1. Identification of the substance & the company

Chemical name: Proprietary mixture of phosphate esters

Type of product and use: Flame-retardant plasticizer

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: Medical: PROSAR 1-888-875-1685 (24HRS)
Chemetrec (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>Triaryl phosphate ester</td>
<td>Confidential</td>
<td>40 - 46</td>
</tr>
<tr>
<td>Alkyl diphenyl phosphate</td>
<td>Confidential</td>
<td>25</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 persists.
### Inhalation
In case of mist inhalation or breathing fumes released from heated material, 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.

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### 5. Fire - fighting measures

**Suitable extinguishing media**
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.

### 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 :**
MATERIAL SAFETY DATA SHEET

Product name: Phosflex 375
Product id: 7019-3P
Revision date: 12/12/2012
Revision: 1

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: Chemical safety gloves
- Eye protection: Chemical splash goggles and/or face shield if splash hazard exists
- Skin and body protection: Body covering clothes and boots

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

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH-TLV Data</th>
<th>OSHA (PEL) Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triaryl phosphate ester</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
<tr>
<td>Alkyl diphenyl phosphate</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
<tr>
<td>Triphenyl phosphate 115-86-6</td>
<td>3 mg/m³</td>
<td>3 mg/m³</td>
</tr>
</tbody>
</table>

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

Page 3 of 8
11. Toxicological information

Note: The toxicological data refer to the main ingredient

Acute toxicity:
- Rat oral LD50 > 5000 mg/kg
- Rabbit dermal LD50 > 2000 mg/kg
- Rat inhalation LC50 > 0.4 mg/l
- Eye irritation (rabbit) Mild irritant
- Dermal irritation (rabbit) Mild irritant.

Chronic toxicity
No data available

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 12th Report on Carcinogens
Not classified as a carcinogen by USA OSHA

Reproductive toxicity
Triaryl phosphate ester did not demonstrate reproductive toxicity.

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 0.8 mg/l (Ictalurus punctatus)
- 48 Hour-EC50, Daphnia magna 202 µg/L

Biodegradation
Readily biodegradable

Bioaccumulative potential
Triaryl phosphate esters, including triphenyl phosphate, exhibit low aqueous solubility, have moderate potential for bioconcentration and readily undergo biodegradation.
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 substances, liquid, n.o.s
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)

IMDG

Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (contains triphenyl phosphate)
Class: 9 - Miscellaneous Dangerous Substances and Articles
Label: 9
Mark: MARINE POLLUTANT
Packing Group: III

ICAO/IATA

Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (triphenyl phosphate)
Class: 9
Hazard label(s): Miscellaneous
Packing group: III
Marking: Environmentally hazardous substance

15. Regulatory information

USA

Reported in the EPA TSCA Inventory.

- SARA 313

This product does not contain a chemical listed at or above de minimis concentrations.

- Massachusetts Right-to-Know Hazardous Substances list

Listed (Triphenyl phosphate)

- New Jersey Right-to-Know Hazardous Substances list

Listed (Triphenyl phosphate)
MATERIAL SAFETY DATA SHEET

Product name: Phosflex 375
Product id: 7019-3P
Revision date: 12/12/2012
Revision: 1

- Pennsylvania Right-to-Know Hazardous Substances list
- Rhode Island Right-to-Know Hazardous Substances list

- California-Prop 65
- Waste Classifications
- Workplace Classification
- EU
- Japan
- Australia
- New Zealand Inventory
- CHINA
- China inventory
- Korea
- Philippines

16. Other information

GHS
GHS classification

Signal word: Warning
Hazard statements: H410 - Very toxic to aquatic life with long lasting effects
MATERIAL SAFETY DATA SHEET

Product name: Phosflex 375
Product id: 7019-3P
Revision: 1
Revision date: 12/12/2012

Precautionary statements:
- P273 - Avoid release to the environment
- P391 - Collect spillage
- P501 - Dispose of contents/container in accordance with national and international regulations

Note:
This chemical is in early research stages. Therefore, information regarding its properties is still scarce.

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.

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, ICL-IP America Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its safety and suitability for their purposes prior to use. In no event will ICL-IP America Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE, ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH THE INFORMATION REFERS.

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

Prepared by:
HERA Division in ISRAEL
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telefax: +/972-8-6297832
www.icl-ip.com
<table>
<thead>
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<tbody>
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Revision: 1

End of safety data sheet