

Classified as hazardous in accordance with the criteria of EPA New Zealand

## Section 1 - Identification

### Product Identifier

|                             |  |
|-----------------------------|--|
| <b>Product Name</b>         | <u>tert-Butyl alcohol</u>                                    |
| <b>CAS No</b>               | 75-65-0  |
| <b>Synonyms</b>             | tert-Butyl alcohol; 2-Methyl-2-propanol; 2-Methylpropan-2-ol |
| <b>Molecular Formula</b>    | C <sub>4</sub> H <sub>10</sub> O                             |
| <b>Molecular Weight</b>     | 74.12  |
| <b>Recommended Use</b>      | Laboratory chemicals.  |
| <b>Uses advised against</b> | No Information available                                     |

|                                |   |
|--------------------------------|---|
| <b>Product Code</b>            | <b>L12338</b>   |
| <b>Address</b>                 | Thermo Fisher Scientific New Zealand Ltd<br>244 Bush Road, Albany,<br>Auckland, New Zealand |
| <b>Emergency Tel.</b>          | <b>CHEMTREC®</b><br><b>09 980 6780 or +64 9 980 6780</b>                                    |
| <b>Telephone / Fax Numbers</b> | Tel: 09 980 6700<br>Fax: 09 980 6788  |
| <b>E-mail address</b>          | <a href="mailto:ANZinfo@thermofisher.com">ANZinfo@thermofisher.com</a>                      |

## Section 2 - Hazard(s) Identification

### Classification under Work Safe New Zealand

Classified as hazardous in accordance with the criteria of EPA New Zealand

**HSNO Approval Number**      **HSR001099**

### GHS Classification

#### Physical hazards

Flammable liquids

Category 2

#### Health hazards

Acute Inhalation Toxicity - Vapors  
 Serious Eye Damage/Eye Irritation  
 Specific target organ toxicity - (single exposure)

Category 4  
 Category 2  
 Category 3

#### Environmental hazards

Based on available data, the classification criteria are not met

### Label Elements



Signal Word

Danger

**Hazard Statements**

H225 - Highly flammable liquid and vapor  
H319 - Causes serious eye irritation  
H335 - May cause respiratory irritation  
H332 - Harmful if inhaled  
H336 - May cause drowsiness or dizziness

**Precautionary Statements****Prevention**

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking  
P233 - Keep container tightly closed  
P240 - Ground and bond container and receiving equipment  
P241 - Use explosion-proof electrical/ ventilating/ lighting equipment  
P242 - Use non-sparking tools  
P243 - Take action to prevent static discharges  
P264 - Wash face, hands and any exposed skin thoroughly after handling  
P271 - Use only outdoors or in a well-ventilated area  
P280 - Wear protective gloves/protective clothing/eye protection/face protection

**Response**

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower  
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P312 - Call a POISON CENTER or doctor if you feel unwell  
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

**Storage**

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

**Disposal**

P501 - Dispose of contents/ container to an approved waste disposal plant

Other hazards which do not result in classification

## Section 3 - Composition and Information on Ingredients

| Component          | CAS No  | Weight % |
|--------------------|---------|----------|
| tert-Butyl alcohol | 75-65-0 | >95      |

## Section 4 - First Aid Measures

**Description of first aid measures****General Advice**

If symptoms persist, call a physician.

**New Zealand Emergency Tel.**

CHEMTREC®  
09 980 6780 or +64 9 980 6780

**Inhalation**

Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if

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|  |  |
|--|--|
|  | symptoms occur.  |
| <b>Eye Contact</b>                         | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.                                  |
| <b>Skin Contact</b>                        | Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.                                |
| <b>Ingestion</b>                           | Clean mouth with water and drink afterwards plenty of water.   |
| <b>Self-Protection of the First Aider</b>  | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. |
| <b>First Aid Facilities</b>                | Eyewash, safety shower and washroom.   |
| <b>Most important symptoms and effects</b> | Difficulty in breathing. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting     |
| <b>Notes to Physician</b>                  | Treat symptomatically. Symptoms may be delayed.  |

## Section 5 - Fire Fighting Measures

### **Suitable Extinguishing Media**

Water spray, carbon dioxide (CO<sub>2</sub>), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.

### **Extinguishing media which must not be used for safety reasons**

Water may be ineffective.

### **Specific Hazards Arising from the Chemical**

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

### **Hazardous Combustion Products**

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>).

### **Special protective equipment and precautions for fire fighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## Section 6 - Accidental Release Measures

### **Personal Precautions, Protective Equipment and Emergency Procedures**

#### **Emergency procedures**

Use personal protective equipment as required. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.

