

## Ytterbium(III) nitrate hydrate

### Apollo Scientific

Chemwatch Hazard Alert Code: 2

Part Number: IN3805

Version No: 1.1

Safety Data Sheet (Conforms to Annex II of REACH (1907/2006) - Regulation 2020/878)

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S.REACH.GBR.EN

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

### 1.1. Product Identifier

|                               |                                |
|-------------------------------|--------------------------------|
| Product name                  | Ytterbium(III) nitrate hydrate |
| Chemical Name                 | ytterbium(III) nitrate         |
| Synonyms                      | Not Available                  |
| Proper shipping name          | NITRATES, INORGANIC, N.O.S.    |
| Chemical formula              | H-N-O3 .1/3 Yb                 |
| Other means of identification | Not Available                  |
| CAS number                    | 13768-67-7                     |
| EC number                     | 237-384-6                      |

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

|                          |  |
|--------------------------|--|
| Relevant identified uses | Not Available                                    |
| Uses advised against     | No specific uses advised against are identified. |

### 1.3. Details of the manufacturer or supplier of the safety data sheet

|                         |   |
|-------------------------|---|
| Registered company name | Apollo Scientific   |
| Address                 | Whitefield Road, Bredbury SK62QR United Kingdom                                     |
| Telephone               | 01614060505   |
| Fax                     | 0161 406 0506   |
| Website                 | <a href="http://www.apolloscientific.co.uk/">http://www.apolloscientific.co.uk/</a> |
| Email                   | sales@apolloscientific.co.uk  |

### 1.4. Emergency telephone number

|                                   |               |
|-----------------------------------|---------------|
| Association / Organisation        | Not Available |
| Emergency telephone numbers       | Not Available |
| Other emergency telephone numbers | Not Available |


## SECTION 2 Hazards identification

### 2.1. Classification of the substance or mixture

|  |  |
|--|--|
| Classification according to regulation (EC) No | H335 - Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, H302 - Acute Toxicity (Oral) Category 4, H315 - Skin Corrosion/Irritation Category 2, H319 - Serious Eye Damage/Eye Irritation Category 2, H272 - Oxidizing |
|--|--|

|                                    |  |
|------------------------------------|--|
| 1272/2008 [CLP] and amendments [1] | Solids Category 3  |
| <b>Legend:</b>                     | 1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI |

## 2.2. Label elements

|                     |   |
|---------------------|---|
| Hazard pictogram(s) |  |
| Signal word         | <b>Warning</b>  |

## Hazard statement(s)

|      |                                   |
|------|-----------------------------------|
| H335 | May cause respiratory irritation. |
| H302 | Harmful if swallowed.             |
| H315 | Causes skin irritation.           |
| H319 | Causes serious eye irritation.    |
| H272 | May intensify fire; oxidiser.     |

## Supplementary statement(s)

Not Applicable

## Precautionary statement(s) Prevention

|      |  |
|------|--|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P271 | Use only outdoors or in a well-ventilated area.  |
| P220 | Keep away from clothing and other combustible materials.                                       |
| P261 | Avoid breathing dust/fumes.  |
| P264 | Wash all exposed external body areas thoroughly after handling.                                |
| P270 | Do not eat, drink or smoke when using this product.  |
| P280 | Wear protective gloves, protective clothing, eye protection and face protection.               |

## Precautionary statement(s) Response

|                |  |
|----------------|--|
| P370+P378      | In case of fire: Use water spray/fog to extinguish.  |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P337+P313      | If eye irritation persists: Get medical advice/attention.  |
| P301+P312      | IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider if you feel unwell.  |
| P302+P352      | IF ON SKIN: Wash with plenty of water.   |
| P304+P340      | IF INHALED: Remove person to fresh air and keep comfortable for breathing.   |
| P330           | Rinse mouth.   |
| P332+P313      | If skin irritation occurs: Get medical advice/attention.   |
| P362+P364      | Take off contaminated clothing and wash it before reuse.   |

## Precautionary statement(s) Storage

|           |  |
|-----------|--|
| P405      | Store locked up.   |
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |

## Precautionary statement(s) Disposal

|      |  |
|------|--|
| P501 | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |
|------|--|

## 2.3. Other hazards

May produce discomfort of the respiratory system and skin\*.

REACH - Art.57-59: The mixture does not contain Substances of Very High Concern (SVHC) at the SDS print date.

