Material Safety Data Sheet

Bis(2-ethylhexyl) phosphate

sc-239351

Hazard Alert Code Key:

EXTREME  HIGH  MODERATE  LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Bis(2-ethylhexyl) phosphate

STATEMENT OF HAZARDOUS NATURE


NFPA

SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800

EMERGENCY
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Toxicty</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Body Contact</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>1</td>
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</tbody>
</table>
EMERGENCY OVERVIEW

RISK
- Harmful in contact with skin.
- Causes burns.
- Risk of serious damage to eyes.
- Possible risk of harm to the unborn child.
- Possible risk of irreversible effects.
- May cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
- The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.
- The material is not thought to produce adverse health effects following ingestion (as classified by EC Directives using animal models).
- Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum.
- Ingestion of acidic corrosives may produce burns around and in the mouth, the throat and oesophagus. Immediate pain and difficulties in swallowing and speaking may also be evident.

EYE
- The material can produce chemical burns to the eye following direct contact. Vapors or mists may be extremely irritating.
- If applied to the eyes, this material causes severe eye damage.
- Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns.
- Mild burns of the epithelia generally recover rapidly and completely.

SKIN
- Skin contact with the material may be harmful; systemic effects may result following absorption.
- The material can produce chemical burns following direct contact with the skin.
- Open cuts, abraded or irritated skin should not be exposed to this material.
- Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue.
- Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
- Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED
- If inhaled, this material can irritate the throat and lungs of some persons.
- Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.
- Organic phosphates are very stable and highly hazardous.
- There are a number of effects they can have on the body, including excitement of the central nervous system, and irritation of the skin and respiratory tract.
- Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage.
- There may be dizziness, headache, nausea and weakness.

CHRONIC HEALTH EFFECTS
- Strong evidence exists that this substance may cause irreversible mutations (though not lethal) even following a single exposure.
Based on experience with animal studies, exposure to the material may result in toxic effects to the development of the foetus, at levels which do not cause significant toxic effects to the mother.
Laboratory (in vitro) and animal studies show, exposure to the material may result in a possible risk of irreversible effects, with the possibility of producing mutation.
Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.
Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and/or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs. Chronic exposure may inflame the skin or conjunctiva.
When the substance was administered in the diets of rats the result was a significant induction in epoxide hydrolase activity and cytochrome P-450 content of liver cytosols as well as an increase in mitochondrial protein.

### Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>NAME</th>
<th>CAS RN</th>
<th>%</th>
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<tr>
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<td>&gt;98</td>
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<tr>
<td>diisooctyl acid phosphate</td>
<td>27215-10-7</td>
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</tr>
<tr>
<td>mono(2-ethylhexyl)phosphate</td>
<td>1070-03-7</td>
<td></td>
</tr>
<tr>
<td>isooctyl acid phosphate</td>
<td>12645-53-3</td>
<td></td>
</tr>
</tbody>
</table>

### Section 4 - FIRST AID MEASURES

**SWALLOWED**
- For advice, contact a Poisons Information Centre or a doctor at once.
- Urgent hospital treatment is likely to be needed.
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

**EYE**
If this product comes in contact with the eyes
- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.

**SKIN**
If skin or hair contact occurs
- Immediately flush body and clothes with large amounts of water, using safety shower if available.
- Quickly remove all contaminated clothing, including footwear.
- Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
- Transport to hospital, or doctor.

**INHALED**
- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Inhalation of vapors or aerosols (mists, fumes) may cause lung oedema.
Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs).
As this reaction may be delayed up to 24 hours after exposure, affected individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested.
Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered.

NOTES TO PHYSICIAN
- For acute or short term repeated exposures to strong acids
- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.
All persons handling organic phosphorus ester materials regularly should undergo regular medical examination with special stress on the central nervous systems. Whilst atropine or pyridine-2-aldoxime methiodide (PAM) are beneficial antidotes for acute phosphate ester poisonings, they are of little value in reversing acute or chronic neurological damage due to phosphites and some types of aryl phosphate.

### Section 5 - FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Vapor Pressure (mmHG)</th>
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</thead>
<tbody>
<tr>
<td>Upper Explosive Limit (%)</td>
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</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>0.965</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not available</td>
</tr>
</tbody>
</table>

**EXTINGUISHING MEDIA**
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

**FIRE FIGHTING**
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use fire fighting procedures suitable for surrounding area.
When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 800 metres in all directions.

**GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS**
- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Acids may react with metals to produce hydrogen, a highly flammable and explosive gas.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
Combustion products include carbon monoxide (CO), carbon dioxide (CO2), phosphorus oxides (POx), other pyrolysis products typical of burning organic material.

**FIRE INCOMPATIBILITY**
- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

### Section 6 - ACCIDENTAL RELEASE MEASURES

**MINOR SPILLS**
Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material.
- Check regularly for spills and leaks.
- Clean up all spills immediately.
- Avoid breathing vapors and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.

