

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

### 1.1. Product identifier

|                           |                            |
|---------------------------|----------------------------|
| Product Description:      | <b>Phosphorus(V) oxide</b> |
| Cat No. :                 | <b>89966</b>               |
| Synonyms                  | Phosphoric anhydride       |
| Index No                  | 015-010-00-0               |
| CAS No                    | 1314-56-3                  |
| EC No                     | 215-236-1                  |
| Molecular Formula         | O5 P2                      |
| REACH registration number | -                          |

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

|                                |   |
|--------------------------------|---|
| Recommended Use                | Laboratory chemicals.   |
| Sector of use                  | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites    |
| Product category               | PC21 - Laboratory chemicals   |
| Process categories             | PROC15 - Use as a laboratory reagent  |
| Environmental release category | ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates) |
| Uses advised against           | No Information available  |

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

|         |  |
|---------|--|
| Company | Avocado Research Chemicals Ltd.<br>(Part of Thermo Fisher Scientific)<br>Shore Road, Heysham<br>Lancashire, LA3 2XY,<br>United Kingdom<br>Office Tel: +44 (0) 1524 850506<br>Office Fax: +44 (0) 1524 850608 |
|---------|--|

E-mail address [begel.sdsdesk@thermofisher.com](mailto:begel.sdsdesk@thermofisher.com)

### 1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11  
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

**Physical hazards**

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Based on available data, the classification criteria are not met

## Health hazards

Skin Corrosion/Irritation  
Serious Eye Damage/Eye Irritation

Category 1 A (H314)  
Category 1 (H318)

## Environmental hazards

Based on available data, the classification criteria are not met

Full text of Hazard Statements: see section 16

## 2.2. Label elements



Signal Word

Danger

## Hazard Statements

H314 - Causes severe skin burns and eye damage  
EUH014 - Reacts violently with water

## Precautionary Statements

P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P310 - Immediately call a POISON CENTER or doctor/physician

## 2.3. Other hazards

In accordance with Annex XIII of the REACH Regulation, inorganic substances do not require assessment  
Reacts violently with water

This product does not contain any known or suspected endocrine disruptors

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

| Component            | CAS No    | EC No             | Weight % | CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567 |
|----------------------|-----------|-------------------|----------|---|
| Phosphorus pentoxide | 1314-56-3 | EEC No. 215-236-1 | <=100    | Skin Corr. 1A (H314)<br>Eye Dam. 1 (H318)<br>(EUH014)                                   |

REACH registration number

-

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Full text of Hazard Statements: see section 16

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

|   |  |
|---|--|
| <b>General Advice</b>                     | Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.  |
| <b>Eye Contact</b>                        | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required. Keep eye wide open while rinsing.  |
| <b>Skin Contact</b>                       | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Call a physician immediately.  |
| <b>Ingestion</b>                          | Immediate medical attention is required. Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person.   |
| <b>Inhalation</b>                         | Remove to fresh air. If not breathing, give artificial respiration. Call a physician or poison control center immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |
| <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.   |

### 4.2. Most important symptoms and effects, both acute and delayed

Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

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

**Notes to Physician** Treat symptomatically.

## SECTION 5: FIREFIGHTING MEASURES

### 5.1. Extinguishing media

#### **Suitable Extinguishing Media**

Substance is nonflammable; use agent most appropriate to extinguish surrounding fire. CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam.

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

Water.

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

The product causes burns of eyes, skin and mucous membranes. Reacts violently with water.

#### **Hazardous Combustion Products**

No information available.

### 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

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

Use personal protective equipment as required. Evacuate personnel to safe areas. Avoid contact with skin, eyes or clothing.

## 6.2. Environmental precautions

Should not be released into the environment. Do not allow material to contaminate ground water system.

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

Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Do not expose spill to water.

## 6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe dust. Do not ingest. If swallowed then seek immediate medical assistance. Do not allow contact with water. Handle under an inert atmosphere.

### **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.

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

Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area. Store under an inert atmosphere. Keep away from water or moist air. Protect from moisture.