Ytterbium(III) nitrate hydrate

**SECTION 3 Composition / information on ingredients**

**3.1.Substances**

| 1. CAS No<br>2.EC No<br>3.Index No<br>4.REACH No | %[weight] | Name                           | Classification according to regulation (EC) No 1272/2008 [CLP] and amendments | SCL / M-Factor | Nanoform Particle Characteristics |
|--|-----------|--------------------------------|---|----------------|-----------------------------------|
| Not Available                                    | 100       | Ytterbium(III) nitrate hydrate | Not Applicable  | Not Applicable | Not Available                     |

**Legend:** 1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 3. Classification drawn from C&L; \* EU IOELVs available; [e] Substance identified as having endocrine disrupting properties

**3.2.Mixtures**

See 'Information on ingredients' in section 3.1

**SECTION 4 First aid measures**

**4.1. 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 fumes, aerosols or combustion products are inhaled remove from contaminated area.</li> <li>▶ Other measures are usually unnecessary.</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>  |

**4.2 Most important symptoms and effects, both acute and delayed**

See Section 11

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

Treat symptomatically.

The toxicity of nitrates and nitrites result from their vasodilating properties and their propensity to form methaemoglobin.

- ▶ Most produce a peak effect within 30 minutes.
- ▶ Clinical signs of cyanosis appear before other symptoms because of the dark pigmentation of methaemoglobin.
- ▶ Initial attention should be directed towards improving oxygen delivery, with assisted ventilation, if necessary. Hyperbaric oxygen has not demonstrated conclusive benefits.
- ▶ Institute cardiac monitoring, especially in patients with coronary artery or pulmonary disease.
- ▶ Hypotension should respond to Trendelenburg's position and intravenous fluids; otherwise dopamine may be needed.
- ▶ Naloxone, glucose and thiamine should be given if a multiple ingestion is suspected.
- ▶ Decontaminate using Ipecac Syrup for alert patients or lavage for obtunded patients who present within 2-4 hours of ingestion.
- ▶ Symptomatic patients with methaemoglobin levels over 30% should receive methylene blue.(Cyanosis alone, is not an indication for treatment). The usual dose is 1-2 mg/kg of a 1% solution (10 mg/ml) IV over 5 minutes; repeat, using the same dose if symptoms of hypoxia fail to subside within 1 hour.

[Ellenhorn and Barceloux: Medical Toxicology]

**BIOLOGICAL EXPOSURE INDEX - BEI**

These represent the determinants observed in specimens collected from a healthy worker who has been exposed at the Exposure Standard (ES or TLV):

| Determinant                | Index               | Sampling Time          | Comments |
|----------------------------|---------------------|------------------------|----------|
| 1. Methaemoglobin in blood | 1.5% of haemoglobin | During or end of shift | B,NS,SQ  |

B: Background levels occur in specimens collected from subjects **NOT** exposed

NS: Non-specific determinant;also observed after exposure to other materials

SQ: Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test.

**SECTION 5 Firefighting measures**

### 5.1. Extinguishing media

#### FOR SMALL FIRE:

- ▶ USE FLOODING QUANTITIES OF WATER.
- ▶ **DO NOT** use dry chemical, CO<sub>2</sub>, foam or halogenated-type extinguishers.

#### FOR LARGE FIRE

- ▶ Flood fire area with water from a protected position

### 5.2. Special hazards arising from the substrate or mixture

|                             |   |
|-----------------------------|---|
| <b>Fire Incompatibility</b> | <ul style="list-style-type: none"> <li>▶ Avoid storage with reducing agents.</li> <li>▶ Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous</li> </ul> |
|-----------------------------|---|

### 5.3. Advice for firefighters

|                              |   |
|------------------------------|---|
| <b>Fire Fighting</b>         |   |
| <b>Fire/Explosion Hazard</b> | <ul style="list-style-type: none"> <li>▶ Will not burn but increases intensity of fire.</li> <li>▶ Heating may cause expansion or decomposition leading to violent rupture of containers.</li> <li>▶ Heat affected containers remain hazardous.</li> <li>▶ Contact with combustibles such as wood, paper, oil or finely divided metal may produce spontaneous combustion or violent decomposition.</li> <li>▶ May emit irritating, poisonous or corrosive fumes.</li> </ul> |