**MAJOR SPILLS**
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.

**Section 7 - HANDLING AND STORAGE**

**PROCEDURE FOR HANDLING**
- DO NOT allow clothing wet with material to stay in contact with skin
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Avoid contact with moisture.

**RECOMMENDED STORAGE METHODS**
- DO NOT use aluminium or galvanised containers
- Check regularly for spills and leaks
- Lined metal can, lined metal pail/ can.
- Plastic pail.
- Polyliner drum.
- Packing as recommended by manufacturer.

For low viscosity materials
- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.

**STORAGE REQUIREMENTS**
- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.

**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**EXPOSURE CONTROLS**

The following materials had no OELs on our records
- di(2-ethylhexyl) acid phosphate CAS298-07-7
- diisooctyl acid phosphate CAS27215-10-7
- mono(2-ethylhexyl)phosphate CAS1070-03-7
- isoctyl acid phosphate CAS12645-53-3

**PERSONAL PROTECTION**
RESPIRATOR
- Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 1432000 & 1492001, ANSI Z88 or national equivalent)

EYE
- Chemical goggles.
- 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 lens 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], [AS/NZS 1336 or national equivalent]

HANDS/FEET
- Wear chemical protective gloves, eg. PVC.
- Wear safety footwear or safety gumboots, eg. Rubber
- When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include
- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

OTHER
- Overalls.
- PVC Apron.
- PVC protective suit may be required if exposure severe.
- Eyewash unit.

ENGINEERING 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.

PHYSICAL PROPERTIES

<table>
<thead>
<tr>
<th>State</th>
<th>Liquid</th>
<th>Molecular Weight</th>
<th>Viscosity</th>
<th>Melting Range (°F)</th>
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</thead>
<tbody>
<tr>
<td>Liquid</td>
<td>-76</td>
<td>322.42</td>
<td>Not Available</td>
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</tbody>
</table>
Boiling Range (°F) | Not applicable | Solubility in water (g/L) | Immiscible
---|---|---|---
Flash Point (°F) | 385 | pH (1% solution) | Not applicable
Decomposition Temp (°F) | Not Available | Specific Gravity (water=1) | 0.965
Autoignition Temp (°F) | Not available | Vapor Pressure (mmHG) | Not available
Upper Explosive Limit (%) | Not available | Relative Vapor Density (air=1) | >1
Lower Explosive Limit (%) | Not available | Evaporation Rate | Not available
Volatile Component (%vol) | Not available | | |

**APPEARANCE**
Strongly acidic liquid; does not mix with water.

**Section 10 - CHEMICAL STABILITY**

**CONDITIONS CONTRIBUTING TO INSTABILITY**
- Contact with alkaline material liberates heat

**STORAGE INCOMPATIBILITY**
- A number of phosphate and thiophosphate esters are of limited thermal stability and undergo highly exothermic self-accelerating decomposition reactions which may be catalysed by impurities.
- The potential hazards can be reduced by appropriate thermal control measures.
- BRETERICK L. Handbook of Reactive Chemical Hazards<.
- Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.
- Segregate from alkalies, oxidising agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates.
- Avoid strong bases.

For incompatible materials - refer to Section 7 - Handling and Storage.

**Section 11 - TOXICOLOGICAL INFORMATION**

di(2-ethylhexyl) acid phosphate

**TOXICITY AND IRRITATION**
- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
- No significant acute toxicological data identified in literature search.
- Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound.
- Alkyl esters of phosphoric acid exhibit a low to moderate acute toxicity and metabolised. From studies done on mice, they are not likely to cause gene damage or affect reproduction. However, 2-ethylhexanoic acid produced an effect on newborn rats at high doses to the pregnant female.
- The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
- The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function.
- for acid mists, aerosols, vapors
Data from assays for genotoxic activity in vitro suggest that eukaryotic cells are susceptible to genetic damage when the pH falls to about 6.5. Cells from the respiratory tract have not been examined in this respect.
The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.
The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

**Section 12 - ECOLOGICAL INFORMATION**

May cause long-term adverse effects in the aquatic environment.

This material and its container must be disposed of as hazardous waste.

**Ecotoxicity**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
<th>Bioaccumulation</th>
<th>Mobility</th>
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<tbody>
<tr>
<td>diisooctyl acid phosphate</td>
<td>HIGH</td>
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<td>LOW</td>
<td>LOW</td>
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<tr>
<td>mono(2-ethylhexyl)phosphate</td>
<td>HIGH</td>
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<td>LOW</td>
<td>MED</td>
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<tr>
<td>isooctyl acid phosphate</td>
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**GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles**

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<th>Name / EHS TRN</th>
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<th>A1b</th>
<th>A1</th>
<th>A2</th>
<th>B1</th>
<th>B2</th>
<th>C1</th>
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<th>C3</th>
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<th>E1</th>
<th>E2</th>
<th>E3</th>
<th>Cas No</th>
<th>RTECS</th>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>643</td>
<td>223</td>
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</table>

