1. Identification of the substance & the company

Chemical name: Tris(2-butoxyethyl) phosphate

Synonym(s): Ethanol, 2-butoxy, phosphate (3:1) Tributoxyethyl phosphate Phosphoric acid, tributoxyethyl ester

Chemical formula: C18 H39 O7 P

Chemical family: Alkyl phosphate

Type of product and use: Flame-retardant plasticizer Leveling Agent

Supplier: ICL-IP America Inc
622 Emerson Road - Suite 500
St Louis, Missouri 63141, USA
Tel:(314)983-7884   Fax:(314)983-7607

Emergency Telephone: Chemtrec (800)424-9300
Medical: PROSAR 1-888-875-1685 (24HRS)

2. Hazards identification

Emergency Overview: May cause mild eye, skin and respiratory tract irritation
                  May cause cholinesterase inhibition
                  May cause nerve damage.

NFPA Ratings (Scale 0-4): Health = 1, Fire = 1, Reactivity = 0
HMIS Ratings (Scale 0-4): Health = 2, Fire = 1, Reactivity = 0.

3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tris(2-butoxyethyl) phosphate</td>
<td>78-51-3</td>
<td>100</td>
</tr>
</tbody>
</table>

4. First-aid measures

Eye contact: Holding the eyelids apart, flush eyes promptly with copious flowing water for at least 20 minutes. Get medical attention immediately.
Skin contact
Remove contaminated clothing. Wash skin thoroughly with mild soap and plenty of water for at least 15 minutes. Wash clothing before re-use. Get medical attention if irritation occurs.

Inhalation
In case of inhalation, remove person to fresh air. Keep him quiet and warm. Apply artificial respiration if necessary and get medical attention immediately.

Ingestion
If swallowed, wash mouth thoroughly with plenty of water. Get medical attention immediately.

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NOTE: Never give an unconscious person anything to drink

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Notes to the physician
Treat symptomatically and supportively.

5. Fire - fighting measures

Suitable extinguishing media
Material is not combustible. Use extinguishing media appropriate to surrounding fire conditions.

Fire fighting procedure
Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA). Contain runoff to prevent entry into water or drainage systems.

Unusual fire and explosion hazards
When heated to decomposition, may release poisonous and corrosive fumes of carbon dioxide, carbon monoxide, phosphorus oxides and phosphoric acid.

6. Accidental release measures

Personal precautions
Wear appropriate safety clothing and eye/face protection (see Section 8).

Methods for cleaning up
Collect in suitable and properly labeled containers. Soak up with sand or other suitable absorbant and dispose of as solid waste. Ventilate area and wash spill site after material pickup is complete.

Environmental precautions
Prevent product from entering drains, ditches and rivers.
7. Handling and storage

Handling
Keep containers tightly closed. Avoid bodily contact.

Storage
Store in a dry, cool, well-ventilated area away from incompatible materials (see "materials to avoid"). Noncorrosive to glass or metals. May soften or deteriorate certain plastics and elastomers (vinyl-based resins, neoprene and natural rubbers).

8. Exposure controls / personal protection

Exposure Limits:

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH-TLV Data</th>
<th>OSHA (PEL) Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tris(2-butoxyethyl) phosphate 78-51-3</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

Ventilation requirements
Adequate ventilation is recommended to control potential employee exposure.

Personal protective equipment:
- Respiratory protection
In case of insufficient ventilation wear suitable respiratory equipment.
- Hand protection
Neoprene gloves
- Eye protection
Chemical safety goggles
- Skin and body protection
Use protective clothing impervious to this material.

Hygiene measures
Wash hands thoroughly after handling and before eating or smoking. Safety shower and eye bath should be provided. Do not eat, smoke or drink where material is handled, processed or stored.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Clear colorless liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odour</td>
<td>Mild</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>231°C (448°F) @ 6 mmHg</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>-70°C (-94°F)</td>
</tr>
<tr>
<td>Flash point</td>
<td>132°C (270°F) (closed cup)</td>
</tr>
<tr>
<td>Flammable/Explosion limits</td>
<td>Not flammable/Not explosive</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not self-ignitable</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>0.03 mmHg (150°C)</td>
</tr>
<tr>
<td>Evaporation rate (ether=1)</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Viscosity</td>
<td>12mPas (20°C)</td>
</tr>
<tr>
<td>Solubility:</td>
<td></td>
</tr>
<tr>
<td>- Solubility in water</td>
<td>&lt; 2 g/l @ 20°C</td>
</tr>
</tbody>
</table>
MATERIAL SAFETY DATA SHEET

Product name: PHOSFLEX T-BEP
Product id: 7068
Revision date: 08/11/2012
Supersedes: 24/12/2008

Revision: 2

Density: 1.012 - 1.018 g/mL (25°C)

10. Stability and reactivity

Stability:
- Stable under normal conditions

Materials to avoid:
- Strong oxidizers, strong acids and strong alkalis.
- It hydrolyzes slowly at normal temperatures in acidic or alkaline aqueous solutions.

