills, fever, tachycardia, chest pain, hyponatraemia, urinary retention, dehydration, blurred vision, convulsions, urticaria, pulmonary oedema and hypotension and hypertension.</p> <p>Long-term exposure to the product is not thought to produce chronic effects adverse to health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.</p> <p>Long term exposure to high dust concentrations may cause changes in lung function (i.e. pneumoconiosis) caused by particles less than 0.5 micron penetrating and remaining in the lung. A prime symptom is breathlessness. Lung shadows show on X-ray.</p>   |

|                 |   |                   |
|-----------------|---|-------------------|
| <b>MANNITOL</b> | <b>TOXICITY</b>                             | <b>IRRITATION</b> |
|                 | Oral (Rat) LD50: 13500 mg/kg <sup>[2]</sup> | Not Available     |

**Legend:** 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>MANNITOL</b> | <p>The clinical impact of the fibrate and thiazolidinedione drugs on dyslipidemia and diabetes is driven mainly through activation of two transcription factors, peroxisome proliferator-activated receptors (PPAR)-alpha and PPAR-gamma. However, substantial differences exist in the therapeutic and side-effect profiles of specific drugs. This has been attributed primarily to the complexity of drug-target complexes that involve many coregulator proteins in the context of specific target gene promoters. Certain data has revealed that some PPAR ligands interact with other non-PPAR targets. These off-target interactions may produce unexpected adverse clinical effects.</p> <p>The expression of PPARs in multiple tissues raises the possible value of PPAR agents in therapeutic indications as diverse as cancers, inflammatory-related diseases, and Alzheimer's disease.</p> <p>It appears that some antiinflammatory effects of glitazones are PPAR-gamma independent, but the mechanisms are poorly understood. Conceptually, these effects may derive from the engagement of cyclooxygenase-2 or JNK/ERK protein kinase pathways.</p> <p>Future directions in PPAR research are likely to focus on optimizing the PPAR subtype interaction profile, as well as maximizing inhibition of PPAR-gamma phosphorylation, and screening against off-target activity. In addition, biochemical studies have identified the mitochondrial targets mitoNEET and mTOT as TZD targets that may have roles in targeting insulin resistance and diabetes in their own right and will clearly be a focus of future investigation</p> <p>The potential of PPAR-gamma or dual PPAR-alpha/gamma agonists to induce tumors in rodents has been disclosed in regulatory submission to the Food and Drug Administration (FDA). Common findings in rodent carcinogenicity studies include haemangioma/hemangiosarcoma, urinary bladder/renal pelvic tumors, lipoma/liposarcoma, skin fibrosarcoma, and, less frequently, mammary adenocarcinoma, gall bladder adenoma, and hepatic tumors. Not all molecules exhibit carcinogenic effects, and in many cases effects were observed with significant safety margins vs therapeutic exposure. To date, the only clinical finding of concern is a small increased risk of bladder cancer in patients on long-term therapy with pioglitazone but not rosiglitazone. Several dual-PPAR-alpha/gamma agonists, muraglitazar, naveglitazar, and ragaglitazar, but not aleglitazar, induce bladder tumor formation in rodents. In 2-year rat and mouse carcinogenicity studies of aleglitazar, no urinary bladder hyperplasia or tumors were reported despite exposure multiples (26-fold in rat and 123-fold in mice) greater than exposure at the 150-ug dose tested in human phase III studies.</p> <p>A hypothetical mechanism that may help to explain the varied properties of different PPAR agonists in inducing sc (lipo)sarcomas. The hypothesis is based on the tumor initiation/promotion concept leading to tumorigenesis: initiation, during which DNA damage occurs, and promotion, involving aberrant cell proliferation. In this model, initiation would occur independently of PPAR-gamma and involve drug-specific effects leading to mitochondrial dysfunction in sc stromovascular cells, leading to oxidative stress and oxidative DNA damage. The subsequent promotion stage would require PPAR-gamma and lead to recruitment, proliferation, and differentiation of stromovascular cells, driving thermogenesis and adipogenesis, and subsequent generation of oxidative free radicals. According to this model, and in agreement with available safety data, the rank order of potency of PPAR-gamma agonists to increase mitochondrial oxidative stress is as follows: troglitazone (most potent) greater than ciglitazone greater than darglitazone/muraglitazar greater than rosiglitazone/pioglitazone (least potent) Thus, screening to exclude compounds that induce mitochondrial dysfunction may help reduce the potential for tumor-promoting effects of new agents</p> <p>Although PPAR-alpha agonists (fibrates) are generally well tolerated, PPAR-gamma activation is associated with weight gain, fluid retention, and bone fractures. Efforts to improve the efficacy and/or safety of first-generation PPAR-gamma agents (the TZDs) have led to understanding of the complexity of PPAR regulation, including the importance of coactivator and corepressor proteins and phosphorylation and posttranslational mechanisms.</p> <p>Known target organs of toxicity for PPAR agonists include the heart, vasculature, skeletal muscle, kidney, liver, and bone marrow in animals and in humans. In rodents they produce peroxisome proliferation, hepatomegaly, regulation of gene expression and alterations in cell cycle control, and ultimately hepatocarcinogenesis. Of the three known subtypes of PPARs (PPAR a, PPAR <math>\beta</math>/d, and PPARg), PPAR a is thought to be primarily if not Known target organs of toxicity for PPAR agonists include the heart, vasculature, skeletal muscle, kidney, liver, and bone marrow in animals and in humans. In rodents they produce peroxisome proliferation, hepatomegaly, regulation of gene expression and alterations in cell cycle control, and ultimately hepatocarcinogenesis. Of the three known subtypes of PPARs (PPAR a, PPAR <math>\beta</math>/d, and PPAR g), PPAR a is thought to be primarily if not wholly responsible for these hepatic adverse effects in rodents.</p> <p>Simultaneous activation of two PPARs, PPARa and PPAR<math>\gamma</math>, can induce angiogenesis by increasing production of vascular endothelial growth factor and stimulate uptake and utilization of fatty acid synthase in adipose tissue, liver and skeletal</p> <p>Beyond the benefits to diabetes, beneficial effects of PPAR<math>\gamma</math> agonists have been also identified in treating other diseases, such as bipolar depression [141], Alzheimer's disease, and cancer. For example, it has been shown that PPAR<math>\gamma</math> agonists can inhibit tumorigenesis by regulating cancer cell differentiation, proliferation, and apoptosis. Those novel therapeutic indications on drug repositioning of PPAR<math>\gamma</math> agonists will make applications of PPAR<math>\gamma</math>-based precision medicine paradigm much broader</p> <p><b>GC-1a –driven mitochondrial biogenesis is tissue specific and developmental stage dependent.</b> Cardiac-specific overexpression of PGC-1a during the neonatal stages leads to a dramatic increase in cardiac mitochondrial number and size coincident with upregulation of</p> |
|-----------------|---|