**Technical Rules for Hazardous Substances (TRGS) 510**      Class 8B  
**Storage Class (LGK) (Germany)**

### 7.3. Specific end use(s)

Use in laboratories

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

#### **Exposure limits**

List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020. **IRE** - 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority

| Component            | The United Kingdom  | European Union                 | Ireland  |
|----------------------|---|--------------------------------|--|
| Phosphorus pentoxide | STEL: 2 mg/m <sup>3</sup> 15 min<br>TWA: 1 mg/m <sup>3</sup> 8 hr | TWA: 1 mg/m <sup>3</sup> (8hr) | TWA: 1 mg/m <sup>3</sup> 8 hr.<br>STEL: 3 mg/m <sup>3</sup> 15 min |

#### **Biological limit values**

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

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regulatory bodies

**Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)**

See table for values

| Component                                   | Acute effects local (Dermal) | Acute effects systemic (Dermal) | Chronic effects local (Dermal) | Chronic effects systemic (Dermal) |
|---|------------------------------|---------------------------------|--------------------------------|-----------------------------------|
| Phosphorus pentoxide<br>1314-56-3 ( <=100 ) |                              |                                 |                                | DNEL = 68.7mg/kg<br>bw/day        |

| Component                                   | Acute effects local (Inhalation) | Acute effects systemic (Inhalation) | Chronic effects local (Inhalation) | Chronic effects systemic (Inhalation) |
|---|----------------------------------|-------------------------------------|------------------------------------|---------------------------------------|
| Phosphorus pentoxide<br>1314-56-3 ( <=100 ) |                                  |                                     |                                    | DNEL = 1mg/m <sup>3</sup>             |

**Predicted No Effect Concentration (PNEC)**

See values below.

| Component                                   | Fresh water     | Fresh water sediment           | Water Intermittent | Microorganisms in sewage treatment | Soil (Agriculture)          |
|---|-----------------|--------------------------------|--------------------|------------------------------------|-----------------------------|
| Phosphorus pentoxide<br>1314-56-3 ( <=100 ) | PNEC = 66.5µg/L | PNEC = 249µg/kg<br>sediment dw | PNEC = 665µg/L     | PNEC = 10mg/L                      | PNEC = 10.7µg/kg<br>soil dw |

| Component                                   | Marine water    | Marine water sediment           | Marine water intermittent | Food chain | Air |
|---|-----------------|---------------------------------|---------------------------|------------|-----|
| Phosphorus pentoxide<br>1314-56-3 ( <=100 ) | PNEC = 6.65µg/L | PNEC = 24.9µg/kg<br>sediment dw |                           |            |     |

**8.2. Exposure controls**

**Engineering Measures**

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. 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

**Personal protective equipment**

**Eye Protection** Goggles (European standard - EN 166)

**Hand Protection** Protective gloves

| Glove material | Breakthrough time                    | Glove thickness | EU standard | Glove comments        |
|----------------|--------------------------------------|-----------------|-------------|-----------------------|
| Natural rubber | See manufacturers<br>recommendations | -               | EN 374      | (minimum requirement) |
| Nitrile rubber |                                      |                 |             |                       |
| Neoprene       |                                      |                 |             |                       |
| PVC            |                                      |                 |             |                       |
| Nitrile rubber | > 480 minutes                        | 0.11 mm         |             |                       |

**Skin and body protection** Wear appropriate protective gloves and clothing to prevent skin exposure.

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.

**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. To protect the wearer, respiratory protective equipment must be the correct fit and be used

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and maintained properly

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced  
**Recommended Filter type:** Particulates filter conforming to EN 143

**Small scale/Laboratory use** Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.  
**Recommended half mask:-** Particle filtering: EN149:2001  
When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls** No information available.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