## SECTION 6 Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

See section 8

### 6.2. Environmental precautions

See section 12

### 6.3. Methods and material for containment and cleaning up

|                     |  |
|---------------------|--|
| <b>Minor Spills</b> | <ul style="list-style-type: none"> <li>▶ Clean up all spills immediately.</li> <li>▶ No smoking, naked lights, ignition sources.</li> <li>▶ Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result.</li> <li>▶ Avoid breathing dust or vapours and all contact with skin and eyes.</li> <li>▶ Control personal contact with the substance, by using protective equipment.</li> <li>▶ Contain and absorb spill with dry sand, earth, inert material or vermiculite.</li> <li>▶ <b>DO NOT</b> use sawdust as fire may result.</li> <li>▶ Scoop up solid residues and seal in labelled drums for disposal.</li> <li>▶ Neutralise/decontaminate area.</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>▶ May be violently or explosively reactive.</li> <li>▶ Wear full body protective clothing with breathing apparatus.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> <li>▶ Consider evacuation (or protect in place).</li> <li>▶ No smoking, flames or ignition sources.</li> <li>▶ Increase ventilation.</li> <li>▶ Contain spill with sand, earth or other clean, inert materials.</li> <li>▶ <b>NEVER</b> use organic absorbents such as sawdust, paper, cloth; as fire may result.</li> <li>▶ Avoid any contamination by organic matter.</li> <li>▶ Use spark-free and explosion-proof equipment.</li> <li>▶ Collect any recoverable product into labelled containers for possible recycling.</li> <li>▶ <b>DO NOT</b> mix fresh with recovered material.</li> <li>▶ Collect residues and seal in labelled drums for disposal.</li> <li>▶ Wash area and prevent runoff into drains.</li> <li>▶ Decontaminate equipment and launder all protective clothing before storage and re-use.</li> <li>▶ If contamination of drains or waterways occurs advise emergency services.</li> </ul> |

### 6.4. Reference to other sections

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

## SECTION 7 Handling and storage

## 7.1. Precautions for safe handling

|   |  |
|---|--|
| <p><b>Safe handling</b></p>                 | <p>For oxidisers, including peroxides.</p> <ul style="list-style-type: none"> <li>· Avoid personal contact and inhalation of dust, mist or vapours.</li> <li>· Provide adequate ventilation.</li> <li>· Always wear protective equipment and wash off any spillage from clothing.</li> <li>· Keep material away from light, heat, flammables or combustibles.</li> <li>· Keep cool, dry and away from incompatible materials.</li> <li>· Avoid physical damage to containers.</li> <li>· <b>DO NOT repack or return unused portions to original containers.</b> Withdraw only sufficient amounts for immediate use.</li> <li>· Use only minimum quantity required.</li> <li>· Avoid using solutions of peroxides in volatile solvents. Solvent evaporation should be controlled to avoid dangerous concentration of the peroxide.</li> <li>· <b>Do NOT allow oxidisers to contact iron or compounds of iron, cobalt, or copper, metal oxide salts, acids or bases.</b></li> <li>· <b>Do NOT use metal spatulas to handle oxidisers</b></li> <li>· <b>Do NOT use glass containers with screw cap lids or glass stoppers.</b></li> <li>· <b>Store peroxides at the lowest possible temperature, consistent with their solubility and freezing point.</b></li> <li>· <b>CAUTION: Do NOT store liquids or solutions of peroxides at a temperature below that at which the oxidiser freezes or precipitates. Peroxides, in particular, in this form are extremely shock and heat-sensitive. Refrigerated storage of peroxides must ONLY be in explosion-proof units.</b></li> <li>· The hazards and consequences of fires and explosions during synthesis and use of oxidisers is widely recognised; spontaneous or induced decomposition may culminate in a variety of ways, ranging from moderate gassing to spontaneous ignition or explosion. The heat released from spontaneous decomposition of an energy-rich compound causes a rise in the surrounding temperature; the temperature will rise until thermal balance is established or until the material heats to decomposition,</li> <li>· The most effective means for minimising the consequences of an accident is to limit quantities to a practical minimum. Even gram-scale explosions can be serious. Once ignited the burning of peroxides cannot be controlled and the area should be evacuated.</li> <li>· Unless there is compelling reason to do otherwise, peroxide concentration should be limited to 10% (or less with vigorous reactants). Peroxide concentration is rarely as high as 1% in the reaction mixture of polymerisation or other free-radical reactions,</li> <li>· Oxidisers should be added slowly and cautiously to the reaction medium. This should be completed prior to heating and with good agitation.</li> <li>· Addition oxidisers to the hot monomer is extremely dangerous. A violent reaction (e.g., fire or explosion) can result from inadvertent mixing of promoters (frequently used with peroxides in polymerisation systems) with full-strength oxidisers</li> <li>· Organic peroxides are very sensitive to contamination (especially heavy-metal compounds, metal oxide salts, alkaline materials including amines, strong acids, and many varieties of dust and dirt). This can initiate rapid, uncontrolled decomposition of peroxides and possible generation of intense heat, fire or explosion The consequences of accidental contamination from returning withdrawn material to the storage container can be disastrous.</li> <li>· When handling <b>NEVER</b> smoke, eat or drink.</li> <li>· Always wash hands with soap and water after handling.</li> <li>· Use only good occupational work practice.</li> <li>· Observe manufacturer's storage and handling recommendations contained within this MSDS.</li> </ul> |
| <p><b>Fire and explosion protection</b></p> | <p>See section 5</p>   |
| <p><b>Other information</b></p>             | <ul style="list-style-type: none"> <li>▸ Store in original containers.</li> <li>▸ Keep containers securely sealed as supplied.</li> <li>▸ Store in a cool, well ventilated area.</li> <li>▸ Keep dry.</li> <li>▸ Store under cover and away from sunlight.</li> <li>▸ Store away from flammable or combustible materials, debris and waste. Contact may cause fire or violent reaction.</li> <li>▸ Store away from incompatible materials and foodstuff containers.</li> <li>▸ <b>DO NOT stack on wooden floors or pallets.</b></li> <li>▸ Protect containers from physical damage.</li> <li>▸ Check regularly for leaks.</li> <li>▸ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> </ul> <p>In addition, Goods of Class 5.1, packing group II should be:</p> <ul style="list-style-type: none"> <li>▸ stored in piles so that</li> <li>▸ the height of the pile does not exceed 1 metre</li> <li>▸ the maximum quantity in a pile or building does not exceed 1000 tonnes unless the area is provided with automatic fire extinguishers</li> <li>▸ the maximum height of a pile does not exceed 3 metres where the room is provided with automatic fire extinguishers or 2 meters if not.</li> <li>▸ the minimum distance between piles is not less than 2 metres where the room is provided with automatic fire extinguishers or 3 meters if not.</li> <li>▸ the minimum distance to walls is not less than 1 metre.</li> </ul>   |