gene markers associated with mitochondrial biogenesis, whereas in adult mice there is only a modest increase in mitochondrial number, associated with derangements of mitochondrial ultrastructure and development of cardiomyopathy., similar adverse effects following PGC-1a overexpression were also reported for the heart. Cardiac-specific overexpression of PGC-1a in transgenic mice resulted in uncontrolled mitochondrial proliferation in cardiac myocytes leading to loss of sarcomeric structure and a dilated cardiomyopathy.<sup>20</sup> Furthermore, an increased mitochondrial respiratory capacity is intimately linked to an increased production of ROS that may further repress survival pathways, hence promoting apoptosis signaling.<sup>21</sup> The increased number of mitochondria in PGC-1a–overexpressing neurons influences the axonal transport of these organelles thereby perturbing their normal turnover

|                                   |   |                          |   |
|-----------------------------------|---|--------------------------|---|
| 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

| MANNITOL       | Endpoint   | Test Duration (hr) | Species                       | Value       | Source |
|----------------|--|--------------------|-------------------------------|-------------|--------|
|                | EC10(ECx)  | 168h               | Algae or other aquatic plants | 4773.64mg/L | 4      |
| <b>Legend:</b> | Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. US EPA, Ecotox database - Aquatic Toxicity Data 4. ECETOC Aquatic Hazard Assessment Data 5. NITE (Japan) - Bioconcentration Data 6. METI (Japan) - Bioconcentration Data 7. Vendor Data |                    |                               |             |        |

log Kow : -3.1 BOD 5 if unstated: 59% COD : 87% ThOD : 1.15 Toxicity Fish: LC50(96)0.53-3.7mg/L