Conditions to avoid:
- Exposure to air and moisture

Hazardous decomposition products:
- Carbon dioxide and carbon monoxide
- Phosphorus oxides, Phosphoric acids

Hazardous polymerization:
- Not expected to occur

11. Toxicological information

Acute toxicity:
- Rat oral LD50: > 5000 mg/kg
- Rabbit dermal LD50: > 5000 mg/kg
- Eye irritation (rabbit): Mild irritant
- Dermal irritation (rabbit): Mild irritant.

Dermal sensitization:
- Not a sensitizer.

Sub-chronic toxicity:
- In some repeated dose studies in which the animals received relatively high doses, mild plasma cholinesterase was observed.

Chronic toxicity:
- No data available

Mutagenicity:
- Not mutagenic by the Ames Test and by mouse lymphoma assay.

Carcinogenicity:
- Not included in NTP 12th Report on Carcinogens
- Not classified by IARC
- Not classified as a carcinogen by USA OSHA

Neurotoxicity:
- The product was examined for acute delayed neurotoxicity potential in hens which were administered at the dose limit of 5 g/kg. The product did not express acute delayed peripheral neurotoxicity.

Developmental toxicity:
- In a developmental toxicity study conducted in rats, the product did not adversely affect fetal development or cause terata.
### 12. Ecological information

Aquatic toxicity:
- 48 Hour-EC50, Daphnia magna 75 ppm

### 13. Disposal considerations

**Waste disposal**
Observe all federal, state and local environmental regulations when disposing of this material

### 14. Transportation information

**UN No.**
Not regulated

**DOT**
Not regulated

**IMDG**
Not regulated

**ICAO/IATA**
Not regulated

### 15. Regulatory information

**USA**
Reported in the EPA TSCA Inventory.

- **SARA 313**
  This substance is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372. Chemical Category: Glycol Ether (100%)

- **California-Prop 65**
  This product does not contain any ingredient known to the State of California to cause cancer or reproductive toxicity as listed under the State drinking water and Toxic Enforcement Act of 1986.

- **Waste Classifications**
  This material does not meet RCRA’s characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40CFR 261.33.

- **Workplace Classification**
  This product is considered hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).

**Canada**
Listed in DSL

- **WHMIS hazard class**
  Non-controlled
MATERIAL SAFETY DATA SHEET

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EU
reported in EINECS

Japan
listed in ENCS

Australia
listed in AICS

New Zealand Inventory
listed in NZIoC

CHINA
- China inventory
listed in IECSC

Korea
listed in ECL

Philippines
listed in PICCS

16. Other information

GHS
Product is not subject to classification according to GHS. No label elements required.

This data sheet contains changes from the previous version in section(s)
1, 16

Health, Safety & Environment Policy
We will strive to ensure that our operations and products meet the needs of the present global community without compromising the ability of future generations to meet their needs. We accept that the success of our business is dependent on the supply of products and services that will benefit society whilst ensuring human safety and protection of the environment and natural resources. Within the framework of our commitment to the Responsible Care program, we will provide a healthy and safe work environment for employees and will responsibly manage our products at all stages of their life cycle in order to protect human health and the environment whilst maintaining high production standards of operation.

TO MEET THIS COMMITMENT WE WILL: Comply with or exceed applicable national and international regulatory requirements and other requirements to which we subscribe. Communicate openly and actively encourage dialogue with employees, customers and community concerning our products and operations. Implement documented management systems consistent with and for promotion of the Responsible Care ethics. Develop and supply products that can be manufactured, transported, used and disposed of safely whilst best meeting the needs of our customers. Regularly assess, continually improve and responsibly manage health, safety and environmental risks associated with products and processes throughout their life-cycles. Share knowledge and expertise with others and seek to learn from and incorporate improved practices into our own operations. Educate and train employees, contractors and customers to improve their HSE performance. Communicate up-to-date information to enable our workers, customers and other interested parties to handle our products in a safe and environmentally responsible manner. Endeavor to work with customers, suppliers, distributors and contractors to foster the safe use, transport and disposal of our chemicals. Support Product Stewardship programs in cooperation with customers, distributors and transporters.
## MATERIAL SAFETY DATA SHEET

### Product name
PHOSFLEX T-BEP

### Product id
7068

### Revision date
08/11/2012

### Supersedes
24/12/2008

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In an event of discrepancy between the contents of this MSDS and the English version of it, the English version shall prevail.

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End of safety data sheet