

# SAFETY DATA SHEET

According to OSHA Hazard Communication Standard 29 CFR 1910.1200 (GHS)

<b>Product name</b>	<b>FYROL 38</b>	
<b>Product id</b>	7007F	
<b>Revision date</b>	06/07/2014	<b>Revision: 5</b>
<b>Supersedes</b>	05/12/2011	

## 1. Identification of the substance & the company

<b>Chemical name</b>	Tris(1,3-dichloro-2-propyl) phosphate
<b>Synonym(s)</b>	Tri(B,B'-dichloroisopropyl) phosphate; 2-Propanol,1,3-dichloro- phosphate (3:1), TDCP
<b>Chemical formula</b>	C <sub>9</sub> H <sub>15</sub> Cl <sub>6</sub> O <sub>4</sub> P
<b>Chemical family</b>	Alkyl phosphate
<b>Molecular weight</b>	430.91
<b>Type of product and use</b>	Flame retardant
<b>Supplier</b>	ICL-IP America Inc. 622 Emerson Road - Suite 500 St Louis, Missouri 63141, USA Tel:(314)983-7884 Fax:(314)983-7607 e-mail:msdsinfo@icl-ip.com
<b>Emergency Telephone</b>	Chemtrec (800)424-9300 Medical: PROSAR 1-888-875-1685 (24HRS)

## 2. Hazards identification

<b>GHS classification</b>	Carc. Cat. 2, H351 Suspected of causing cancer Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects
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### Labels and other form of warning

#### Symbol(s)



<b>Signal Word</b>	WARNING
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<b>Hazard statements</b>	H351 - Suspected of causing cancer H411 - Toxic to aquatic life with long lasting effects
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**Precautionary statements**

P202 - Do not handle until all safety precautions have been read and understood  
P273 - Avoid release to the environment  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P308 + P313 - IF exposed or concerned: Get medical advice/attention  
P391 - Collect spillage  
P405 - Store locked up  
P501 - Dispose of contents/container in accordance with national and international regulations

**NFPA Ratings (Scale 0-4)** Health = 2, Fire = 1, Reactivity = 0.  
**HMIS Ratings (Scale 0-4)** Health = 1, Fire = 1, Reactivity = 0.

### 3. Composition / information on ingredients

Components	CAS No.	Weight %
1,3-Dichloro-2-propanol phosphate (3:1)	13674-87-8	93 - 97

### 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 reuse. 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.

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NOTE: Never give an unconscious person anything to drink  
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**Most important symptoms and effects, acute or delayed**

Suspected of causing cancer.

**Notes to the physician**

Repeated exposure to very high doses of this product may result in cholinesterase inhibition. Additional symptoms resulting from the repeated exposure could include salivation, sweating, headache, nausea, diarrhea and tremors. Should cholinesterase inhibition occur, atropine may be used as an antidote.

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## 5. Fire - fighting measures

**Suitable extinguishing media** Water, water fog, carbon dioxide (CO<sub>2</sub>), dry chemical, foam.

**Unusual fire and explosion hazards** When heated to decomposition, may release poisonous and corrosive fumes of Carbon Dioxide, Carbon Monoxide, Hydrogen Chloride and Phosphorus Oxides.

**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.

## 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.

## 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"). Maximum recommended storage temperature of 54.4°C (130°F). Crystallizes at temperatures below 15°C (59°F).

## 8. Exposure controls / personal protection

**Exposure Limits :**

Components	ACGIH-TLV Data	OSHA (PEL) Data
1,3-Dichloro-2-propanol phosphate (3:1) 13674-87-8	Not determined	Not determined

**Ventilation requirements** Adequate ventilation is recommended to control potential employee exposure.

**Personal protective equipment:**

- **Respiratory protection** In case of insufficient ventilation wear suitable respiratory equipment.
- **Hand protection** Neoprene or nitrile rubber
- **Eye protection** Chemical safety goggles
- **Skin and body protection** Body covering clothes and boots.