### Persistence and degradability

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

### Bioaccumulative potential

| Ingredient | Bioaccumulation     |
|------------|---------------------|
| mannitol   | LOW (LogKOW = -3.1) |

### Mobility in soil

| Ingredient | Mobility           |
|------------|--------------------|
| mannitol   | LOW (Log KOC = 10) |

## SECTION 13 Disposal considerations

### Waste treatment methods

|                                     |  |
|-------------------------------------|--|
| <b>Product / Packaging disposal</b> | <p>Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.</p> <p>A Hierarchy of Controls seems to be common - the user should investigate:</p> <ul style="list-style-type: none"> <li>▶ Reduction</li> <li>▶ Reuse</li> <li>▶ Recycling</li> <li>▶ Disposal (if all else fails)</li> </ul> <p>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.</p> <ul style="list-style-type: none"> <li>▶ <b>DO NOT allow wash water from cleaning or process equipment to enter drains.</b></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> |
|-------------------------------------|--|

## SECTION 14 Transport information

### Labels Required

|                         |                |
|-------------------------|----------------|
| <b>Marine Pollutant</b> | NO             |
| <b>HAZCHEM</b>          | 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

14.7. Maritime transport in bulk according to IMO instruments

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

Not Applicable

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

| Product name | Group          |
|--------------|----------------|
| mannitol     | Not Applicable |

**14.7.3. Transport in bulk in accordance with the IGC Code**

| Product name | Ship Type      |
|--------------|----------------|
| mannitol     | Not Applicable |

**SECTION 15 Regulatory information****Safety, health and environmental regulations / legislation specific for the substance or mixture**

mannitol is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

**Additional Regulatory Information**

Not Applicable

**National Inventory Status**

| National Inventory                                | Status  |
|---|---|
| Australia - AIIC / Australia Non-Industrial Use   | Yes   |
| Canada - DSL                                      | Yes   |
| Canada - NDSL                                     | No (mannitol)   |
| China - IECSC                                     | Yes   |
| Europe - EINEC / ELINCS / NLP                     | Yes   |
| Japan - ENCS                                      | Yes   |
| Korea - KECI                                      | Yes   |
| New Zealand - NZIoC                               | Yes   |
| Philippines - PICCS                               | Yes   |
| USA - TSCA  | All chemical substances in this product have been designated as TSCA Inventory 'Active'   |
| Taiwan - TCSI                                     | Yes   |
| Mexico - INSQ                                     | Yes   |
| Vietnam - NCI                                     | Yes   |
| Russia - FBEPH                                    | Yes   |
| UAE - Control List (Banned/Restricted Substances) | No (mannitol)   |
| <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. These ingredients may be exempt or will require registration. |

**SECTION 16 Other information**

|                      |            |
|----------------------|------------|
| <b>Revision Date</b> | 20/01/2026 |
| <b>Initial Date</b>  | 12/05/2005 |

**SDS Version Summary**

| Version | Date of Update | Sections Updated   |
|---------|----------------|--|
| 8.1     | 19/12/2024     | Exposure controls / personal protection - Engineering Control, Exposure controls / personal protection - Exposure Standard, Exposure controls / personal protection - Personal Protection (other), Exposure controls / personal protection - Personal Protection (Respirator), Exposure controls / personal protection - Personal Protection (eye), Exposure controls / personal protection - Personal Protection (hands/feet), Accidental release measures - Spills (minor), Handling and storage - Storage (suitable container), Toxicological information - Toxicity and Irritation (Other), Identification of the substance / mixture and of the company / undertaking - Use |
| 9.1     | 20/12/2024     | Toxicological information - Toxicity and Irritation (Other), Identification of the substance / mixture and of the company / undertaking - Use  |

**Other information**

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

Continued...

- ▶ 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
- ▶ DNEL: Derived No-Effect Level
- ▶ PNEC: Predicted no-effect concentration
- ▶ MARPOL: International Convention for the Prevention of Pollution from Ships
- ▶ IMSBC: International Maritime Solid Bulk Cargoes Code
- ▶ IGC: International Gas Carrier Code
- ▶ IBC: International Bulk Chemical Code
  
- ▶ AIIC: 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
- ▶ 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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