# SAFETY DATA SHEET

**Creation Date** 29-Oct-2006 **Revision Date** 16-Jun-2015 **Revision Number** 8

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

### 1.1. Product identification

| | |
|---|---|
| **Product Description:** | **Phosphorus oxychloride** |
| **Cat No. :** | **191290000; 191290010; 191290050; 191290051; 191292500** |
| **Synonyms** | Phosphoryl Chloride |
| **CAS-No** | 10025-87-3 |
| **EC-No.** | 233-046-7 |
| **Molecular Formula** | Cl3 O P |

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

| | |
|---|---|
| **Recommended Use** | Laboratory chemicals. |
| **Uses advised against** | No Information available |

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

| | |
|---|---|
| **Company** | Acros Organics BVBA<br>Janssen Pharmaceuticalaan 3a<br>2440 Geel, Belgium |
| **E-mail address** | begel.sdsdesk@thermofisher.com |

### 1.4. Emergency telephone number

For information **US** call: 001-800-ACROS-01 / **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 - Regulation (EC) No 1272/2008**

**Physical hazards**
Based on available data, the classification criteria are not met

**Health hazards**

| | |
|---|---|
| Acute oral toxicity | Category 4 |
| Acute Inhalation Toxicity - Vapors | Category 2 |
| Skin Corrosion/irritation | Category 1 A |
| Serious Eye Damage/Eye Irritation | Category 1 |
| Specific target organ toxicity - (repeated exposure) | Category 1 |

**Environmental hazards**
Based on available data, the classification criteria are not met

### 2.2. Label elements

**Signal Word** **Danger**

**Hazard Statements**

H302 - Harmful if swallowed
H330 - Fatal if inhaled
H314 - Causes severe skin burns and eye damage
H372 - Causes damage to organs through prolonged or repeated exposure
EUH029 - Contact with water liberates toxic gas
EUH014 - Reacts violently with water

**Precautionary Statements**

P280 - Wear eye protection/ face protection
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position 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
P260 - Do not breathe dust/fume/gas/mist/vapors/spray

### 2.3. Other hazards

Decomposes in contact with water
Lachrymator (substance which increases the flow of tears)

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

| Component | CAS-No | EC-No. | Weight % | CLP Classification - Regulation (EC) No 1272/2008 |
|---|---|---|---|---|
| Phosphorus oxychloride | 10025-87-3 | EEC No. 233-046-7 | >95 | Acute Tox. 4 (H302)<br>Acute Tox. 2 (H330)<br>Skin Corr. 1A (H314)<br>Eye Dam. 1 (H318)<br>STOT RE 1 (H372)<br>EUH014<br>EUH029 |

*Full text of Hazard Statements: see section 16*

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

**Eye Contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required. Do not rub affected area.

**Skin Contact** Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

**Ingestion** Do not induce vomiting. Call a physician or Poison Control Center immediately.

**Inhalation** Move to fresh air. If breathing is difficult, give oxygen. If breathing is irregular or stopped,

administer artificial respiration. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Immediate medical attention is required.

**Protection of First-aiders** 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: After inhalation exposure, observe for 24 to 72 hours as pulmonary edema may be delayed

### 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**
Carbon dioxide ($CO_2$). Dry powder.

**Extinguishing media which must not be used for safety reasons**
Water.

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

Contact with water liberates toxic gas. Water reactive. Produce flammable gases on contact with water. Containers may explode when heated.

**Hazardous Combustion Products**
Hydrogen chloride gas, Oxides of phosphorus.

### 5.3. Advice for firefighters

Vapors are heavier than air and may spread along floors. 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

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

Ensure adequate ventilation. Use personal protective equipment. Evacuate personnel to safe areas.

### 6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so.

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

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Prevent product from entering drains. Keep in suitable, closed containers for disposal. Wear self-contained breathing apparatus and protective suit. Provide adequate ventilation. Sweep up or vacuum up spillage and collect in suitable container for disposal. Do not flush into surface water or sanitary sewer system. 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

Use only under a chemical fume hood. Do not get in eyes, on skin, or on clothing. Avoid breathing vapors or mists. Do not ingest. Do not allow contact with water. Protect from moisture. Keep containers dry and tightly closed to avoid moisture absorption and contamination. Keep under nitrogen. Wash hands before breaks and immediately after handling the product.

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

Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Protect from moisture. Corrosives area. Keep under nitrogen.