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**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

<b>Appearance</b>	Clear colorless liquid
<b>Odor</b>	Mild
<b>Melting point/range</b>	-20°C (1013 hPa) This product is a supercooled liquid and may crystallize
<b>Boiling point/range</b>	326°C (1013hPa)
<b>Flash point</b>	>200°C
<b>Flammable/Explosion limits</b>	Not flammable/Not explosive
<b>Vapor pressure</b>	0.0000056Pa (25°C)
<b>Solubility:</b>	
- <b>Solubility in water</b>	18.1mg/l at 20°C
<b>Partition coefficient (n-octanol/water)</b>	Log Kow - 3.69
<b>Auto-ignition temperature</b>	Not self-ignitable
<b>Decomposition temperature</b>	326°C
<b>Viscosity</b>	1715mPa.s(dynamic) (20°C)
<b>Ignition temperature</b>	513°C (955 °F)
<b>Specific gravity</b>	1.51(20°C)
<b>Oxidising properties</b>	Not oxidising

### 10. Stability and reactivity

<b>Stability</b>	Stable under normal conditions
<b>Conditions to avoid</b>	Heating above 50 °C.
<b>Materials to avoid</b>	Strong oxidizers, strong acids and strong alkalis. It hydrolyzes slowly at normal temperatures in acidic or alkaline aqueous solutions.
<b>Hazardous decomposition products</b>	Phosphorus oxides, Hydrogen Chloride, Carbon dioxide and carbon monoxide

### 11. Toxicological information

<b>Likely Routes of Exposure</b>	Skin Eye contact Inhalation Ingestion
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**Acute toxicity:**

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<b>- Rat oral LD50</b>	>2000 mg/kg
<b>- Rat dermal LD50</b>	>2000 mg/kg
<b>- Rat inhalation LC50</b>	> 5220 mg/m <sup>2</sup>
<b>- Eye irritation (rabbit)</b>	Slightly irritant
<b>- Dermal irritation (rabbit)</b>	Slightly irritating to skin but not sufficient for classification.
<b>Dermal sensitization</b>	Not a sensitizer
<b>Sub-chronic toxicity:</b>	A 90-day study (rabbit, dermal application of 1450 mg/kg) produced an increase in kidney weight, but no histological changes in any tissue. A 90-day study (rat, oral doses of 25 or 250 mg/kg/day) produced mortality and an increase in liver and kidney organ weights, but no histological changes in any tissue.
<b>Chronic toxicity</b>	NOEL: 5 mg/kg/day (rat) Certain high dose female rats showed plasma cholinesterase inhibition of up to 30 percent
<b>Mutagenicity</b>	Mutagenic by the Ames Test Unscheduled DNA synthesis (rat liver) - not mutagenic Not mutagenic in the mouse lymphoma L5178Y test system. Negative in the Chromosomal aberrations test (hamster's V79 cells) Not clastogenic in chromosome aberration test with Chinese hamster cells. In vivo mouse bone marrow cytogenicity: not mutagenic In vivo Drosophila melanogaster test: not mutagenic

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<b>Carcinogenicity</b>	<p>Not classified by IARC          Not included in NTP 12th Report on Carcinogens          Not classified as a carcinogen by USA OSHA          Daily ingestion of 20 mg/kg or 80 mg/kg for two years was oncogenic to rats. No significant effects were observed at 5 mg/kg/day. Microscopic examination of the tissues and organs of the mid and high dose animals revealed significant increases in the incidence of liver nodules, benign renal cortical tumors and interstitial cell tumors or the testes.          Females receiving the high dose showed an increase in adrenal cortical adenomas. No significant increase in tumor incidence was observed in the low dose animals. The substantial decrease in body weights seen in the high dose animals confirmed that the Maximum Tolerated Dose was achieved, and possibly exceeded.          Although there was a significant increase in the incidence of benign tumors in mid and high dose animals, the lack of a significant incidence of malignant tumors in any treatment group confirms that the product did not demonstrate carcinogenic activity. This is consistent with the results of the mutagenicity tests which show the product is not a genotoxin and thus not a genotoxic carcinogen.          In spite of the above the EU authorities reviewed the carcinogenicity of TDCP and decided to classify it as Category 2 Carcinogen (GHS). This category includes substances which cause concern to man owing to possible carcinogenic effects but in respect of which the available information is not adequate for making a satisfactory assessment.</p>
<b>Reproductive toxicity</b>	<p>Reproductive studies showed that oral administration of this product to male rabbits for 12 weeks did not adversely affect fertility or sperm quantity.</p>
<b>Teratogenicity</b>	<p>Not teratogenic</p>
<b>Neurotoxicity</b>	<p>All of neurotoxicity tests conducted consistently showed the product lacked neurotoxic activity</p>