## 7.2. Conditions for safe storage, including any incompatibilities

|                                  |   |
|----------------------------------|---|
| <p><b>Suitable container</b></p> | <ul style="list-style-type: none"> <li>▸ <b>DO NOT repack.</b> Use containers supplied by manufacturer only.</li> </ul> <p>For low viscosity materials</p> <ul style="list-style-type: none"> <li>▸ Drums and jerricans must be of the non-removable head type.</li> <li>▸ Where a can is to be used as an inner package, the can must have a screwed enclosure.</li> </ul> |
|----------------------------------|---|

|  |   |
|--|---|
|  | <p>For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids:</p> <ul style="list-style-type: none"> <li>▸ Removable head packaging and</li> <li>▸ cans with friction closures may be used.</li> </ul> <p>-</p> <p>Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages *.</p> <p>-</p> <p>In addition, where inner packagings are glass and contain liquids of packing group I and II there must be sufficient inert absorbent to absorb any spillage *.</p> <p>-</p> <p>* unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic.</p>  |
| <b>Storage incompatibility</b>   | <p>Avoid contamination of water, foodstuffs, feed or seed.</p> <ul style="list-style-type: none"> <li>▸ Inorganic peroxy compounds are potent oxidisers that pose fire or explosive hazards when in contact with ordinary combustible materials.</li> <li>▸ Inorganic peroxides react with organic compounds to generate organic peroxide and hydroperoxide products that react violently with reducing agents.</li> <li>▸ Inorganic oxidising agents can react with reducing agents to generate heat and products that may be gaseous (causing pressurization of closed containers). The products may themselves be capable of further reactions (such as combustion in the air).</li> <li>▸ Organic compounds in general have some reducing power and can in principle react with compounds in this class. Actual reactivity varies greatly with the identity of the organic compound.</li> <li>▸ Inorganic oxidising agents can react violently with active metals, cyanides, esters, and thiocyanates.</li> <li>▸ Peroxides, in contact with inorganic cobalt and copper compounds, iron and iron compounds, acetone, metal oxide salts and acids and bases can react with rapid, uncontrolled decomposition, leading to fires and explosions.</li> <li>▸ Inorganic reducing agents react with oxidizing agents to generate heat and products that may be flammable, combustible, or otherwise reactive. Their reactions with oxidizing agents may be violent.</li> <li>▸ Incidents involving interaction of active oxidants and reducing agents, either by design or accident, are usually very energetic and examples of so-called redox reactions.</li> </ul> <p>for metal nitrates:</p> <ul style="list-style-type: none"> <li>▸ Segregate from heavy metals, phosphides, sodium acetate, lead nitrate, tartrates, trichloroethylene,</li> <li>▸ Avoid shock and heat.</li> <li>▸ Mixtures of metal nitrates with alkyl esters may explode due to the formation of unstable alkyl nitrates.</li> <li>▸ Mixtures of a nitrate with phosphorous, tin(II) chloride and other reducing agents may react explosively.</li> <li>▸ Mixtures containing nitrates and organic materials are potentially dangerous, especially if acidic materials or heavy metals are present.</li> <li>▸ Fibrous organic material, jute, wood and similar cellulosic material can become highly combustible by nitrate impregnation</li> <li>▸ Metal nitrates are incompatible with cyanides, thiocyanates, isothiocyanates and hypophosphites. Avoid reaction with the following which can cause an explosion: barium thiocyanate, boron phosphide, cyanides, sodium hypophosphite, sulfur and charcoal, powdered aluminium or aluminium oxide, sodium thiosulfate.</li> <li>▸ Mixtures of metal nitrates and phosphinates may explode on heating</li> <li>▸ A mixture of aluminium powder, water and metal nitrate may explode due to a self accelerating reaction.</li> <li>▸ Mixtures containing nitrates, nitrites and organic materials are potentially dangerous, especially in the presence of acidic materials and heavy metals</li> </ul> |
| <b>Hazard categories in accordance with Regulation (EC) No 1272/2008</b>   | Not Available   |
| <b>Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of</b> | Not Available   |