|  |  |  |
|--|--|--|
| <b>Physical State</b>                          | Solid Powder                                     |  |
| <b>Appearance</b>                              | White  |  |
| <b>Odor</b>                                    | Odorless   |  |
| <b>Odor Threshold</b>                          | No data available                                |  |
| <b>Melting Point/Range</b>                     | 340 - 360 °C / 644 - 680 °F                      |  |
| <b>Softening Point</b>                         | No data available                                |  |
| <b>Boiling Point/Range</b>                     | No information available                         |  |
| <b>Flammability (liquid)</b>                   | Not applicable                                   | Solid                                    |
| <b>Flammability (solid,gas)</b>                | No information available                         |  |
| <b>Explosion Limits</b>                        | No data available                                |  |
| <b>Flash Point</b>                             | No information available                         | <b>Method -</b> No information available |
| <b>Autoignition Temperature</b>                | No data available                                |  |
| <b>Decomposition Temperature</b>               | No data available                                |  |
| <b>pH</b>                                      | 3.6  | 0.1 g/l aq. sol                          |
| <b>Viscosity</b>                               | Not applicable                                   | Solid                                    |
| <b>Water Solubility</b>                        | Soluble, 85% (20°C), Reacts violently with water |  |
| <b>Solubility in other solvents</b>            | No information available                         |  |
| <b>Partition Coefficient (n-octanol/water)</b> |  |  |
| <b>Vapor Pressure</b>                          | 1.3 mbar @ 388 °C                                |  |
| <b>Density / Specific Gravity</b>              | No data available                                |  |
| <b>Bulk Density</b>                            | No data available                                |  |
| <b>Vapor Density</b>                           | Not applicable                                   | Solid                                    |
| <b>Particle characteristics</b>                | No data available                                |  |

### 9.2. Other information

|                          |                        |
|--------------------------|------------------------|
| <b>Molecular Formula</b> | O5 P2                  |
| <b>Molecular Weight</b>  | 141.94                 |
| <b>Evaporation Rate</b>  | Not applicable - Solid |

## SECTION 10: STABILITY AND REACTIVITY

**10.1. Reactivity** Yes

**10.2. Chemical stability** Hygroscopic. Air sensitive. Reacts violently with water.

**10.3. Possibility of hazardous reactions**

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## Hazardous Polymerization Hazardous Reactions

Hazardous polymerization does not occur.  
None under normal processing. Reacts violently with water.

## 10.4. Conditions to avoid

Incompatible products. Excess heat. Avoid dust formation. Exposure to air. Exposure to moist air or water. Exposure to moisture.

## 10.5. Incompatible materials

Strong oxidizing agents. Metals. Bases. Ammonia. copper.

## 10.6. Hazardous decomposition products

No information available.

## SECTION 11: TOXICOLOGICAL INFORMATION

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

#### Product Information

#### (a) acute toxicity;

Oral

Based on available data, the classification criteria are not met

Dermal

Based on available data, the classification criteria are not met

Inhalation

Based on available data, the classification criteria are not met

| Component            | LD50 Oral | LD50 Dermal | LC50 Inhalation                           |
|----------------------|-----------|-------------|---|
| Phosphorus pentoxide | -         | -           | LC50 = 1217 mg/m <sup>3</sup> ( Rat ) 1 h |

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

Category 1 A

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

Category 1

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

Respiratory

Based on available data, the classification criteria are not met

Skin

Based on available data, the classification criteria are not met

#### (e) germ cell mutagenicity;

Based on available data, the classification criteria are not met

#### (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;

Based on available data, the classification criteria are not met

#### (i) STOT-repeated exposure;

Based on available data, the classification criteria are not met

Target Organs

None known.

#### (j) aspiration hazard;

Not applicable  
Solid

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

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

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## 11.2. Information on other hazards

**Endocrine Disrupting Properties** Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

**Ecotoxicity effects** Do not empty into drains. Reacts with water so no ecotoxicity data for the substance is available.

### 12.2. Persistence and degradability

**Persistence** Soluble in water, Persistence is unlikely, based on information available.  
**Degradability** Not relevant for inorganic substances, Reacts with water.  
**Degradation in sewage treatment plant** Reacts violently with water.

### 12.3. Bioaccumulative potential

Bioaccumulation is unlikely; Product does not bioaccumulate due to reaction with water

### 12.4. Mobility in soil

The product is water soluble, and may spread in water systems Reacts violently with water Will likely be mobile in the environment due to its water solubility. Is not likely mobile in the environment. Highly mobile in soils

### 12.5. Results of PBT and vPvB assessment

In accordance with Annex XIII of the REACH Regulation, inorganic substances do not require assessment. Reacts violently with water.

### 12.6. Endocrine disrupting properties

**Endocrine Disruptor Information** This product does not contain any known or suspected endocrine disruptors

### 12.7. Other adverse effects

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

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

**Waste from Residues/Unused Products** Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

**Contaminated Packaging** Dispose of this container to hazardous or special waste collection point.

**European Waste Catalogue (EWC)** According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

**Other Information** Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not flush to sewer. Large amounts will affect pH and harm aquatic organisms. Solutions with low pH-value must be neutralized before discharge.



