Material Safety Data Sheet
Tricresyl phosphate

Section 1 - Chemical Product and Company Identification

**MSDS Name:** Tricresyl phosphate
**Synonyms:** Tricresyl phosphate; Tris(tolyloxy)phosphine oxide; Tritolyl phosphate.

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1330-78-5</td>
<td>Tricresyl phosphate</td>
<td>99</td>
<td>215-548-8</td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

**Emergency Overview**

Appearance: colorless to pale yellow liquid.

**Danger!** Exposure may cause central and peripheral neuropathies with paralysis of muscles. Harmful if swallowed or absorbed through the skin. May cause eye, skin, and respiratory tract irritation. May be harmful if inhaled. Cholinergic (interferes with nerve impulse transmission). Marine pollutant.

**Target Organs:** Nervous system.

**Potential Health Effects**

**Eye:** May cause eye irritation. Causes redness and pain.

**Skin:** May cause skin irritation. If absorbed, causes symptoms similar to those of ingestion.

**Ingestion:** Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause headache. May cause muscle paralysis, respiratory failure, and possible death. Overexposure to this product by ingestion, inhalation, or skin absorption may cause cholinesterase inhibition. Symptoms of cholinesterase inhibition may include: headache, nausea, sweating, numbness and tingling of the hands and feet, salivation, muscle twitching, tremors, incoordination, blurred vision, tears, abdominal cramps, diarrhea, and chest discomfort.

**Inhalation:** May cause respiratory tract irritation. May cause effects similar to those described for ingestion.
Chronic: May cause paralysis. Effects may be delayed. May cause adverse reproductive effects.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water. Wash mouth out with water.

Inhalation: Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Containers may explode in the heat of a fire. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Runoff from fire control or dilution water may cause pollution.

Extinguishing Media: For small fires, use dry chemical, carbon dioxide, or water spray. For large fires, use water spray, fog or regular foam.

Flash Point: 210 deg C (410.00 deg F)

Autoignition Temperature: > 500 deg C (> 932.00 deg F)

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 3; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.
Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Avoid ingestion and inhalation. Use only in a chemical fume hood.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
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</thead>
<tbody>
<tr>
<td>Tricresyl phosphate</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
<tr>
<td>Triorthocresyl phosphate</td>
<td>0.1 mg/m3 TWA;</td>
<td>0.1 mg/m3 TWA 40</td>
<td>0.1 mg/m3 TWA</td>
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<tr>
<td></td>
<td>Skin - potential</td>
<td>mg/m3 IDLH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>significant</td>
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<td></td>
<td>contribution to</td>
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<tr>
<td></td>
<td>overall exposure</td>
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<tr>
<td></td>
<td>by the cutaneous</td>
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<td></td>
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<tr>
<td></td>
<td>route</td>
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</tr>
</tbody>
</table>

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: colorless to pale yellow

Odor: odorless

pH: Not available.

Vapor Pressure: Negligible

Vapor Density: 12.70

Evaporation Rate: Not available.

Viscosity: 34 cps @ 37.8 deg C

Boiling Point: 410 deg C

Freezing/Melting Point: -30 deg C

Decomposition Temperature: 530 deg C

Solubility: insoluble
**Specific Gravity/Density:** 1.1600 g/ml
**Molecular Formula:** C21H21O4P
**Molecular Weight:** 368.36

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.
**Conditions to Avoid:** Excess heat.
**Incompatibilities with Other Materials:** Strong oxidizing agents.
**Hazardous Decomposition Products:** Carbon monoxide, oxides of phosphorus, carbon dioxide.
**Hazardous Polymerization:** Will not occur.

### Section 11 - Toxicological Information

**RTECS#:**
**CAS# 1330-78-5: TD0175000**
**CAS# 78-30-8: TD0350000**

**LD50/LC50:**
**CAS# 1330-78-5:**
- Draize test, rabbit, eye: 500 mg/24H Mild;
- Oral, mouse: LD50 = 3900 mg/kg;
- Oral, rat: LD50 = 3 gm/kg;

**CAS# 78-30-8:**
- Oral, mouse: LD50 = 900 mg/kg;
- Oral, rat: LD50 = 1160 mg/kg;
- Skin, rabbit: LD50 = >3700 mg/kg;

**Carcinogenicity:**
**CAS# 1330-78-5:** Not listed by ACGIH, IARC, NTP, or CA Prop 65.
**CAS# 78-30-8:** Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found
**Teratogenicity:** No information found

**Reproductive Effects:** Adverse reproductive effects have occurred in experimental animals. Tritolyl phosphate (specifically the ortho-tolyl form) produced testicular toxicity in roosters and testicular and perhaps epididymal toxicity in rats.

**Mutagenicity:** No information found

**Neurotoxicity:** Signs of TOCP intoxication include peripheral paresthesias, ataxia, spasticity, & flaccid paralysis. TOCP may be absorbed through intact human skin & the GI tract. It is estimated that the minimum paralytic dose in humans by ingestion is 10-30 mg/kg.

**Other Studies:**
Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

Section 14 - Transport Information

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<tr>
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<td><strong>UN Number:</strong></td>
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<td><strong>Packing Group:</strong></td>
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</table>

Section 15 - Regulatory Information

**Hazard Symbols:**

- T
- N

**Risk Phrases:**

- R 39/23/24/25 Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
- R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety Phrases:**

- S 20/21 When using do not eat, drink or smoke.
- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S 28A After contact with skin, wash immediately with plenty of water.
- S 61 Avoid release to the environment. Refer to special instructions.
Section 16 - Additional Information

**MSDS Creation Date:** 9/02/1997  
**Revision #7 Date:** 10/20/2004  

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall INDO GULF GROUP be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if INDO GULF GROUP has been advised of the possibility of such damages.