

TRICRESYL PHOSPHATE (>= 1% ORTHO ISOMER)

TCO

CAUTIONARY RESPONSE INFORMATION

Common Synonyms o-Cresylphosphate Phosphoric acid, tris(2-methylphenyl) ester o-Tolylphosphate phosphoric acid Tri-o-cresyl ester	Liquid Colorless Odorless Sinks in water.
Keep people away. Avoid contact with liquid or vapor. Wear positive pressure breathing apparatus and special chemical protective clothing. Call fire department. Notify local health and pollution control agencies. Protect water intakes.	
Fire	Combustible POISONOUS GASES ARE PRODUCED IN FIRE. Wear positive pressure breathing apparatus and special chemical protective clothing. Extinguish with dry chemical, carbon dioxide, water spray, fog or foam. (Water or foam may cause frothing.) Cool exposed containers with water.
Exposure	CALL FOR MEDICAL AID VAPOR OR LIQUID Poisonous. May be fatal if inhaled, swallowed or absorbed through skin. Exposure causes nausea, vomiting, diarrhea and abdominal pain. Delayed effects begin in 1-3 weeks after initial effects. VAPOR Move to fresh air. If in eyes, hold eyelids open and flush with running water for 15 minutes. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Remove contaminated clothing and shoes and isolate. If in eyes, flush with running water for at least 15 minutes; lift upper and lower eyelids occasionally. IF ON SKIN, wash with soap and mild detergent and flush with running water for at least 15 minutes. IF SWALLOWED and victim is conscious, have victim drink water and induce vomiting by touching back of throat with finger. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim quiet and maintain body temperature.
Water Pollution	Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Contain
Collection Systems: Pump

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 34; Esters
2.2 Formula: (CH₃C₆H₄O)₃PO
2.3 IMO/IUN Designation: 6.1/2574
2.4 DOT ID No.: 2574
2.5 CAS Registry No.: 78-30-8
2.6 NAERG Guide No.: 151
2.7 Standard Industrial Trade Classification: 51631

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Wear positive pressure breathing apparatus and special chemical protective clothing.
- 3.2 **Symptoms Following Exposure:** Transient gastro-intestinal upset accompanied by nausea, vomiting, diarrhea and abdominal pain, in 1-3 weeks after initial symptoms, soreness of the lower leg muscles and numbness of toes and fingers occur. Later weakness of the toes and bilateral wrist drop develop. Eyes: Contact may cause burns.
- 3.3 **Treatment of Exposure:** INHALATION: Get medical attention immediately. Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. EYES: In case of contact with material, immediately flush eyes with running water for at least 15 minutes, lifting the upper and lower eyelids occasionally. SKIN: Immediately wash contaminated skin with soap or mild detergent; continue to flush with running water for at least 15 minutes. Speed in removing material from the skin is of extreme importance. Remove and isolate contaminated clothing and shoes at the site. Keep victim quiet and maintain normal body temperature. Effects may be delayed; keep victim under observation. INGESTION: If CONSCIOUS, give large quantities of water and induce vomiting by having the victim touch the back of his throat. If UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep the victim quiet and maintain normal body temperature.
- 3.4 **TLV-TWA:** 0.1 mg/m³ (skin)
- 3.5 **TLV-STEL:** Not listed.
- 3.6 **TLV-Ceiling:** Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 2; LD₅₀ = 3.0 g/kg (rat)
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** Delayed neurotoxin. After a symptom-free period of 3 to 28 days following initial effects, paralysis, especially of the lower arms and legs, may develop. Recovery may take months or years; permanent residual effects occur in 25 to 30% of the cases.
- 3.10 **Vapor (Gas) Irritant Characteristics:** Readily absorbed through the skin without local irritant effects. Not known to be an eye irritant.
- 3.11 **Liquid or Solid Characteristics:** Readily absorbed through the skin without local irritant effects. SKIN: TLV, 0.1 mg/m³; STEL: 0.3 mg/m³
- 3.12 **Odor Threshold:** Odorless
- 3.13 **IDLH Value:** 40 mg/m³ (skin)
- 3.14 **OSHA PEL-TWA:** 0.1 mg/m³
- 3.15 **OSHA PEL-STEL:** Not listed.
- 3.16 **OSHA PEL-Ceiling:** Not listed.
- 3.17 **EPA AEGL:** Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:** 437°F C.C.
- 4.2 **Flammable Limits in Air:** Currently not available
- 4.3 **Fire Extinguishing Agents:** Small fires: Dry chemical, CO₂, water spray or foam. Large fires: Water spray, fog or foam (water or foam may cause frothing.)
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent.
- 4.5 **Special Hazards of Combustion Products:** Contain highly toxic POx fumes.
- 4.6 **Behavior in Fire:** Can react with oxidizing materials. Produces poisonous gases upon combustion.
- 4.7 **Auto Ignition Temperature:** 725°F
- 4.8 **Electrical Hazards:** Not pertinent
- 4.9 **Burning Rate:** Currently not available
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** 123.8 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 32.0 (calc.)
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
- 5.2 **Reactivity with Common Materials:** Will attack some forms of plastics, rubber and coatings.
- 5.3 **Stability During Transport:** Stable
- 5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
- 5.5 **Polymerization:** Not pertinent
- 5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** Currently not available
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** Currently not available
- 6.4 **Food Chain Concentration Potential:** Currently not available
- 6.5 **GESAMP Hazard Profile:**
Bioaccumulation: +
Damage to living resources: 3
Human Oral hazard: 1
Human Contact hazard: II
Reduction of amenities: XX

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Currently not available
- 7.2 **Storage Temperature:** Currently not available
- 7.3 **Inert Atmosphere:** Currently not available
- 7.4 **Venting:** Pressure vacuum
- 7.5 **IMO Pollution Category:** A
- 7.6 **Ship Type:** 2
- 7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Poison
- 8.2 **49 CFR Class:** 6.1
- 8.3 **49 CFR Package Group:** II
- 8.4 **Marine Pollutant:** Yes
- 8.5 **NFPA Hazard Classification:**
- | Category | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | 2 |
| Flammability (Red)..... | 1 |
| Instability (Yellow)..... | 0 |
- 8.6 **EPA Reportable Quantity:** Not listed.
- 8.7 **EPA Pollution Category:** Not listed.
- 8.8 **RCRA Waste Number:** Not listed
- 8.9 **EPA FWPCA List:** Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
- 9.2 **Molecular Weight:** 368.37
- 9.3 **Boiling Point at 1 atm:** 770°F = 410°C = 683.2°K
- 9.4 **Freezing Point:** -27°F = -33°C = 240.2°K
- 9.5 **Critical Temperature:** Currently not available
- 9.6 **Critical Pressure:** Currently not available
- 9.7 **Specific Gravity:** 1.162 at 25°C
- 9.8 **Liquid Surface Tension:** Currently not available
- 9.9 **Liquid Water Interfacial Tension:** Currently not available
- 9.10 **Vapor (Gas) Specific Gravity:** 12.7
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
- 9.12 **Latent Heat of Vaporization:** Not pertinent
- 9.13 **Heat of Combustion:** Currently not available
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** Not pertinent
- 9.16 **Heat of Polymerization:** Not pertinent
- 9.17 **Heat of Fusion:** Currently not available
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
77	72.300		C U R R E N T L Y N O T A V A I L A B L E		C U R R E N T L Y N O T A V A I L A B L E		C U R R E N T L Y N O T A V A I L A B L E

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	I N S O L U B L E		N O T P E R T I N E N T		N O T P E R T I N E N T		C U R R E N T L Y N O T A V A I L A B L E