

Yangzhou Sunchem Co.,Ltd.

Material Safety Data Sheet

Tricresyl Phosphate (TCP)

1. Product Identification

Synonyms: Tritolyl Phosphate; Phosphoric Acid Tris(Methylphenyl)Ester; TCP

CAS No.: 1330-78-5

Molecular Weight: 368.37

Chemical Formula: (CH₃C₆H₄O)₃PO

Product Codes: W601

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Phosphoric Acid, tris(methylphenyl)ester	1330-78-5	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE CENTRAL AND PERIPHERAL NERVOUS SYSTEMS.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate (Life)

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

Potential Health Effects

Tricresyl Phosphate (TCP) exists in three isomeric forms: ortho, meta, and para. The commercial product is a mixture of the three forms with as little of the highly toxic ortho-isomer (TOCP) as possible. The meta- and para-isomers are relatively inactive. The human lethal oral dose of TOCP is about 1 g/kg; doses

of 6 to 7 mg/kg

have produced serious paralysis.

Inhalation:

Since TCP has low volatility, vapor inhalation is unlikely at normal temperatures; however, it may be a hazard if boiled. Mist or vapor can cause irritation to respiratory tract. May be absorbed into the bloodstream with symptoms similar to ingestion.

Ingestion:

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. Breathing or swallowing large quantities may cause neurological disturbances which may progress to delayed neurotoxicity characterized by ataxia and tremors.

Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain. May be absorbed through the skin without local irritant effects; symptoms similar to ingestion.

Eye Contact:

Causes irritation, redness, and pain. Rapid eye oscillation with dizziness may occur.

Chronic Exposure:

Repeated exposure may cause symptoms similar to those listed for acute effects. TCP inhibits cholinesterase.

Neurologic damage can be severe and permanent.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

Skin Contact:

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

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally.

Get medical attention immediately.

Note to Physician:

Consider gastric lavage if patients are comatose or at risk of convulsing. Since

prolonged diarrhea may occur, avoid cathartic administration. Avoid administration of atropine and 2-PAM chloride (protopam) since these agents are ineffective. Chronic poisoning: treat for polyneuritis. Experimental cholinesterase reactivators used for therapeutic use in TCP poisoning show encouraging results. Observe all exposures for delayed peripheral neuropathies, particularly the axonal type.

5. Fire Fighting Measures

Fire:

Flash point: 410C (770F) CC

Fire Hazard when exposed to heat or flame. However, the high flash point reduces its fire hazard, and it tends to stop burning when the ignition source is removed.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Dry chemical, foam or carbon dioxide. Water may be ineffective. Water spray may be used to keep fire exposed containers cool. Do not allow water runoff to enter sewers or waterways.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

7. Handling and Storage

Keep in a tightly closed galvanized steel container, stored in a cool, dry, ventilated area away from direct sunlight and open flames. Protect against physical damage. Isolate from any source of heat or ignition.

Containers should be effectively sealed and clearly marked. Tricresyl phosphates should not be used in plastic articles which are likely to come into contact with foodstuffs or clothing. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

For Tricresyl Phosphate (TCP):

- None Established

For Triorthocresyl Phosphate (TOCP):

- OSHA Permissible Exposure Limit (PEL) -

0.1 mg/m³ (TWA).

- ACGIH Threshold Limit Value (TLV) -

0.1 mg/m³ (TWA) skin, A4 - not classifiable as a human carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Colorless to pale yellow, oily liquid.

Odor:

Odorless.

Solubility:

Insoluble in water.

Specific Gravity:

1.16-1.175 @ 20C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

241 - 255C (466 - 491F) At 4 mm Hg.

Melting Point:

< -40C (< -40F)

Vapor Density (Air=1):

12.7

Vapor Pressure (mm Hg):

Not applicable.

Evaporation Rate (BuAc=1):

Not applicable.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Hydrolyzes slowly at room temperature under wet alkaline conditions.

Hazardous Decomposition Products:

Phosphorus oxides may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Tricresyl phosphate can react with oxidizing materials, especially when heated. TCP is inert to common metals.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

For Tricresyl Phosphate (TCP): 3 gm/kg oral rat LD50; irritation data - skin mild (open Draize, 500 mg, rabbit), and eye mild (std Draize, 500 mg/24H, rabbit). Investigated as a tumorigen and a reproductive effector.

-----\Cancer Lists\-----

Ingredient	Known	Anticipated	IARC Category
Phosphoric Acid, tris (methylphenyl) ester (1330-78-5)	No	No	None

12. Ecological Information

Environmental Fate:

When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is not expected to leach into groundwater. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals.

Environmental Toxicity:

This material is expected to be very toxic to aquatic life. The LC50/96-hour values for fish are less than 1 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options.

State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

(CONTAINS TRICRESYL PHOSPHATE WITH **Hazard Class:** 9

UN/NA: UN3082

Packing Group: III

Information reported for product/size: 4L

International (Water, I.M.O.)

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

(CONTAINS TRICRESYL PHOSPHATE WITH **Hazard Class:** 9

UN/NA: UN3082

Packing Group: III

Information reported for product/size: 4L

International (Air, I.C.A.O.)

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

(CONTAINS TRICRESYL PHOSPHATE WITH **Hazard Class:** 9

UN/NA: UN3082

Packing Group: III

Information reported for product/size: 4L

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----
Ingredient TSCA EC Japan Australia

Phosphoric Acid, tris(methylphenyl)ester Yes Yes Yes Yes

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-----\Chemical Inventory Status - Part 2\-----
Ingredient Korea DSL NDSL Phil.

Phosphoric Acid, tris(methylphenyl)ester Yes Yes No Yes

(1330-78-5)

-----\Federal, State & International Regulations - Part 1\-----
Ingredient RQ TPQ List Chemical Catg.

Phosphoric Acid, tris(methylphenyl)ester No No No No

-----\Federal, State & International Regulations - Part 2\-----
Ingredient CERCLA -RCRA- -TSCA
261.33 8(d)

Phosphoric Acid, No No No
tris(methylphenyl)ester (1330-78-5)

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Liquid)

16. Other Information

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.