Legend: EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships) NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradation, B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l), C1=Acute mammalian oral toxicity LD50 (mg/kg), C2=Acute mammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation & corrosion, D2=Eye irritation& corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitats, E3=Interference with coastal amenities, For column A2: R=Readily biodegradable, NR=Not readily biodegradable. For column D3: C=Carcinogen, M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjury, N=Neurotoxic, I=Immunotoxic. For column E1: NT=Not tainting (tested), T=Tainting test positive. For column E2: Fp=Persistent floater, F=Floater, S=Sinking substances. The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard. (GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships)

**Section 13 - DISPOSAL CONSIDERATIONS**

**US EPA Waste Number & Descriptions**

A. General Product Information

Corrosivity characteristic: use EPA hazardous waste number D002 (waste code C)

**Disposal Instructions**

All waste must be handled in accordance with local, state and federal regulations.

- Containers may still present a chemical hazard/ danger when empty.
• Return to supplier for reuse/recycling if possible.  
Otherwise:
• If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
• Where possible retain label warnings and MSDS and observe all notices pertaining to the product. Legislation addressing waste disposal requirements may differ by country, state and/or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:
• Reduction
• Reuse
• Recycling
• Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
• DO NOT allow wash water from cleaning or process equipment to enter drains.
• It may be necessary to collect all wash water for treatment before disposal.
• In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
• Where in doubt contact the responsible authority.
• Recycle wherever possible.
• Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
• Treat and neutralise at an approved treatment plant. Treatment should involve: Neutralisation with soda-ash or soda-lime followed by: burial in a land-fill specifically licenced to accept chemical and/or pharmaceutical wastes or Incineration in a licenced apparatus
• Decontaminate empty containers with 5% aqueous sodium hydroxide or soda ash, followed by water. Observe all label safeguards until containers are cleaned and destroyed.

### Section 14 - TRANSPORTATION INFORMATION

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<td>Packaging: Exceptions:</td>
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<td>Quantity Limitations: Cargo aircraft only:</td>
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<td>Vessel stowage: Other:</td>
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</table>

Hazardous materials descriptions and proper shipping names:
Diisooctyl acid phosphate

**Air Transport IATA:**

| ICAO/IATA Class: | 8 | ICAO/IATA Subrisk: | None |
| UN/ID Number: | 1902 | Packing Group: | III |
| Special provisions: | None |  |

**Cargo Only**

| Packing Instructions: | 856 | Maximum Qty/Pack: | 60 L |
**Passenger and Cargo**

<table>
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<th>Packing Instructions</th>
<th>Maximum Qty/Pack</th>
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<td>5 L</td>
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<tr>
<td>Passenger and Cargo</td>
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<tr>
<td>Limited Quantity</td>
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<tr>
<td>Packing Instructions</td>
<td>Maximum Qty/Pack</td>
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**Shipping name:** DIISOOCTYL ACID PHOSPHATE

**Maritime Transport IMDG:**

<table>
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<th>IMDG Class</th>
<th>IMDG Subrisk</th>
<th>Packaging Group</th>
<th>Special provisions</th>
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<tbody>
<tr>
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<td>None</td>
<td>III</td>
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<table>
<thead>
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<th>EMS Number</th>
<th>Limited Quantities</th>
<th>Special provisions</th>
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<td>1902</td>
<td>F-A,S-B</td>
<td>5 L</td>
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</table>

**Regulations for ingredients**

*di(2-ethylhexyl) acid phosphate (CAS: 298-07-7)* is found on the following regulatory lists;
- "Canada CEPA Environmental Registry Substance Lists - Other DSL substances that are priorities for human health (English)",
- "Canada Ingredient Disclosure List (SOR/88-64)",
- "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)",

*mono(2-ethylhexyl)phosphate (CAS: 1070-03-7)* is found on the following regulatory lists;
- "Canada Domestic Substances List (DSL)", "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory", "US TSCA Section 8 (a) - Preliminary Assessment Information Rules (PAIR) - Reporting List", "US TSCA Section 8 (d) - Health and Safety Data Reporting"

*isooctyl acid phosphate (CAS: 12645-53-3)* is found on the following regulatory lists;
- "Canada Domestic Substances List (DSL)", "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"

**Section 15 - REGULATORY INFORMATION**

**Section 16 - OTHER INFORMATION**

**LIMITED EVIDENCE**

- Inhalation may produce health damage.
- Cumulative effects may result following exposure.

* (limited evidence).

**Denmark Advisory list for selfclassification of dangerous substances**

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS</th>
<th>Suggested codes</th>
</tr>
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<td>d(2-ethylhexyl) acid phosphate</td>
<td>298-07-7</td>
<td>Mut3; R68 Rep3;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R63 Xi; R38</td>
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<tr>
<td>isooctyl acid phosphate</td>
<td>27215-10-7</td>
<td>Mut3; R68 Rep3;</td>
</tr>
</tbody>
</table>
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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. A list of reference resources used to assist the committee may be found at: www.chemwatch.net/references.

The (M)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.

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