MATERIAL SAFETY DATA SHEET

Product name: Fyrolflex SOL-DP
Product id: 7023
Supersedes: 09/06/2011
Revision date: 03/01/2012
Revision: 6

1. Identification of the substance & the company

Chemical name: The chemical identity of this product is a trade secret.
Chemical family: Aryl phosphate
Type of product and use: Flame retardant
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: Light yellow powder which can cause mild irritation to the eye
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>Aryl phosphate</td>
<td>trade secret</td>
<td>&gt;95</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: Wash skin thoroughly with mild soap and plenty of water for at least 15 minutes. 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
Dust may form a weak explosive mixture with air (class St1) 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
Sweep up and shovel into suitable containers for disposal. 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 producing or diffusing dust into the air.
Avoid bodily contact.
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## Storage
Store in a dry, cool, well-ventilated area away from incompatible materials (see "materials to avoid").

## 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>Aryl phosphate</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
<tr>
<td>trade secret</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Ventilation requirements
Provide adequate ventilation.

### Personal protective equipment:
- **Respiratory protection**: Not normally required; In case of dust formation use an approved particulate respirator.
- **Hand protection**: Neoprene gloves
- **Eye protection**: Chemical safety goggles
- **Skin and body protection**: Use protective clothing impervious to this material.

### 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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Light yellow powder</td>
</tr>
<tr>
<td>Odour</td>
<td>Slight mildew or earthy smell</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>Not applicable (decomposes)</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>102 - 104°C (216 - 219°F)</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammable/Explosion limits</td>
<td>Not available</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>&gt; 620°C (&gt;1148°F)</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not self-ignitable</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>&lt; 5.6x10(-7)Pa (20°C)</td>
</tr>
<tr>
<td>Solubility:</td>
<td></td>
</tr>
<tr>
<td>- Solubility in water</td>
<td>0.0187 µg/l (20°C)</td>
</tr>
<tr>
<td>Bulk density</td>
<td>2.6-4.9 lb./gal</td>
</tr>
</tbody>
</table>
9. Physical and chemical properties

- **Density**: 1.347 kg/m³ (20°C)
- **pH**: Neutral (5% suspension in water)
- **Decomposition temperature**: 326°C
- **Partition coefficient**: Log Kow - 4.98
- **Explosive properties**: Not explosive
- **Oxidising properties**: Not oxidising
- **Particle size**: D10 =< 4.5 µm, D50 =< 47.0 µm, D90 =< 147.2 µm

10. Stability and reactivity

- **Stability**: Stable under normal conditions
- **Materials to avoid**: Strong acids, strong bases
- **Conditions to avoid**: Excessive heat and moisture
- **Hazardous decomposition products**: Phosphorus oxides, Carbon dioxide and carbon monoxide
- **Hazardous polymerization**: Not expected to occur

11. Toxicological information

- **Acute toxicity**:
  - Rat oral LD50: > 5000 mg/kg
  - Rabbit dermal LD50: > 5000 mg/kg
  - Rat inhalation LC50: > 5.23 mg/L
  - Eye irritation (rabbit): Mild irritant
  - Dermal irritation (rabbit): Not irritant
- **Dermal sensitization**: Not a sensitizer
- **Sub-acute toxicity**:
  - NOAEL: > 1000 mg/kg/day (oral rat)
- **Target organ effects**: No organs known to be damaged from exposure to this product.
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Sub-chronic toxicity:
- NOAEL: > 1000 mg/kg/day (13 weeks oral, rat)

Chronic toxicity: No data available

Mutagenicity:
- Not mutagenic by the Ames Test
- In vivo mouse bone marrow cytogenicity: not mutagenic
- Not clastogenic in chromosome aberration test with Human lymphocytes.

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

Reproductive toxicity:
The NOAEL >1000 mg/kg/day (rats). There were no effects on mating, pregnancy, litter size and pup survival.

Neurotoxicity:
- Not neurotoxic

Developmental toxicity:
Daily oral gavage administration of Fyrolflex SOL-DP to female rabbits up to and including 1000 mg/kg/day did not cause adverse effects upon maternal parameters or embryo-fetal survival, growth and development. NOAEL = 1000 mg/kg/day

12. Ecological information

Environmental fate:
Activated sludge respiration inhibition test: EC50 > 414 mg/l

Aquatic toxicity:
Due to the extremely low water solubility, it is technically difficult to perform full aquatic toxicity studies. Thus, the actual level of exposure cannot be determined. It can be reasonably assumed that aquatic organisms will not be directly exposed to the substance.

Chronic toxicity:
A 14-day range-finding test with Daphnia showed no toxicity at all substance concentrations (NOEC > water solubility)

Biodegradation:
Not readily biodegradable
In the Closed Bottle Test, this product biodegraded 8% at day 28.
13. Disposal considerations

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

14. Transportation information

DOT
Not regulated

IMO
Not regulated

ICAO/IATA
Not regulated

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.
- 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
- WHMIS hazard class
Not listed in DSL
Non-controlled

EU
Listed

Japan
Not listed in ENCS

Australia
Not listed in AICS

China inventory
Listed in IECSC
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)
2 (REACH), 3, 4, 11, 12

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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
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Support Product Stewardship programs in cooperation with customers, distributors and transporters
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End of safety data sheet