### 7.3. Specific end use(s)

See section 1.2

## SECTION 8 Exposure controls / personal protection

### 8.1. Control parameters

| Ingredient    | DNELs<br>Exposure Pattern Worker | PNECs<br>Compartment |
|---------------|----------------------------------|----------------------|
| Not Available | Not Available                    | Not Available        |

\* Values for General Population

#### Occupational Exposure Limits (OEL)

#### INGREDIENT DATA

Continued...

| Source        | Ingredient    | Material name | TWA           | STEL          | Peak          | Notes         |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Not Available | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available |

Not Applicable

**Emergency Limits**

| Ingredient                     | TEEL-1        | TEEL-2        | TEEL-3        |
|--------------------------------|---------------|---------------|---------------|
| Ytterbium(III) nitrate hydrate | Not Available | Not Available | Not Available |

| Ingredient                     | Original IDLH | Revised IDLH  |
|--------------------------------|---------------|---------------|
| Ytterbium(III) nitrate hydrate | Not Available | Not Available |

**8.2. Exposure 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.

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered.

Such protection might consist of:

- (a): particle dust respirators, if necessary, combined with an absorption cartridge;
- (b): filter respirators with absorption cartridge or canister of the right type;
- (c): fresh-air hoods or masks.

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:                   |
|--|------------------------------|
| 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 4-10 m/s (800-2000 f/min) for extraction of crusher dusts generated 2 metres 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.

**8.2.2. Individual protection measures, such as personal protective equipment**

**Eye and face protection**

- Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent]
- Full face shield may be required for supplementary but never for primary protection of eyes.
- 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].



|                              |   |
|------------------------------|---|
| <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>▶ Wear chemical protective gloves, e.g. PVC.</li> <li>▶ Wear safety footwear or safety gumboots, e.g. Rubber</li> <li>▶ <b>DO NOT wear cotton or cotton-backed gloves.</b></li> <li>▶ <b>DO NOT wear leather gloves.</b></li> <li>▶ Promptly hose all spills off leather shoes or boots or ensure that such footwear is protected with PVC over-shoes.</li> </ul> |
| <b>Body protection</b>       | See Other protection below  |
| <b>Other protection</b>      | <ul style="list-style-type: none"> <li>▶ Overalls.</li> <li>▶ PVC Apron.</li> <li>▶ PVC protective suit may be required if exposure severe.</li> <li>▶ Eyewash unit.</li> <li>▶ Ensure there is ready access to a safety shower.</li> <li>▶ Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.</li> <li>▶ For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets).</li> <li>▶ Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot an shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms. Conductive shoes should be stored in lockers close to the room in which they are worn. Personnel who have been issued conductive footwear should not wear them from their place of work to their homes and return.</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*      | -<br>-               | PAPR-P1<br>-           |
| up to 50 x ES                      | Air-line**           | P2                   | PAPR-P2                |
| up to 100 x ES                     | -                    | P3                   | -                      |



## Ytterbium(III) nitrate hydrate

|           |   |            |         |
|-----------|---|------------|---------|
|           |   | 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.