#### **Environmental Precautions**

Should not be released into the environment.

#### **Methods for Containment and Clean Up**

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

#### **Precautions to prevent secondary hazards**

Clean contaminated objects and areas thoroughly observing environmental regulations

#### **Reference to Other Sections**

Refer to protective measures listed in Sections 8 and 13.

## Section 7 - Handling and Storage

### Precautions for Safe Handling

#### **Advice on safe handling**

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Ensure adequate ventilation. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

#### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

### Conditions for Safe Storage, Including any Incompatibilities

#### **Storage Conditions**

Keep containers tightly closed in a dry, cool and well-ventilated place. Flammables area. Keep away from heat, sparks and flame.

#### **Incompatible Materials**

Strong oxidizing agents. Strong acids. Alkali metals.

AS/NZS 2243.10:2004, Safety in laboratories - Storage of chemicals

AS 1940-2004 - The storage and handling of flammable and combustible liquids

## Section 8 - Exposure Controls and Personal Protection

### Control parameters

#### **Exposure limits**

**NZ** - Workplace Exposure Standards and Biological Exposure Indices (6th edition). New Zealand Department of Labor

**UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020.

**ACGIH** - Threshold Limit Values - Ceiling (TLV-C) guidelines by the American Conference of Governmental Industrial Hygienists (ACGIH) for controlling worker exposure to airborne chemical concentrations in the workplace.

**AUS** - Exposure Standards for Atmospheric Contaminants in the Occupational Environment - Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:3008(1995)]

Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)] updated in August, 2005. Safe Work Australia

| Component          | New Zealand WEL  | Australia  | ACGIH TLV    | The United Kingdom   |
|--------------------|--|--|--------------|--|
| tert-Butyl alcohol | TWA: 100 ppm<br>TWA: 303 mg/m <sup>3</sup><br>STEL: 150 ppm<br>STEL: 455 mg/m <sup>3</sup> | STEL: 150 ppm<br>STEL: 455 mg/m <sup>3</sup><br>TWA: 100 ppm<br>TWA: 303 mg/m <sup>3</sup> | TWA: 100 ppm | STEL: 150 ppm 15 min<br>STEL: 462 mg/m <sup>3</sup> 15 min<br>TWA: 100 ppm 8 hr<br>TWA: 308 mg/m <sup>3</sup> 8 hr |

#### **Biological limit values**

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

### Appropriate engineering controls

#### **Engineering Measures**

Use explosion-proof electrical/ventilating/lighting equipment. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

### Individual protection measures, such as personal protective equipment

#### **Eye Protection**

Goggles (Australian/New Zealand Standard AS/NZS 1337 - Eye protectors for Industrial applications)

**Hand Protection**

Protective gloves

| Glove material                 | Breakthrough time | Glove thickness | AUS/NZ Standard | Glove comments   |
|--------------------------------|-------------------|-----------------|-----------------|--|
| Butyl rubber, Neoprene gloves. | > 480 minutes     | 0.35 mm         | AS/NZS 2161     | As tested under EN374-3 Determination of Resistance to Permeation by Chemicals |
| Viton (R)                      | > 480 minutes     | 0.45 mm         |                 |  |
|                                | > 480 minutes     | 0.3 mm          |                 |  |

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves.

(Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

**Skin and body protection**

Long sleeved clothing

**Respiratory Protection**

Use an AS/NZS 1716 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained in line with AS/NZS 1715 on the use and maintenance of respiratory protective devices (or AUS/NZ equivalent)

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls**

No information available.

