1. Identification of the substance & the company

Chemical name: Butylated triphenyl phosphate ester based preparation
Chemical family: Aryl phosphate
Type of product and use: Flame-retardant plasticizer
Supplier: ICL Supresta, 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

2. Hazards identification

Emergency overview: May cause mild skin and eye irritation. Inhalation of vapor or mist may cause mild respiratory tract irritation.
NFPA Ratings (Scale 0-4): Health = 1, Fire = 1, Reactivity = 0
HMIS Ratings (Scale 0-4): Health = 1, 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>t-Butylphenyl diphenyl phosphate</td>
<td>56803-37-3</td>
<td>40 - 46</td>
</tr>
<tr>
<td>Bis(t-butylphenyl)phenyl phosphate</td>
<td>65652-41-7</td>
<td>12 - 18</td>
</tr>
<tr>
<td>Tri(t-butylphenyl) phosphate</td>
<td>78-33-1</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Triphenyl phosphate</td>
<td>115-86-6</td>
<td>30 - 45</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.

***********************************************************************
NOTE: Never give an unconscious person anything to drink.
***********************************************************************

Notes to the physician  Treat symptomatically and supportively.
No specific antidote.

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 and Phosphorus Oxides.

6. Accidental release measures

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

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

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

Handling
Avoid bodily contact. Keep containers tightly closed.

Storage
Store in a dry, cool, well-ventilated area away from incompatible materials (see "materials to avoid"). Crystallizes at temperatures below 4.4°C (40°F). Maximum recommended storage temperature of 65°C (149°F)

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>t-Butylphenyl diphenyl phosphate</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
<tr>
<td>56803-37-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bis[t-butylyphenyl]phenyl</td>
<td>Not determined</td>
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</tr>
<tr>
<td>phosphate 65652-41-7</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Not determined</td>
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</tr>
<tr>
<td>78-33-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triphenyl phosphate</td>
<td>3 mg/m³</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td>115-86-6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ventilation requirements
Ventilation must be sufficient to maintain atmospheric concentration below recommended exposure limit.

Personal protective equipment:
- Respiratory protection
  In case of insufficient ventilation wear suitable respiratory equipment.
- Hand protection
  Protective gloves
- Eye protection
  Chemical safety goggles
- Skin and body protection
  Body covering clothes and boots

Hygiene measures
Safety shower and eye bath should be provided. Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking.
9. Physical and chemical properties

Appearance: Clear, transparent liquid
Odor: None
Melting point/range: Not determined
Boiling point/range: >352°C (>666 °F) Decomposes on heating
Pour point: -26.11°C (-15 °F)
Flash point: >225°C (>437°F) (closed cup)
Flammable/Explosion limits: Not explosive/Not flammable
Auto-ignition temperature: Not self-ignitable
Vapour pressure: 0.24 mmHg (20°C)
Viscosity: 70mPas (25°C)
Solubility:
- Solubility in water: 2.7ug/ml
Specific gravity: 1.182
Decomposition temperature: >234°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: Heating above decomposition temperature
Hazardous decomposition products: Carbon dioxide and carbon monoxide
Phosphorus oxides
Hazardous polymerization: Not expected to occur

11. Toxicological information

Acute toxicity:
- Rat oral LD50: > 5000 mg/kg
- Rabbit dermal LD50: > 2000 mg/kg
- Rat inhalation LC50: > 3.1 mg/l
- Eye irritation (rabbit): Mild irritant
- Dermal irritation (rabbit): Mild irritant

Sub-chronic toxicity:
- NOEL: 100 ppm (13 weeks oral rat)

Chronic toxicity: No data available
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Mutagenicity
No evidence of genotoxic or mutagenic activity was noted in Ames tests, the mouse lymphoma and chromosome aberration tests.