### 7.3. Specific end use(s)

Use in laboratories

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

**Exposure limits**
List source(s): **UK** - EH40/2005 Containing the workplace exposure limits (WELs) for use with the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended). Updated by September 2006 official press release and October 2007 Supplement. **IRE -** 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority.

| Component | European Union | The United Kingdom | France | Belgium | Spain |
|---|---|---|---|---|---|
| Phosphorus oxychloride | | STEL: 0.6 ppm 15 min<br>STEL: 3.8 mg/m³ 15 min<br>TWA: 0.2 ppm 8 hr<br>TWA: 1.3 mg/m³ 8 hr | TWA / VME: 0.1 ppm (8 heures).<br>TWA / VME: 0.6 mg/m³ (8 heures). | TWA: 0.1 ppm 8 uren<br>TWA: 0.64 mg/m³ 8 uren | TWA / VLA-ED: 0.1 ppm (8 horas)<br>TWA / VLA-ED: 0.64 mg/m³ (8 horas) |

| Component | Italy | Germany | Portugal | The Netherlands | Finland |
|---|---|---|---|---|---|
| Phosphorus oxychloride | | TWA: 0.2 ppm (8 Stunden). AGW - exposure factor 1<br>TWA: 1.3 mg/m³ (8 Stunden). AGW - exposure factor 1<br>TWA: 0.2 ppm (8 Stunden). MAK<br>TWA: 1.3 mg/m³ (8 Stunden). MAK<br>Höhepunkt: 0.2 ppm<br>Höhepunkt: 1.3 mg/m³ | TWA: 0.1 ppm 8 horas | | STEL: 0.5 ppm 15 minuutteina<br>STEL: 2.4 mg/m³ 15 minuutteina |

| Component | Austria | Denmark | Switzerland | Poland | Norway |
|---|---|---|---|---|---|
| Phosphorus oxychloride | MAK-KZW: 0.8 ppm 15 Minuten<br>MAK-KZW: 5.1 mg/m³ 15 Minuten<br>MAK-TMW: 0.2 ppm 8 Stunden<br>MAK-TMW: 1.3 mg/m³ 8 Stunden | TWA: 0.1 ppm 8 timer<br>TWA: 0.6 mg/m³ 8 timer | STEL: 0.1 ppm 15 Minuten<br>STEL: 0.6 mg/m³ 15 Minuten<br>TWA: 0.1 ppm 8 Stunden<br>TWA: 0.6 mg/m³ 8 Stunden | | TWA: 0.1 ppm 8 timer<br>TWA: 0.6 mg/m³ 8 timer<br>STEL: 0.3 ppm 15 minutter.<br>STEL: 1.8 mg/m³ 15 minutter. |

| Component | Bulgaria | Croatia | Ireland | Cyprus | Czech Republic |
|---|---|---|---|---|---|
| Phosphorus oxychloride | | TWA-GVI: 0.2 ppm 8 satima.<br>TWA-GVI: 1.3 mg/m³ 8 satima.<br>STEL-KGVI: 0.6 ppm 15 minutama. | TWA: 0.2 ppm 8 hr.<br>TWA: 1.2 mg/m³ 8 hr.<br>STEL: 0.6 ppm 15 min<br>STEL: 3.6 mg/m³ 15 min | | TWA: 0.5 mg/m³ 8 hodinách.<br>Ceiling: 1 mg/m³ |

| | | | | | |
|---|---|---|---|---|---|
| | | STEL-KGVI: 3.8 mg/m³<br>15 minutama. | | | |

| Component | Estonia | Gibraltar | Greece | Hungary | Iceland |
|---|---|---|---|---|---|
| Phosphorus oxychloride | TWA: 0.1 ppm 8 tundides.<br>TWA: 0.6 mg/m³ 8 tundides. | | STEL: 0.6 ppm<br>STEL: 3.6 mg/m³<br>TWA: 0.2 ppm<br>TWA: 1.2 mg/m³ | | TWA: 0.1 ppm 8 klukkustundum.<br>TWA: 0.6 mg/m³ 8 klukkustundum.<br>Ceiling: 0.2 ppm<br>Ceiling: 1.2 mg/m³ |

| Component | Latvia | Lithuania | Luxembourg | Malta | Romania |
|---|---|---|---|---|---|
| Phosphorus oxychloride | TWA: 0.05 mg/m³ | Ceiling: 0.05 mg/m³<br>Oda | | | TWA: 0.15 ppm 8 ore<br>TWA: 1 mg/m³ 8 ore<br>STEL: 0.8 ppm 15 minute<br>STEL: 5 mg/m³ 15 minute |

| Component | Russia | Slovak Republic | Slovenia | Sweden | Turkey |
|---|---|---|---|---|---|
| Phosphorus oxychloride | Skin notation<br>MAC: 0.05 mg/m³ | TWA: 0.2 ppm<br>TWA: 1.3 mg/m³ | TWA: 0.2 ppm 8 urah<br>TWA: 1.3 mg/m³ 8 urah<br>STEL: 0.8 ppm 15 minutah<br>STEL: 5.2 mg/m³ 15 minutah | STV: 0.2 ppm 15 minuter<br>STV: 1.2 mg/m³ 15 minuter<br>LLV: 0.1 ppm 8 timmar.<br>LLV: 0.6 mg/m³ 8 timmar. | |