## Section 9 - Physical and Chemical Properties

### Information on basic physical and chemical properties

|  |                             |  |
|--|-----------------------------|--|
| <b>Physical State</b>                          | Liquid                      |  |
| <b>Appearance</b>                              | Clear                       |  |
| <b>Odor</b>                                    | Strong                      |  |
| <b>Odor Threshold</b>                          | No data available           |  |
| <b>pH</b>                                      | 7                           |  |
| <b>Melting Point/Range</b>                     | 25 - 25.5 °C / 77 - 77.9 °F |  |
| <b>Softening Point</b>                         | No data available           |  |
| <b>Boiling Point/Range</b>                     | 83 °C / 181.4 °F            | @ 760 mmHg                               |
| <b>Flammability (liquid)</b>                   | Highly flammable            | On basis of test data                    |
| <b>Flammability (solid,gas)</b>                | Not applicable              | Liquid                                   |
| <b>Explosion Limits</b>                        | <b>Lower</b> 1.8 Vol%       |  |
|  | <b>Upper</b> 8 Vol%         |  |
| <b>Flash Point</b>                             | 11 °C / 51.8 °F             | <b>Method -</b> No information available |
| <b>Autoignition Temperature</b>                | 490 °C / 914 °F             |  |
| <b>Decomposition Temperature</b>               | No data available           |  |
| <b>Viscosity</b>                               | 6.43 mPa.s (25°C)           |  |
| <b>Water Solubility</b>                        | Miscible                    |  |
| <b>Solubility in other solvents</b>            | No information available    |  |
| <b>Partition Coefficient (n-octanol/water)</b> |                             |  |
| <b>Component</b>                               | <b>log Pow</b>              |  |
| tert-Butyl alcohol                             | 0.317                       |  |
| <b>Vapor Pressure</b>                          | 36 mbar @ 20 °C             |  |
| <b>Density / Specific Gravity</b>              | 0.775                       |  |
| <b>Bulk Density</b>                            | Not applicable              | Liquid                                   |
| <b>Vapor Density</b>                           | 2.6                         | (Air = 1.0)                              |
| <b>Particle characteristics</b>                | Not applicable (liquid)     |  |

### Other information

|                          |          |
|--------------------------|----------|
| <b>Molecular Formula</b> | C4 H10 O |
| <b>Molecular Weight</b>  | 74.12    |

**Explosive Properties**

Vapors may form explosive mixtures with air

## Section 10 - Stability and Reactivity

|   |   |
|---|---|
| <b>Reactivity</b>                       | None known, based on information available  |
| <b>Stability</b>                        | May form explosive peroxides.   |
| <b>Sensitivity to Mechanical Impact</b> | No information available  |
| <b>Sensitivity to Static Discharge</b>  | No information available  |
| <b>Hazardous Polymerization</b>         | Hazardous polymerization does not occur.  |
| <b>Hazardous Reactions</b>              | None under normal processing.   |
| <b>Conditions to Avoid</b>              | Incompatible products, Excess heat, Keep away from open flames, hot surfaces and sources of ignition. |
| <b>Incompatible Materials</b>           | Strong oxidizing agents, Strong acids, Alkali metals.   |
| <b>Hazardous Decomposition Products</b> | Carbon monoxide (CO). Carbon dioxide (CO <sub>2</sub> ).  |

## Section 11 - Toxicological Information

### Acute Effects

### Information on likely routes of exposure

#### Product Information

|                   |  |
|-------------------|--|
| <b>Inhalation</b> | Harmful by inhalation. Irritating to respiratory system.   |
| <b>Eyes</b>       | Irritating to eyes.  |
| <b>Skin</b>       | Irritating to skin. May be harmful in contact with skin.   |
| <b>Ingestion</b>  | May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. |

### Numerical measures of toxicity

#### (a) acute toxicity;

|                   |  |
|-------------------|--|
| <b>Oral</b>       | Based on available data, the classification criteria are not met |
| <b>Dermal</b>     | Based on available data, the classification criteria are not met |
| <b>Inhalation</b> | Category 4   |

| Component          | LD50 Oral         | LD50 Dermal          | LC50 Inhalation   |
|--------------------|-------------------|----------------------|-------------------|
| tert-Butyl alcohol | >3100 mg/kg (Rat) | >2000 mg/kg (Rabbit) | >31 mg/L/4h (Rat) |

#### (b) skin corrosion/irritation;

|                               |  |
|-------------------------------|--|
| <b>Test species</b>           | Based on available data, the classification criteria are not met |
| <b>Observational endpoint</b> | rabbit<br>Irritating   |

#### (c) serious eye damage/irritation;

|                              |                              |
|------------------------------|------------------------------|
| <b>Test species</b>          | Category 2                   |
| <b>Observation end point</b> | rabbit<br>Irritating to eyes |

#### (d) respiratory or skin sensitization;

|                    |  |
|--------------------|--|
| <b>Respiratory</b> | Based on available data, the classification criteria are not met |
| <b>Skin</b>        | Based on available data, the classification criteria are not met |

| Component                             | Test method                                | Test species | Study result    |
|---------------------------------------|--|--------------|-----------------|
| tert-Butyl alcohol<br>75-65-0 ( >95 ) | OECD Test Guideline 406 Skin sensitization | guinea pig   | non-sensitising |

(e) germ cell mutagenicity; Based on available data, the classification criteria are not met

| Component                             | Test method | Test species | Study result |
|---------------------------------------|-------------|--------------|--------------|
| tert-Butyl alcohol<br>75-65-0 ( >95 ) | AMES test   | in vitro     | negative     |

(f) carcinogenicity; Based on available data, the classification criteria are not met  
There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; Based on available data, the classification criteria are not met

(h) STOT-single exposure; Category 3  
  
Results / Target organs Respiratory system  
Central nervous system (CNS)

(i) STOT-repeated exposure; Based on available data, the classification criteria are not met  
  
Target Organs None known.