Carcinogenicity
Not classified by IARC
Not included in NTP 11th Report on Carcinogens
Not classified as a carcinogen by USA OSHA

Reproductive toxicity
Butylated triphenyl phosphate did not demonstrate reproductive toxicity.
In a rat reproduction study, male and female animals received either 50, 250 or 1000 mg/kg/day for several weeks after which they mated. There were no reproductive toxicity observed at any dose level. Diagnostic pathology confirmed no alterations to the reproductive organs. There was no effect on mating index, litter size, survival of the offspring or on any other measured parameter.

Teratogenicity
Not teratogenic when administered orally up to 1000 mg/kg

Neurotoxicity
No signs of acute delayed neurotoxicity when administered orally to hens at 23 g/kg

12. Ecological information

Aquatic toxicity:
- 96 Hour-LC50, Fish: > 1.0 mg/l (Sheepshead minnow)
- 96 Hour-EC50, fish: > 2.0 mg/l (Rainbow Trout)
- LC50, Crustacea: 0.39 mg/l (Mysid shrimp, 96-hours)

Persistence and degradability:
- Hydrolysis
  Hydrolysis rates for triphenyl phosphate, a product component are:
  at pH 9.5: half-life: 0.23 days
  at pH 8.2: half-life: 7.5 days

Biodegradation
Readily biodegradable

Bioaccumulative potential
Triaryl phosphate esters, including triphenyl phosphate, exhibit low aqueous solubility, have moderate potential for bioconcentration and readily undergo biodegradation.

Germany, water endangering classes (WGK)
2
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13. Disposal considerations

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

Disposal of Packaging Dispose of in a safe manner in accordance with local/national regulations.

14. Transportation information

UN No. 3082
DOT Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates)
Class: 9 - Miscellaneous Hazardous Material
Label: 9
Packing Group: III

Not regulated for surface and air transport in non-bulk (<119 gallons) packagings. (contains triphenyl phosphate which is a Marine Pollutant per 49CFR 172.101 Appendix B)

IMO Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates)
Class: 9 - Miscellaneous Dangerous Substances and articles
Label: 9
Marking: MARINE POLLUTANT (PP)
Packing Group: III

ICAO/IATA Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates)
Class: 9
Hazard label(s): Miscellaneous
Packing group: III

15. Regulatory information

USA Reported in the EPA TSCA Inventory.
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**Product Name**: PHOSFLEX 71B  
**Product id**: 7019  
**Revision date**: 08/12/2008  
**Revision**: 1

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>- SARA 313</strong></td>
<td>This product does not contain a chemical listed at or above de minimis concentrations.</td>
</tr>
<tr>
<td><strong>- Massachusetts right-to-know list</strong></td>
<td>Listed (Triphenyl phosphate)</td>
</tr>
<tr>
<td><strong>- New Jersey right-to-know list</strong></td>
<td>Listed (Triphenyl phosphate)</td>
</tr>
<tr>
<td><strong>- Pennsylvania right to know list</strong></td>
<td>Listed (Triphenyl phosphate)</td>
</tr>
<tr>
<td><strong>- Rhode Island right-to-know list</strong></td>
<td>Listed (Triphenyl phosphate)</td>
</tr>
<tr>
<td><strong>- California-Prop 65</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>- Waste Classifications</strong></td>
<td>This material does not meet RCRA`s characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40CFR 261.33.</td>
</tr>
<tr>
<td><strong>- Workplace Classification</strong></td>
<td>This product is considered hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).</td>
</tr>
</tbody>
</table>

**Canada**  
Listed in DSL  
**-WHMIS hazard class**  
Non-controlled  
**EU**  
Reported in EINECS  
**Japan**  
Listed in ENCS  
**Australia**  
Listed in AICS  
**New Zealand Inventory**  
Listed in NZIoC  
**China inventory**  
Listed  
**Korea**  
Listed in ECL  
**Philippines**  
Listed in PICCS
16. Other information

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.

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MATERIAL SAFETY DATA SHEET

Product Name: PHOSFLEX 71B
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telefax: +972-8-6297832
www.icl-ip.com

End of safety data sheet