SAFETY DATA SHEET


Product name SYN-O-AD 8484
Product id 7063
Revision date 30/11/2011
Supersedes 04/01/2011

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Tricresyl phosphate
Multi constituent substance

Synonym(s)
Tritolyl phosphate; Phosphoric acid, tris (methylphenyl) ester, TCP

Chemical formula
C21H21O4P

REACH Registration No.
The transition time according to REACH Regulation, Article 23 is still not expired

Chemical family
Aryl phosphate

1.2. Relevant identified uses of the substance or mixture and uses advised against
Lubricant
Additive

1.3. Details of the supplier of the Safety Data Sheet
ICL-IP Europe B.V.
P.O.Box 465
1000 AL Amsterdam, Netherlands
Tel: +31 20 800 5 800
Fax:+31 20 800 5 805
e-mail:msdsinfo@icl-ip.com

Emergency telephone number:
- For Europe +32 (0) 3 575 5555 SGS

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification in accordance with Repr.2 H361f: Suspected of damaging fertility
Regulation (EC) No 1272/2008 Aquatic Chronic 1, H410 Very toxic to aquatic life with long lasting effects
[CLP/GHS]

Classification in accordance with Harmful (Xn), R 62: Possible risk of impaired fertility
Directive 67/548/EEC Dangerous for the Environment; (N) R 50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Additional information
None
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2.2. Label elements
Labelling in accordance with the CLP Regulation EC (No) 1272/2008

Signal word: Warning

Hazard statements:
- H361f - Suspected of damaging fertility
- H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements:
- P202 - Do not handle until all safety precautions have been read and understood.
- P273 - Avoid release to the environment
- P281 - Use personal protective equipment as required.
- 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

2.3. Other hazards
None

SECTION 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>
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<tr>
<td>Tricresyl phosphate (mixed isomers) 1330-78-5</td>
<td>&gt; 96.7</td>
<td>215-548-8</td>
<td></td>
<td>Repr. 2 :H361f Aquatic Acute 1, H400 Aquatic Chronic 1, H410 (In accordance with CLP 1272/2008) Xn;R62 N; R50/53 (In accordance with DSD 67/548/EEC)</td>
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### SECTION 4: First aid measures

#### 4.1. Description of 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.

**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.

| **Trixylyl phosphate** 25155-23-1 | **< 3** | **246-677-8** | **Repr. 2 :H361f**  
Aquatic Acute 1, H400  
Aquatic Chronic 1, H410  
(In accordance with CLP 1272/2008)  
Xn;R62  
Xn; R48/20  
N; R50/53  
(In accordance with DSD 67/548/EEC) |
|-----------------------------|--------|---------------|---------------------------------|
| **Tri-ortho-cresyl phosphate** 78-30-8 | **0.001 - 0.03** | **# 015-015-00-8** | **201-103-5**  
STOT SE 1 H370  
Aquatic Chronic 2 H411  
(In accordance with CLP 1272/2008)  
T; R39/23/24/25,  
N;51/53  
(In accordance with DSD 67/548/EEC) |
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Ingestion
If swallowed, wash mouth thoroughly with plenty of water. Get medical attention immediately.
************************************************************************
NOTE: Never give an unconscious person anything to drink.
************************************************************************

4.2. Most important symptoms and effects, both acute and delayed
Suspected of damaging fertility

4.3. Indication of any immediate medical attention and special treatment needed
Treat symptomatically and supportively.

SECTION 5: Fire-fighting measures

5.1. Extinguishing media
Material is not combustible. Use extinguishing media appropriate to surrounding fire conditions.

5.2 Special hazards arising from the substance or mixture
When heated to decomposition, may release poisonous and corrosive fumes of Carbon Monoxide and Phosphorus Oxides.

5.3. Advice for fire-fighters
Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA). Contain runoff to prevent entry into water or drainage systems.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Wear appropriate safety clothing and eye/face protection (see Section 8)

6.2. Environmental precautions
Prevent product from entering drains, ditches and rivers.

6.3. Methods and materials for containment and 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.
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SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid bodily contact.
Keep containers tightly closed.

7.2. Conditions for safe storage, including any incompatibilities
Store in a dry, cool, well-ventilated area, away from incompatible materials (see Section 10). Maximum recommended storage temperature of 65°C (149°F)
Store above 4.4°C (40° F) for improved pumping rates. Temperatures between 27 - 37.8°C (80 - 100°F) provide good flow rates

7.3. Specific end use(s)
No specific requirements

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>Weight %</th>
<th>ACGIH-TLV Data</th>
<th>UK (WEL) - TWA</th>
<th>Netherlands national MAC data</th>
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<td>0.001 - 0.03</td>
<td>Not determined</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

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 gloves
- Eye protection
  Chemical safety goggles
- 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. Wash hands carefully before eating or smoking.
SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance: Clear, colourless to slightly brownish liquid
Odour: Slight
Melting point/range: < -20°C
Boiling point/range: >400°C
Pour point: -25°C (-13 °F)
Vapour pressure: 0.28 kPa (20 °C) 0.37 kPa (25°C)
Flash point: >200°C
Density: 1.172 (20°C)
Solubility:
- Solubility in water: 0.271 mg/L
- Solubility in other solvents: Soluble in common solvents
Partition coefficient: Log Pow = 5.93
(n-octanol/water)
Auto-ignition temperature: Not self-ignitable
Viscosity: 80.0 mPa*sec (20°C) 32.4 mPa*sec (35°C)
Oxidising properties: The structure indicates non oxidizing properties