(j) aspiration hazard; Based on available data, the classification criteria are not met

#### Symptoms / effects, both acute and delayed

Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

## Section 12 - Ecological Information

### Ecotoxicity

Aquatic ecotoxicity Do not empty into drains. .

| Component          | Freshwater Fish                             | Water Flea         | Freshwater Algae    | Microtox               |
|--------------------|---|--------------------|---------------------|------------------------|
| tert-Butyl alcohol | LC50 >961 mg/L/96h<br>(Pimephales promelas) | EC50 933 mg/L 48 h | EC50 1000 mg/L 72 h | EC50 > 10000 mg/L 17 h |

Terrestrial ecotoxicity There is no data for this product

Persistence and Degradability Readily biodegradable

Persistence Persistence is unlikely, based on information available.

Bioaccumulative Potential Bioaccumulation is unlikely

| Component          | log Pow | Bioconcentration factor (BCF) |
|--------------------|---------|-------------------------------|
| tert-Butyl alcohol | 0.317   | 1.09 dimensionless            |

Mobility The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces. Will likely be mobile in the environment due to its volatility. Disperses rapidly in air

### Other adverse effects

**Endocrine Disruptor Information**  
**Persistent Organic Pollutant**  
**Ozone Depletion Potential**

This product does not contain any known or suspected endocrine disruptors  
This product does not contain any known or suspected substance  
This product does not contain any known or suspected substance

## Section 13 - Disposal Considerations

### Waste treatment methods

**Waste from Residues/Unused Products**

Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. Wastes, including emptied containers, are controlled wastes and should be disposed of in accordance with all federal, E.P.A., state and local regulations. Assure conformity with all applicable regulations.

**Contaminated Packaging**

Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

**Other Information**

Disposal agencies or waste contractors must comply with the New Zealand Hazardous Substances (Disposal) Regulations . Waste codes should be assigned by the user based on the application for which the product was used. Do not flush to sewer. Can be landfilled or incinerated, when in compliance with local regulations.

## Section 14 - Transport Information

### NZS 5433:2020

|                      |          |
|----------------------|----------|
| UN-No                | UN1120   |
| Proper Shipping Name | BUTANOLS |
| Hazard Class         | 3        |
| Packing Group        | II       |

### IATA

|                      |          |
|----------------------|----------|
| UN-No                | UN1120   |
| Proper Shipping Name | BUTANOLS |
| Hazard Class         | 3        |
| Packing Group        | II       |

### IMDG/IMO

|                      |          |
|----------------------|----------|
| UN-No                | UN1120   |
| Proper Shipping Name | BUTANOLS |
| Hazard Class         | 3        |
| Packing Group        | II       |

|                       |                       |
|-----------------------|-----------------------|
| Environmental hazards | No hazards identified |
|-----------------------|-----------------------|

|  |                                |
|--|--------------------------------|
| Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable, packaged goods |
|--|--------------------------------|

|                     |   |
|---------------------|---|
| Special Precautions | No special precautions required. Please refer to the applicable dangerous goods regulations for additional information. |
|---------------------|---|

|                        |            |
|------------------------|------------|
| Additional information | None known |
|------------------------|------------|



## Section 15 - Regulatory Information

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

|                      |           |
|----------------------|-----------|
| HSNO Approval Number | HSR001099 |
|----------------------|-----------|

#### National Regulations

There are no applicable tolerable exposure limits or environmental exposure limits according to the EPA Controls for Hazardous Substances

#### Certified handlers, tracking and controlled substance license requirements

Certified handlers are required for some substances. This includes substances requiring a controlled substance license, and most explosives, vertebrates toxic agents, and certain fumigants. Acutely toxic substances which are a Category 1 or 2, such as pesticides also require Certified handlers. Please check the Health and Safety at Work Act 2015 for further information. Tracking is required for some highly hazardous substances. These substances need to be under the control of an appropriately trained person or appropriately secured. Please check the Health and Safety at Work Act 2015 for further information.

#### Prohibition or notification/licensing requirements

Shown below are details of specific prohibition/notifications or licensing requirements when they apply.