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

**Monitoring methods**
BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.

**Derived No Effect Level (DNEL)** No information available

| Route of exposure | Acute effects (local) | Acute effects (systemic) | Chronic effects (local) | Chronic effects (systemic) |
|---|---|---|---|---|
| **Oral** | | | | |
| **Dermal** | | | | |
| **Inhalation** | | | | |

**Predicted No Effect Concentration (PNEC)** No information available.

**8.2. Exposure controls**

**Engineering Measures**
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use only under a chemical fume hood.
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 Face-shield (European standard - EN 166)
**Hand Protection** Protective gloves

| Glove material | Breakthrough time | Glove thickness | EU standard | Glove comments |
|---|---|---|---|---|
| Butyl rubber | See manufacturers recommendations | - | EN 374 | (minimum requirement) |

| | |
|---|---|
| **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** | Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.<br>To protect the wearer, respiratory protective equipment must be the correct fit and be used 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<br>**Recommended Filter type:** Particulates filter conforming to EN 143 Acid gases filter Type E Yellow conforming to EN14387 |
| **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.<br>**Recommended half mask:-** Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141<br>When RPE is used a face piece Fit Test should be conducted |
| **Hygiene Measures** | Handle in accordance with good industrial hygiene and safety practice. |
| **Environmental exposure controls** | No information available. |

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

| | | |
|---|---|---|
| **Appearance** | Colorless | |
| **Physical State** | Liquid | |
| **Odor** | pungent | |
| **Odor Threshold** | No data available | |
| **pH** | No information available | |
| **Melting Point/Range** | 1.2 °C / 34.2 °F | |
| **Softening Point** | No data available | |
| **Boiling Point/Range** | 107 °C / 224.6 °F | |
| **Flash Point** | No information available | **Method -** No information available |
| **Evaporation Rate** | No data available | |
| **Flammability (solid,gas)** | Not applicable | Liquid |
| **Explosion Limits** | No data available | |
| **Vapor Pressure** | 36 mbar @ 20 °C | |
| **Vapor Density** | 5.3 | (Air = 1.0) |
| **Specific Gravity / Density** | 1.645 | |
| **Bulk Density** | Not applicable | Liquid |
| **Water Solubility** | Decomposes | |
| **Solubility in other solvents** | No information available | |
| **Partition Coefficient (n-octanol/water)** | | |
| **Autoignition Temperature** | No data available | |
| **Decomposition Temperature** | No data available | |
| **Viscosity** | 1.11 mPa.s at 22 °C | |
| **Explosive Properties** | No information available | |
| **Oxidizing Properties** | No information available | |

### 9.2. Other information

**Molecular Formula** Cl3 O P
**Molecular Weight** 153.33

## SECTION 10: STABILITY AND REACTIVITY

**10.1. Reactivity**

Yes

**10.2. Chemical stability**

Reacts violently with water: Moisture sensitive: Contact with water liberates toxic gas

**10.3. Possibility of hazardous reactions**

**Hazardous Polymerization** Hazardous polymerization does not occur.
**Hazardous Reactions** No information available.

**10.4. Conditions to avoid**

Excess heat. Incompatible products. Exposure to moist air or water.

**10.5. Incompatible materials**

Strong bases. Alcohols. Amines. Metals.

**10.6. Hazardous decomposition products**

Hydrogen chloride gas. Oxides of phosphorus.

