MATERIAL SAFETY DATA SHEET

Product name: FYRQUEL EHC PLUS
Product id: 7080
Revision date: 17/10/2012
Supersedes: 12/02/2012
Revision: 5

1. Identification of the substance & the company

Chemical name: Butylated triphenyl phosphate ester based mixture
Chemical family: Aryl phosphate
Type of product and use: Fire-resistant hydraulic fluid
Company: ICL-IP America Inc.
622 Emerson Road - Suite 500
St Louis, Missouri 63141, USA
Phone - 1 800 666 1200

Emergency telephone number:
- For Europe: +32 (0) 3 575 5555   SGS
- For USA: Chemtrec (800) 424-9300
- For Asia - Pacific: ALERT-SGS
  24 hr Toll Free Number : +800 ALERTSGS (+800-2537-8747)
  24 hr Singapore Exchange Number : +65 6542-9595

2. Hazards identification

GHS classification

Signal word: Warning
Hazard statements: H411 - Toxic to aquatic life with long lasting effects
Precautionary statements: P273 - Avoid release to the environment
  P391 - Collect spillage
  P501 - Dispose of contents/container in accordance with national and international
  regulations

NFPA Ratings (Scale 0-4): Health = 1, Fire = 1, Reactivity = 0
3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>Weight %</th>
<th>Index No.</th>
<th>EC No.</th>
<th>EU Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-Butylphenyl diphenyl phosphate 56803-37-3</td>
<td>65-85</td>
<td></td>
<td>260-391-0</td>
<td>None</td>
</tr>
<tr>
<td>Bis(t-butylphenyl)phenyl phosphate 65652-41-7</td>
<td>10-30</td>
<td></td>
<td>265-859-8</td>
<td>None</td>
</tr>
<tr>
<td>Tri(t-butylphenyl) phosphate 78-33-1</td>
<td>0-10</td>
<td></td>
<td>201-106-1</td>
<td>None</td>
</tr>
<tr>
<td>Triphenyl phosphate 115-86-6</td>
<td>0-4</td>
<td></td>
<td>204-112-2</td>
<td>Aquatic Acute 1, H400, Aquatic Chronic 1, H410 (In accordance with CLP 1272/2008) N:R50/53 (In accordance with DSD 67/548/EEC)</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

Symptoms / Effects, Acute and Delayed

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

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"). Store above 4.4°C (40°F) for improved pumping rates. Temperatures between 27 - 37.8°C (80 - 100°F) provide good flow rates.

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 56803-37-3</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
<tr>
<td>Bis(t-butylphenyl)phenyl phosphate 65652-41-7</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
<tr>
<td>Tri(t-butylphenyl) phosphate 78-33-1</td>
<td>Not determined</td>
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</tbody>
</table>
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| Triphenyl phosphate 115-86-6 | 3 mg/m³ | 3 mg/m³ |

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: Neoprene 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: 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

Appearance: Clear liquid
Odour: Slight
Boiling point/range: Not determined
Melting point/range: Not determined
Flash point: >240°C (>465°F)
Flammable/Explosion limits: Not flammable/Not explosive
Ignition temperature: 593°C (1100°F)
Auto-ignition temperature: Not self-ignitable
Viscosity: 42-46 cSt. (40°C)
Solubility:
- Solubility in water: Not available
Density: 1.16-1.18 g/mL (25°C)

Explosive properties: There are no chemical groups associated with explosive properties present in the molecule

Oxidising properties: The structure indicates non oxidizing properties

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: Phosphorus oxides, Carbon dioxide and carbon monoxide

Hazardous polymerization: Not expected to occur
11. Toxicological information

Toxicity  The toxicological data refer only to main component(s).

Acute toxicity:
- Rat oral LD50  > 5000 mg/kg
- Rabbit dermal LD50  > 2000 mg/kg
- Rat inhalation LC50  > 0.4 mg/l
- Dermal irritation (rabbit)  Not irritant
- Eye irritation (rabbit)  Not irritant

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

Chronic toxicity
No data available

Mutagenicity
Not mutagenic by the Ames Test and by mouse lymphoma assay
Negative in chromosome aberration and sister chromatid exchange tests in mouse lymphoma cells.

Carcinogenicity
Not included in NTP 12th Report on Carcinogens
Not classified by IARC

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 was 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

Note:  Ecological data have not been determined specifically for this product.
Information given is based on data on the components and the ecotoxicology of similar products.

Aquatic toxicity:
- 96 Hour-LC50, Fish  0.8 mg/l (Ictalurus punctatus)
- 48 Hour-EC50, Daphnia magna  202 µg/L
## 13. Disposal considerations

### Waste disposal
Dispose of in a safe manner in accordance with local/national regulations.

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

## 14. Transportation information

### UN No.
3082

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

### ADR/RID
Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (triphenyl phosphate)
Classification Code: M6
Class: 9 - Miscellaneous Dangerous Substances and Articles
Danger Label Model No.: 9
Hazard identification No.: 90
Packing group: III
Marking: Environmentally hazardous substance

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

### DOT
Not regulated

## 15. Regulatory information

### EU
Reported in EINECS

### - Indication of danger
N - Dangerous for the Environment.
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- R Phrases: R 51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

- S Phrases: S60: This material and its container must be disposed of as hazardous waste
S61: Avoid release to the environment. Refer to special instructions/Safety data sheets.

USA: Reported in the EPA TSCA Inventory.
Australia: Listed in AICS
Canada: Listed in DSL

- CHINA
  - China inventory: Listed in IECSC
  - Hazardous Chemicals List: The substance is not included
  - Toxic Chemicals List: The substance is not included

Japan: Listed in ENCS
Korea: Listed in ECL
New Zealand Inventory: Listed in NZIoC
Philippines: Listed in PICCS

16. Other information

This data sheet contains changes from the previous version in section(s) 12 & 14 (not REACH format)

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.
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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 EXPRESSED 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.

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End of safety data sheet