SECTION 10: Stability and reactivity

10.1 Reactivity: It hydrolyzes slowly at normal temperatures in acidic or alkaline aqueous solutions.
10.2 Chemical stability: Stable under normal conditions
10.3 Possibility of hazardous reactions: Not expected to occur
10.4 Conditions to avoid: Prolonged storage at elevated temperatures
10.5 Incompatible materials: Strong oxidizers, strong acids and strong alkalis.
10.6 Hazardous decomposition products: Carbon dioxide and carbon monoxide, Phosphorus oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:
- Rat oral LD50: 15750 mg/kg
- Rabbit dermal LD50: 3700 mg/kg
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- **Rat inhalation LC50**: >11.1 mg/m³ air

- **Serious eye damage/ irritation**: Not irritant

- **Skin corrosion/irritation**: Not irritant

- **Mutagenicity**: Not mutagenic in several in vitro assays.

- **Carcinogenicity**: Not included in NTP 11th Report on Carcinogens
  Not classified by IARC

**Reproductive toxicity**

In a reproductive toxicity test, male and female rats received daily oral doses of trixyl enyl phosphate for two weeks after which they were mated. Although mating was successful, there was a treatment-related decrease in the pregnancies in the mid and high dose animals. While there were no pregnancies in the high dose animals, when the previously treated animals were maintained without treatment for four weeks and then mated, all the females became pregnant. This antifertility effect is fully reversible.

The ortho isomer of TCP (tricresyl phosphate) has been shown to cause reproductive toxicity in male rats. A metabolite of TOCP (tri ortho-cresyl phosphate) apparently causes a reversible adverse effect on spermatogenesis, which results in decreased male fertility. The meta and para isomers of TCP do not adversely affect the male reproductive system.

**Neurotoxicity**

Trixyl enyl phosphate can cause acute delayed neurotoxicity when administered orally to hens at > 1000 mg/kg.

A single oral dose of 2000 mg/kg of tricresyl phosphate to hens resulted in no effects in neurotoxic esterase activity and no clinical signs of neurotoxicity. Five consecutive daily oral doses of 2000 mg/kg of this product to hens resulted in a slight decrease in neurotoxic esterase activity but no clinical signs of neurotoxicity. In a recently conducted neurotoxicity test, this product did not express neurotoxic activity.

**Specific Target Organ Toxicity (STOT) - Single exposure**

No data available

**Specific Target Organ Toxicity (STOT) - Repeat exposure**

In two-year feeding studies in rats and mice, tricresyl phosphate showed no evidence of carcinogenic activity. The NOELs (no observable effect levels) in rats and mice were 300 ppm and 250 ppm, respectively.
SECTION 12: Ecological information

12.1 Toxicity
Aquatic toxicity:
- 96 Hour-LC50, Fish: 0.6 mg/L
- 48 Hour-EC50, Daphnia magna: 146 ug/L

12.2 Persistence and degradability
Tricresyl phosphate displays a low ready biodegradability.
Tricresyl phosphate is expected to hydrolyse slowly under normal environmental conditions. Therefore, abiotic processes would contribute significantly to the depletion of the substance within the environment. As such, the substance does not fulfill the requirements of Annex XIII, Para 1.1 and cannot be considered a "P" and "vP".

12.3 Bioaccumulative potential
The calculated bioconcentration factor (BCF) is lower than 2000. As such, the substance does not fulfill the requirement of Annex XIII, Para 1.2 and cannot be considered to be "B" or "vB".

12.4 Mobility in soil
The adsorption of the substance to soil has been demonstrated to be high (log Koc 4.31)

12.5 Results of PBT and vPvB assessment
Does not meet the criteria for PBT or vPvB assessment

12.6 Other adverse effects
Germany, water endangering classes (WGK) 2

SECTION 13: Disposal considerations

13.1 Waste treatment methods
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.

SECTION 14: Transport information
SECTION 14: Transport information

ADR/RID
Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (Tricresyl phosphate (less than 1% ortho isomer), trixylenyl phosphate)
Packing group: III
Class: 9 - Miscellaneous Dangerous Substances and Articles
Danger Label Model No.: 9
Hazard identification No: 90
Classification Code: M6
Marking: Environmentally hazardous substance

IMO
Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (Tricresyl phosphate (less than 1% ortho isomer), trixylenyl phosphate)
Class: 9 - Miscellaneous Dangerous Substances and Articles
Label: 9
Packing Group: III
Mark: MARINE POLLUTANT

ICAO/IATA
Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (Tricresyl phosphate (less than 1% ortho isomer), trixylenyl phosphate)
Class: 9
Hazard label(s): Miscellaneous
Packing group: III
Marking: Environmentally hazardous substance

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU
Reported in EINECS

USA
Reported in the EPA TSCA Inventory.

Australia
Listed in AICS

Canada
Listed in DSL

China inventory
Listed in IECSC

Japan
Listed in ENCS

Korea
Listed in ECL
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New Zealand Inventory Listed in NZIoC

Philippines Listed in PICCS

15.2 Chemical Safety Assessment A Chemical Safety Assessment has not yet been carried out under the REACH Regulation.
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SECTION 16: Other information

This data sheet contains changes from the previous version in section(s)
1 (REACH), 2, 3 (not ANSI), 11, 14, 16 (ANSI)

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