### 8.2.3. Environmental exposure controls

See section 12

## SECTION 9 Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

|   |               |  |                |
|---|---------------|--|----------------|
| <b>Appearance</b>                                   | White         |  |                |
| <b>Physical state</b>                               | Solid         | <b>Relative density (Water = 1)</b>            | Not Available  |
| <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 (°C)</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 Available  |
| <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 Applicable |
| <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</b>                          | Miscible      | <b>pH as a solution (1%)</b>                   | Not Available  |
| <b>Vapour density (Air = 1)</b>                     | Not Available | <b>VOC g/L</b>                                 | Not Available  |
| <b>Nanoform Solubility</b>                          | Not Available | <b>Nanoform Particle Characteristics</b>       | Not Available  |
| <b>Particle Size</b>                                | Not Available |  |                |

### 9.2. Other information

Not Available

## SECTION 10 Stability and reactivity

|                        |                 |
|------------------------|-----------------|
| <b>10.1.Reactivity</b> | See section 7.2 |
|------------------------|-----------------|

|   |   |
|---|---|
| <b>10.2. Chemical stability</b>                 | Product is considered stable and hazardous polymerisation will not occur.<br><ul style="list-style-type: none"> <li>▸ Unstable in the presence of incompatible materials.</li> <li>▸ Product is considered stable under normal handling conditions.</li> <li>▸ Prolonged exposure to heat.</li> <li>▸ Hazardous polymerisation will not occur.</li> </ul> |
| <b>10.3. Possibility of hazardous reactions</b> | See section 7.2   |
| <b>10.4. Conditions to avoid</b>                | See section 7.2   |
| <b>10.5. Incompatible materials</b>             | See section 7.2   |
| <b>10.6. Hazardous decomposition products</b>   | See section 5.3   |

## SECTION 11 Toxicological information

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008 Information on toxicological effects

|                     |  |
|---------------------|--|
| <b>Inhaled</b>      | 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.  |
| <b>Ingestion</b>    | <p>The main concern with exposure to inorganic nitrate is its biological reduction to the reactive and toxic nitrite. Nitrate itself is relatively harmless, but where bacteria are present and the environment is anaerobic (lacking in oxygen), nitrate can be converted to nitrite. The main sites of this reaction are the mouth and stomach, but nitrite formation in the bladder (urinary infection) may also be of some toxicological importance.</p> <p>Adults have tolerated large doses of sodium nitrate and ammonium nitrate (&gt; 100 milligrams of nitrate per kilogram body weight), in some cases repeated for several days for medical or experimental purposes, with only minor effects in some subjects (slight amount of methaemoglobin in the blood, diarrhea and vomiting). Death and severe effects of swallowing nitrate are generally associated with doses greater than 10 grams of nitrate ion. Doses of between 2 and 9 grams of nitrate ion (equivalent to 33 to 150 milligrams of nitrate ion per kilogram body weight) have been reported to cause methaemoglobin to be present in the blood, impairing delivery of oxygen to the tissues. This is the main acute toxic effect of nitrate and nitrite poisoning.</p> <p>The half-life in the body for an oral dose of nitrate is approximately 5 hours. Nitrate does not accumulate in the body.</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.</p> <p>The substance and/or its metabolites may bind to haemoglobin inhibiting normal uptake of oxygen. This condition, known as "methaemoglobinemia", is a form of oxygen starvation (anoxia).</p> <p>Symptoms include cyanosis (a bluish discolouration skin and mucous membranes) and breathing difficulties. Symptoms may not be evident until several hours after exposure.</p> <p>At about 15% concentration of blood methaemoglobin there is observable cyanosis of the lips, nose and earlobes. Symptoms may be absent although euphoria, flushed face and headache are commonly experienced. At 25-40%, cyanosis is marked but little disability occurs other than that produced on physical exertion. At 40-60%, symptoms include weakness, dizziness, lightheadedness, increasingly severe headache, ataxia, rapid shallow respiration, drowsiness, nausea, vomiting, confusion, lethargy and stupor. Above 60% symptoms include dyspnea, respiratory depression, tachycardia or bradycardia, and convulsions. Levels exceeding 70% may be fatal.</p> |
| <b>Skin Contact</b> | 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.  |
| <b>Eye</b>          | 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.   |
| <b>Chronic</b>      | Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.   |

|                                       |   |  |
|---------------------------------------|---|--|
| <b>Ytterbium(III) nitrate hydrate</b> | <b>TOXICITY</b>   | <b>IRRITATION</b>  |
|                                       | Oral (Mouse) LD50; 126 mg/kg <sup>2</sup>   | Skin: no adverse effect observed (not irritating) <sup>1</sup> |
| <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>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>   | ✓ |
| <b>Respiratory or Skin sensitisation</b> | ✗ | <b>STOT - Repeated Exposure</b> | ✗ |
| <b>Mutagenicity</b>                      | ✗ | <b>Aspiration Hazard</b>        | ✗ |

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

## 11.2 Information on other hazards

### 11.2.1. Endocrine disrupting properties

No evidence of endocrine disrupting properties were found in the current literature.

