MATERIAL SAFETY DATA SHEET

Product Name: FYROL PNX
Product id: 7003
Revision date: 25/02/2010
Supersedes: 22/12/2008
Revision: 2

1. Identification of the substance & the company

Chemical name: Phosphoric acid, triethyl ester, polymer with oxirane and phosphorus oxide
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:
May cause skin and respiratory tract irritation.
May cause eye 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>Phosphoric acid, triethyl ester, polymer with oxirane and phosphorus oxide (P2O5)</td>
<td>184538-58-7</td>
<td>95 - 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. 

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

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.

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 fire fighting water 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
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.
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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").
Maximum recommended storage temperature of 70°C (158°F)

8. Exposure controls / personal protection

Exposure Limits:

<table>
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<tr>
<th>Components</th>
<th>ACGIH-TLV Data</th>
<th>OSHA (PEL) Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphoric acid, triethyl ester, polymer with oxirane and phosphorus oxide (P2O5) 184538-58-7</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

Ventilation requirements
Due to its low vapor pressure, this product is not likely to present an inhalation hazard at normal temperatures.

Personal protective equipment:
- Respiratory protection
  If product misting occurs, use NIOSH approved respirator Not required; except in case of aerosol formation.
- 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

Physical state
Liquid
Color
Amber
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Odour: Slightly sweetish
Boiling point/range: Not determined
Melting point/range: Not determined
Flash point: 208°C (closed cup)
Flammable/Explosion limits: Not explosive/Not flammable
Auto-ignition temperature: Not self-ignitable
Vapour pressure: Not available
Viscosity: 2000 - 3000 mPas (25°C)
Solubility:
- Solubility in water: Soluble
Density: ~ 1300 kg/m³ (20°C)
Partition coefficient: Log Kow - < -1

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: Excessive heat and moisture
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
- Eye irritation (rabbit): Mild irritant
- Dermal irritation (rabbit): Mild irritant

Sub-acute toxicity:
- NOEL: 200 mg/kg/day (4 weeks oral, male rat)
  40 mg/kg/day (4 weeks oral, female rat)

Chronic toxicity: No data available

Mutagenicity: Not mutagenic by the Ames Test

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

12. Ecological information

Aquatic toxicity:
- 48 Hour-EC50, Daphnia magna: 224 mg/kg

Biodegradation: Not readily biodegradable
In the Closed Bottle Test, this product biodegraded 0% at day 28 and 2% at day 140.

Bioaccumulative potential: Not bioaccumulative significantly.

Germany, water endangering classes (WGK): 2

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
IMO: Not regulated
ICAO/IATA: Not regulated

15. Regulatory information

USA
- SARA 313: Reported in the EPA TSCA Inventory
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.
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**Revision:** 225/02/2010

- **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 NDSL

- **WHMIS hazard class**
  Non-controlled

- **EU**
  This product is a polymer.
  Monomers are listed in EINECS.

- **Japanese METI**
  ENCS 7-2885

- **Australia**
  Listed in AICS

- **New Zealand Inventory**
  Listed in NZIoC

- **China inventory**
  Listed

### 16. Other information

This data sheet contains changes from the previous version in section(s)
9, 11, 12, 15

**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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End of safety data sheet