#### International Regulations

**Ozone Depletion Potential** This product does not contain any known or suspected substance

**Persistent Organic Pollutant** This product does not contain any known or suspected substance

**Rotterdam Convention (PIC)** Not applicable

#### Authorisation/Restrictions according to EU REACH

| Component          | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|--------------------|---|---|---|
| tert-Butyl alcohol | -   | Use restricted. See item 75. (see link for restriction details)               | -   |

<https://echa.europa.eu/substances-restricted-under-reach>

#### International Inventories

New Zealand (NZIoC), Australia (AICS), Europe (EINECS/ELINCS/NLP), Korea (KECL), China (IECSC), Taiwan (TCSI), Japan (ENCS), Japan (ISHL), Canada (DSL/NDL), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

| Component          | CAS No  | NZIoC | AICS | EINECS | ELINCS | NLP | KECL     | IECSC | TCSI |
|--------------------|---------|-------|------|--------|--------|-----|----------|-------|------|
| tert-Butyl alcohol | 75-65-0 | X     | X    | -      | -      | -   | KE-24895 | X     | X    |

| Component          | CAS No  | TSCA | TSCA Inventory notification - Active-Inactive | DSL | NDL | PICCS | ISHL | ENCS |
|--------------------|---------|------|---|-----|-----|-------|------|------|
| tert-Butyl alcohol | 75-65-0 | X    | ACTIVE  | X   | -   | X     | X    | X    |

**Legend:** X - Listed '-' - Not Listed

**KECL** - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

## Section 16 - Other Information

This safety data sheet complies with the requirements of the EPA Hazardous Substances

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**(Hazard Classification) Notice 2020 and WorkSafe New Zealand Regulations**

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**Legend**

|  |  |
|--|--|
| <b>NZIoC</b> - New Zealand Inventory of Chemicals  | <b>AICS</b> - Australian Inventory of Chemical Substances  |
| <b>TSCA</b> - United States Toxic Substances Control Act Section 8(b) Inventory                      | <b>EINECS/ELINCS</b> - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances |
| <b>DSL/NDL</b> - Canadian Domestic Substances List/Non-Domestic Substances List                      | <b>ENCS</b> - Japanese Existing and New Chemical Substances  |
| <b>IECSC</b> - Chinese Inventory of Existing Chemical Substances                                     | <b>KECL</b> - Korean Existing and Evaluated Chemical Substances  |
| <b>PICCS</b> - Philippines Inventory of Chemicals and Chemical Substances                            | <b>CAS</b> - Chemical Abstracts Service  |
| <b>TWA</b> - Time Weighted Average   | <b>ACGIH</b> - American Conference of Governmental Industrial Hygienists   |
| <b>IARC</b> - International Agency for Research on Cancer  | <b>PNEC</b> - Predicted No Effect Concentration  |
| <b>NZS 5433:2020</b> - Transport of Dangerous Goods on Land  | <b>OECD</b> - Organisation for Economic Co-operation and Development   |
| <b>ICAO/IATA</b> - International Civil Aviation Organization/International Air Transport Association | <b>IMO/IMDG</b> - International Maritime Organization/International Maritime Dangerous Goods Code                            |
| <b>MARPOL</b> - International Convention for the Prevention of Pollution from Ships                  | <b>ADG</b> - Australian Code for the Transport of Dangerous Goods by Road and Rail   |
| <b>LD50</b> - Lethal Dose 50%  | <b>LC50</b> - Lethal Concentration 50%   |
| <b>EC50</b> - Effective Concentration 50%  | <b>ATE</b> - Acute Toxicity Estimate   |
| <b>WEL</b> - Workplace Exposure Limit  | <b>RPE</b> - Respiratory Protective Equipment  |
| <b>DNEL</b> - Derived No Effect Level  | <b>NOEC</b> - No Observed Effect Concentration   |
| <b>POW</b> - Partition coefficient Octanol:Water   | <b>BCF</b> - Bioconcentration factor   |
| <b>vPvB</b> - very Persistent, very Bioaccumulative  | <b>PBT</b> - Persistent, Bioaccumulative, Toxic  |
| <b>VOC</b> - (Volatile Organic Compound)   |  |

**Key literature references and sources for data**

HSNO classifications provided in the New Zealand Chemical Classification Information Database (CCID).

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

EPA Guide to classifying hazardous substances in New Zealand

EPA - Assigning a product to an existing HSNO approval guide

**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Chemical incident response training.

|                         |                |
|-------------------------|----------------|
| <b>Revision Date</b>    | 13-Mar-2023    |
| <b>Revision Summary</b> | Not applicable |

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

## End of Safety Data Sheet