### 11.2.2. Other information

See Section 11.1

## SECTION 12 Ecological information

### 12.1. Toxicity

| Ytterbium(III) nitrate hydrate | Endpoint  | Test Duration (hr) | Species | Value             | Source |
|--------------------------------|-----------|--------------------|---------|-------------------|--------|
|                                | LC50      | 96h                | Fish    | >4.491<44.913mg/L | 2      |
|                                | NOEC(ECx) | 96h                | Fish    | 4.491mg/L         | 2      |

**Legend:** *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 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*

### 12.2. Persistence and degradability

| Ingredient | Persistence: Water/Soil               | Persistence: Air                      |
|------------|---------------------------------------|---------------------------------------|
|            | No Data available for all ingredients | No Data available for all ingredients |

### 12.3. Bioaccumulative potential

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

### 12.4. Mobility in soil

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

### 12.5. Results of PBT and vPvB assessment

|                         | P             | B             | T             |
|-------------------------|---------------|---------------|---------------|
| Relevant available data | Not Available | Not Available | Not Available |
| PBT                     | ✘             | ✘             | ✘             |
| vPvB                    | ✘             | ✘             | ✘             |

PBT Criteria fulfilled?

No

vPvB

No

### 12.6. Endocrine disrupting properties

No evidence of endocrine disrupting properties were found in the current literature.

### 12.7. Other adverse effects

No evidence of ozone depleting properties were found in the current literature.

## SECTION 13 Disposal considerations

### 13.1. Waste treatment methods

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

Continued...

|                                |  |
|--------------------------------|--|
|                                | ▸ Recycle containers if possible, or dispose of in an authorised landfill. |
| <b>Waste treatment options</b> | Not Available  |
| <b>Sewage disposal options</b> | Not Available  |

## SECTION 14 Transport information

### Labels Required

|                         |   |
|-------------------------|---|
|                         |  |
| <b>Marine Pollutant</b> | NO  |
| <b>HAZCHEM</b>          | 1Y  |

### Land transport (ADR-RID)

|                                    |                                |                |
|------------------------------------|--------------------------------|----------------|
| 14.1. UN number or ID number       | 1477                           |                |
| 14.2. UN proper shipping name      | NITRATES, INORGANIC, N.O.S.    |                |
| 14.3. Transport hazard class(es)   | Class                          | 5.1            |
|                                    | Subsidiary risk                | Not Applicable |
| 14.4. Packing group                | II                             |                |
| 14.5. Environmental hazard         | Not Applicable                 |                |
| 14.6. Special precautions for user | Hazard identification (Kemler) | 50             |
|                                    | Classification code            | O2             |
|                                    | Hazard Label                   | 5.1            |
|                                    | Special provisions             | 511            |
|                                    | Limited quantity               | 1 kg           |
|                                    | Tunnel Restriction Code        | 2 (E)          |

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

|                                    |   |                |
|------------------------------------|---|----------------|
| 14.1. UN number                    | 1477  |                |
| 14.2. UN proper shipping name      | Nitrates, inorganic, n.o.s.                               |                |
| 14.3. Transport hazard class(es)   | ICAO/IATA Class   | 5.1            |
|                                    | ICAO / IATA Subrisk                                       | Not Applicable |
|                                    | ERG Code  | 5L             |
| 14.4. Packing group                | II  |                |
| 14.5. Environmental hazard         | Not Applicable  |                |
| 14.6. Special precautions for user | Special provisions  | A3 A803        |
|                                    | Cargo Only Packing Instructions                           | 562            |
|                                    | Cargo Only Maximum Qty / Pack                             | 25 kg          |
|                                    | Passenger and Cargo Packing Instructions                  | 558            |
|                                    | Passenger and Cargo Maximum Qty / Pack                    | 5 kg           |
|                                    | Passenger and Cargo Limited Quantity Packing Instructions | Y544           |
|                                    | Passenger and Cargo Limited Maximum Qty / Pack            | 2.5 kg         |