## SECTION 11: TOXICOLOGICAL INFORMATION

**11.1. Information on toxicological effects**

**Product Information**

**(a) acute toxicity;**
**Oral** Category 4
**Dermal** No data available
**Inhalation** Category 2

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|---|---|---|
| Phosphorus oxychloride | 380 mg/kg ( Rat ) | | 31.4 ppm ( Rat ) 4 h |

**(b) skin corrosion/irritation;** Category 1 A

**(c) serious eye damage/irritation;** Category 1

**(d) respiratory or skin sensitization;**
**Respiratory** No data available
**Skin** No data available

**(e) germ cell mutagenicity;** No data available

**(f) carcinogenicity;** No data available

There are no known carcinogenic chemicals in this product

**(g) reproductive toxicity;** No data available

**(h) STOT-single exposure;** No data available

**(i) STOT-repeated exposure;** Category 1

**Target Organs** No information available.

| | |
|---|---|
| **(j) aspiration hazard;** | No data available |
| **Other Adverse Effects** | See actual entry in RTECS for complete information |
| **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: After inhalation exposure, observe for 24 to 72 hours as pulmonary edema may be delayed |

## SECTION 12: ECOLOGICAL INFORMATION

**12.1. Toxicity**

**Ecotoxicity effects** Reacts with water so no ecotoxicity data for the substance is available.

**12.2. Persistence and degradability**

| | |
|---|---|
| **Persistence** | Persistence is unlikely, based on information available. |
| **Degradability** | Decomposes in contact with water. |
| **Degradation in sewage treatment plant** | Decomposes in contact with water. |

**12.3. Bioaccumulative potential** Product does not bioaccumulate due to reaction with water

**12.4. Mobility in soil** Decomposes in contact with water. Is not likely mobile in the environment.

**12.5. Results of PBT and vPvB assessment** Decomposes in contact with water.

**12.6. Other adverse effects**

| | |
|---|---|
| **Endocrine Disruptor Information** | This product does not contain any known or suspected endocrine disruptors |
| **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 Catalogue, 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 dispose of waste into sewer. Large amounts will affect pH and harm aquatic organisms. |

## SECTION 14: TRANSPORT INFORMATION

**IMDG/IMO**

| | |
|---|---|
| **14.1. UN number** | UN1810 |
| **14.2. UN proper shipping name** | PHOSPHORUS OXYCHLORIDE |
| **14.3. Transport hazard class(es)** | 6.1 |
| **Subsidiary Hazard Class** | 8 |
| **14.4. Packing group** | I |

**ADR**

**14.1. UN number** UN1810

| | |
|---|---|
| **14.2. UN proper shipping name** | PHOSPHORUS OXYCHLORIDE |
| **14.3. Transport hazard class(es)** | 6.1 |
| **Subsidiary Hazard Class** | 8 |
| **14.4. Packing group** | I |

**IATA** FORBIDDEN FOR IATA TRANSPORT

| | |
|---|---|
| **14.1. UN number** | UN1810 |
| **14.2. UN proper shipping name** | PHOSPHORUS OXYCHLORIDE, FORBIDDEN FOR IATA TRANSPORT |
| **14.3. Transport hazard class(es)** | 6.1 |
| **Subsidiary Hazard Class** | 8 |
| **14.4. Packing group** | |

**14.5. Environmental hazards** No hazards identified

**14.6. Special precautions for user** No special precautions required

**14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable, packaged goods

## SECTION 15: REGULATORY INFORMATION

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

**International Inventories** X = listed

| Component | EINECS | ELINCS | NLP | TSCA | DSL | NDSL | PICCS | ENCS | IECSC | AICS | KECL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phosphorus oxychloride | 233-046-7 | - | | X | X | - | X | X | X | X | X |

**National Regulations**

| Component | Germany - Water Classification (VwVwS) | Germany - TA-Luft Class |
|---|---|---|
| Phosphorus oxychloride | WGK 1 | |

Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment.
Take note of Dir 94/33/EC on the protection of young people at work
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

**15.2. Chemical safety assessment**

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

## SECTION 16: OTHER INFORMATION

**Full Text of H-/EUH-Statements Referred to Under Section 3**
H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H330 - Fatal if inhaled
H372 - Causes damage to organs through prolonged or repeated exposure
EUH014 - Reacts violently with water
EUH029 - Contact with water liberates toxic gas

**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

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

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

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

**IECSC** - Chinese Inventory of Existing Chemical Substances
**KECL** - Korean Existing and Evaluated Chemical Substances
**AICS** - Australian Inventory of Chemical Substances
**NZIoC** - New Zealand Inventory of Chemicals

**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
**PNEC** - Predicted No Effect Concentration
**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 Compounds

**Key literature references and sources for data**
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.
Chemical incident response training.

| | |
|---|---|
| **Creation Date** | 29-Oct-2006 |
| **Revision Date** | 16-Jun-2015 |
| **Revision Summary** | Update to Format. |

## This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

**Disclaimer**

**The information provided on 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.**

# End of Safety Data Sheet