**12. Ecological information**

**Aquatic toxicity :**

- 96 Hour-LC50, Fish 1.1 mg/l (Oncorhynchus mykiss)
- 48 Hour-EC50, Daphnia magna 3.8 mg/l

**Biodegradation** Not readily biodegradable.

**Bioaccumulative potential** Not bioaccumulative  
Measured fish BCF of 31-59

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**Note:** TDCP can be considered to be potentially persistent (P) or potentially very persistent (vP) based on its ultimate mineralisation. The available information on bioaccumulation shows that TDCP does not meet the B or vB criterion. The T criterion is not met.

### 13. Disposal considerations

<b>Waste disposal</b>	Observe all federal, state and local environmental regulations when disposing of this material
<b>Disposal of Packaging</b>	Dispose of in a safe manner in accordance with local/national regulations.

### 14. Transportation information

<b>UN No.</b>	3082
<b>DOT</b>	<p>Proper shipping name: Environmentally hazardous substances, liquid , n.o.s (tris(1,3-Dichloroisopropyl)phosphate)            Class: 9 - Miscellaneous Hazardous Material            Label: 9            Packing Group: III</p> <p>Not regulated for surface and air transport in non-bulk (&lt;119 gallons) packagings. (contains (tris(1,3-Dichloroisopropyl)phosphate) which is Marine Pollutants per 49CFR 172.101 Appendix B)</p>
<b>IMDG</b>	<p>Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (tris(1,3-Dichloroisopropyl)phosphate)            Class: 9 - Miscellaneous Dangerous Substances and Articles            Label: 9            Packing Group: III            Mark: MARINE POLLUTANT</p>
<b>ICAO/IATA</b>	<p>Proper shipping name: Environmentally hazardous substance, liquid , n.o.s (tris(1,3-Dichloroisopropyl)phosphate)            Class: 9            Hazard label(s): Miscellaneous            Packing group: III            Marking: Environmentally hazardous substance</p>

### 15. Regulatory information

<b>USA</b>	Reported in the EPA TSCA Inventory.
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<b>- SARA 313</b>	This product does not contain a chemical listed at or above de minimis concentrations
<b>- California-Prop 65</b>	WARNING: This product contains chemicals known to the State of California to cause cancer and/or reproductive toxicity: [1,3-Dichloro-2-propanol phosphate (3:1) (CAS# 13674-87-8), 93-97%; 1-chloro-2,3-epoxypropane (CAS No. 106-89-8), <0.2%; 1,2,3-trichloropropane (CAS No. 96-18-4), <0.03%; tetrachloroethylene (CAS No. 127-18-4), <0.02%; 1,2-dichloropropane (CAS No. 78-87-5), <0.002%; and 1,3-Dichloro-2-propanol (1,3-DCP, CAS No. 96-23-1), <0.02%.]
<b>- Waste Classifications</b>	This material does not meet RCRA`s characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40CFR 261.33.
<b>Canada</b>	Listed in DSL
<b>-WHMIS hazard class</b>	D2A Very toxic material causing other toxic effects
<b>EU</b>	Reported in EINECS
<b>Japan</b>	ENCS no. (2)-1914 ISHL no. (2)-1914
<b>Australia</b>	Listed in AICS
<b>New Zealand Inventory</b>	Listed in NZIoC
<b>- China inventory</b>	Listed in IECSC
<b>Mexico</b>	Listed in the National Inventory of Chemical Substances (INSQ).
<b>Korea</b>	Listed in ECL (KE-34801)
<b>Philippines</b>	Listed in PICCS

### 16. Other information

This data sheet contains changes from the previous version in section(s)  
2, 11, 15



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### 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**