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

|                 |      |
|-----------------|------|
| 14.1. UN number | 1477 |
|-----------------|------|

|                                    |                             |                |
|------------------------------------|-----------------------------|----------------|
| 14.2. UN proper shipping name      | NITRATES, INORGANIC, N.O.S. |                |
| 14.3. Transport hazard class(es)   | IMDG Class                  | 5.1            |
|                                    | IMDG Subrisk                | Not Applicable |
| 14.4. Packing group                | II                          |                |
| 14.5. Environmental hazard         | Not Applicable              |                |
| 14.6. Special precautions for user | EMS Number                  | F-A, S-Q       |
|                                    | Special provisions          | Not Applicable |
|                                    | Limited Quantities          | 1 kg           |

#### Inland waterways transport (ADN)

|                                    |                             |                |
|------------------------------------|-----------------------------|----------------|
| 14.1. UN number                    | 1477                        |                |
| 14.2. UN proper shipping name      | NITRATES, INORGANIC, N.O.S. |                |
| 14.3. Transport hazard class(es)   | 5.1                         | Not Applicable |
|                                    |                             |                |
| 14.4. Packing group                | II                          |                |
| 14.5. Environmental hazard         | Not Applicable              |                |
| 14.6. Special precautions for user | Classification code         | O2             |
|                                    | Special provisions          | 511            |
|                                    | Limited quantity            | 1 kg           |
|                                    | Equipment required          | PP             |
|                                    | Fire cones number           | 0              |

#### 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 |
|--------------|-------|
|--------------|-------|

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

| Product name | Ship Type |
|--------------|-----------|
|--------------|-----------|

### SECTION 15 Regulatory information

#### 15.1. Safety, health and environmental regulations / legislation specific for the substance or mixture

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2020/878; Regulation (EC) No 1272/2008 as updated through ATPs.

#### Information according to 2012/18/EU (Seveso III):

|                 |               |
|-----------------|---------------|
| Seveso Category | Not Available |
|-----------------|---------------|

#### 15.2. Chemical safety assessment

For further information please look at the Chemical Safety Assessment and Exposure Scenarios prepared by your Supply Chain if available.

#### ECHA SUMMARY

Not Applicable

#### National Inventory Status

| National Inventory | Status |
|--------------------|--------|
|--------------------|--------|

| National Inventory                              | Status   |
|---|--|
| Australia - AIIC / Australia Non-Industrial Use | Not Available  |
| Canada - DSL                                    | Not Available  |
| Canada - NDSL                                   | Not Available  |
| China - IECSC                                   | Not Available  |
| Europe - EINEC / ELINCS / NLP                   | Not Available  |
| Japan - ENCS                                    | Not Available  |
| Korea - KECI                                    | Not Available  |
| New Zealand - NZIoC                             | Not Available  |
| Philippines - PICCS                             | Not Available  |
| USA - TSCA                                      | Not Available  |
| Taiwan - TCSI                                   | Not Available  |
| Mexico - INSQ                                   | Not Available  |
| Vietnam - NCI                                   | Not Available  |
| Russia - FBEPH                                  | Not Available  |
| <b>Legend:</b>                                  | <p><i>Yes = All CAS declared ingredients are on the inventory</i></p> <p><i>No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.</i></p> |

## SECTION 16 Other information

|                      |            |
|----------------------|------------|
| <b>Revision Date</b> | 16/09/2022 |
| <b>Initial Date</b>  | 16/09/2022 |

### Full text Risk and Hazard codes

#### 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.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:

- EN 166 Personal eye-protection
- EN 340 Protective clothing
- EN 374 Protective gloves against chemicals and micro-organisms
- EN 13832 Footwear protecting against chemicals
- EN 133 Respiratory protective devices

#### Definitions and abbreviations

- PC - TWA: Permissible Concentration-Time Weighted Average
- PC - STEL: Permissible Concentration-Short Term Exposure Limit
- IARC: International Agency for Research on Cancer
- ACGIH: American Conference of Governmental Industrial Hygienists
- STEL: Short Term Exposure Limit
- TEEL: Temporary Emergency Exposure Limit,
- IDLH: Immediately Dangerous to Life or Health Concentrations
- ES: Exposure Standard
- OSF: Odour Safety Factor
- NOAEL :No Observed Adverse Effect Level
- LOAEL: Lowest Observed Adverse Effect Level
- TLV: Threshold Limit Value
- LOD: Limit Of Detection
- OTV: Odour Threshold Value
- BCF: BioConcentration Factors
- BEI: Biological Exposure Index
- 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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