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## SECTION 14: TRANSPORT INFORMATION

### IMDG/IMO

**14.1. UN number** UN1807  
**14.2. UN proper shipping name** PHOSPHORUS PENTOXIDE  
**14.3. Transport hazard class(es)** 8  
**14.4. Packing group** II

### ADR

**14.1. UN number** UN1807  
**14.2. UN proper shipping name** PHOSPHORUS PENTOXIDE  
**14.3. Transport hazard class(es)** 8  
**14.4. Packing group** II

### IATA

**14.1. UN number** UN1807  
**14.2. UN proper shipping name** PHOSPHORUS PENTOXIDE  
**14.3. Transport hazard class(es)** 8  
**14.4. Packing group** II

**14.5. Environmental hazards** No hazards identified  
**14.6. Special precautions for user** No special precautions required.  
**14.7. Maritime transport in bulk according to IMO instruments** Not applicable, packaged goods

## SECTION 15: REGULATORY INFORMATION

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

#### International Inventories

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

| Component            | CAS No    | EINECS    | ELINCS | NLP | IECSC | TCSI | KECL     | ENCS | ISHL |
|----------------------|-----------|-----------|--------|-----|-------|------|----------|------|------|
| Phosphorus pentoxide | 1314-56-3 | 215-236-1 | -      | -   | X     | X    | KE-12129 | X    | X    |

| Component            | CAS No    | TSCA | TSCA Inventory notification - Active-Inactive | DSL | NDSL | AICS | NZIoC | PICCS |
|----------------------|-----------|------|---|-----|------|------|-------|-------|
| Phosphorus pentoxide | 1314-56-3 | 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>)

#### Authorisation/Restrictions according to EU REACH

| Component            | CAS No    | 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) |
|----------------------|-----------|---|---|---|
| Phosphorus pentoxide | 1314-56-3 | -   | Use restricted. See item 75.  | -   |

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|  |  |  |                                    |  |
|--|--|--|------------------------------------|--|
|  |  |  | (see link for restriction details) |  |
|--|--|--|------------------------------------|--|

## REACH links

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

## Seveso III Directive (2012/18/EC)

| Component            | CAS No    | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements |
|----------------------|-----------|---|--|
| Phosphorus pentoxide | 1314-56-3 | Not applicable  | Not applicable   |

## Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Not applicable

## Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values

## National Regulations

**UK** - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

## WGK Classification

See table for values

| Component            | Germany - Water Classification (AwSV) | Germany - TA-Luft Class |
|----------------------|---------------------------------------|-------------------------|
| Phosphorus pentoxide | WGK1                                  |                         |

## 15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

## SECTION 16: OTHER INFORMATION

### Full text of H-Statements referred to under sections 2 and 3

H314 - Causes severe skin burns and eye damage

H318 - Causes serious eye damage

EUH014 - Reacts violently with water

### Legend

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

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**WEL** - Workplace Exposure Limit  
**ACGIH** - American Conference of Governmental Industrial Hygienists  
**DNEL** - Derived No Effect Level  
**RPE** - Respiratory Protective Equipment  
**LC50** - Lethal Concentration 50%  
**NOEC** - No Observed Effect Concentration  
**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average  
**IARC** - International Agency for Research on Cancer  
Predicted No Effect Concentration (PNEC)  
**LD50** - Lethal Dose 50%  
**EC50** - Effective Concentration 50%  
**POW** - Partition coefficient Octanol:Water  
**vPvB** - very Persistent, very Bioaccumulative

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road  
**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code  
**OECD** - Organisation for Economic Co-operation and Development  
**BCF** - Bioconcentration factor

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association  
**MARPOL** - International Convention for the Prevention of Pollution from Ships  
**ATE** - Acute Toxicity Estimate  
**VOC** - (Volatile Organic Compound)

## Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>  
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

## 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.

|                         |  |
|-------------------------|--|
| <b>Prepared By</b>      | Health, Safety and Environmental Department        |
| <b>Creation Date</b>    | 01-Sep-2010  |
| <b>Revision Date</b>    | 16-Feb-2024  |
| <b>Revision Summary</b> | New emergency telephone response service provider. |

**This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.**

## 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**