



TCI AMERICA

SAFETY DATA SHEET

Revision number: 2
Revision date: 10/06/2014

1. IDENTIFICATION

Product name: Tris(2-ethylhexyl) Phosphate
Product code: P1022

Product use: For laboratory research purposes.
Restrictions on use: Not for drug or household use.

Company:
TCI America
9211 N. Harborside Street
Portland, OR 97203 U.S.A.
Telephone:
+1-800-423-8616 / +1-503-283-1681
Fax:
+1-888-520-1075 / +1-503-283-1987
e-mail:
sales-US@TCIchemicals.com
www.TCIchemicals.com

Emergency telephone number:
Chemical Emergencies:
TCI America (8:00am - 5:00pm) PST
+1-503-286-7624
Transportation Emergencies:
Chemtrec 24-Hour
+1-800-424-9300 (U.S.A.)
+1-703-527-3887 (International)
Responsible department:
TCI America
Environmental Health Safety and Security
+1- 503-286-7624

2. HAZARD(S) IDENTIFICATION

OSHA Haz Com: CFR 1910.1200: Skin Corrosion/Irritation [Category 2]
Eye Damage/Irritation [Category 2A]

Signal word: Warning!

Hazard Statement(s): Causes serious eye irritation
Causes skin irritation

Pictogram(s) or Symbol(s):



Precautionary Statement(s):

[Prevention]
[Response]

Wash hands and face thoroughly after handling. Wear protective gloves. Wear eye and face protection.
If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

[Storage]
[Disposal]

None
None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture: Substance
Components: Tris(2-ethylhexyl) Phosphate
Percent: >98.0%(GC)
CAS Number: 78-42-2
Molecular Weight: 434.64
Chemical Formula: C₂₄H₅₁O₄P
Synonyms: Phosphoric Acid Trioctyl Ester , Phosphoric Acid Tris(2-ethylhexyl) Ester , Trioctyl Phosphate

4. FIRST-AID MEASURES

Inhalation:	Call a poison center or doctor if you feel unwell. Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
Skin contact:	If skin irritation occurs get medical advice/attention. Remove and wash contaminated clothing before re-use. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
Eye contact:	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Contact with material may irritate or burn eyes. Call emergency medical service. Move victim to fresh air. Check for and remove any contact lenses. Keep victim warm and quiet. Treat symptomatically and supportively. Effects of exposure to substance may be delayed. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
Ingestion:	Do not induce vomiting with out medical advice. If swallowed, seek medical advice immediately and show the container or label. Do not use mouth-to-mouth method if victim ingested the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Loosen tight clothing such as a collar, tie, belt or waistband. If a person vomits place them in the recovery position so that vomit will not reenter the mouth and throat. Rinse mouth. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Symptoms/effects:

Acute:	Redness.
Delayed:	No data available

Immediate medical attention:	If breathing has stopped, perform artificial respiration. Use first aid treatment according to the nature of the injury. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
-------------------------------------	--

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:	Dry chemical, CO ₂ , sand, earth, water spray or regular foam Consult with local fire authorities before attempting large scale fire fighting operations.
--------------------------------------	--

Specific hazards arising from the chemical

Hazardous combustion products:	These products include: Carbon oxides Phosphates
Other specific hazards:	Closed containers may explode from heat of a fire.

Special precautions for fire-fighters:

Use water spray or fog; do not use straight streams. Dike fire-control water for later disposal; do not scatter the material. Containers may explode when heated. Move containers from fire area if you can do it without risk.

Special protective equipment for fire-fighters:

Wear positive pressure self-contained breathing apparatus (SCBA). Structural fire fighters' protective clothing provides limited protection in fire situations ONLY; it may not be effective in spill situations. Wear chemical protective clothing which is specifically recommended by the manufacturer. It may provide little or no thermal protection.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:	Avoid contact with skin, eyes, and clothing. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (Section 8). Warn unnecessary personnel to move away. Stop leak if you can do it without risk. Ensure adequate ventilation. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.
Personal protective equipment:	Wear eye protection (splash goggles) and face protection (full length face shield). Lab coat. Vapor respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Wear protective gloves (nitrile).
Emergency procedures:	In case of a spill and/or a leak, always shut off any sources of ignition, ventilate the area, and exercise caution. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Warn personnel to move away. Prevent entry into sewers, basements or confined areas; dike if needed.

Methods and materials for containment and cleaning up:

ELIMINATE all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if without risk. Ventilate the area. Absorb with an inert material and put the spilled material in an appropriate waste disposal container. Use clean non-sparking tools to collect absorbed material.

Environmental precautions:

Prevent further leakage or spillage if safe to do so. Water runoff can cause environmental damage. Prevent entry into sewers, basements or confined areas; dike if needed.

7. HANDLING AND STORAGE

Precautions for safe handling:	Do NOT breath gas, fumes, vapor, or spray. Avoid contact with skin and eyes. Good general ventilation should be sufficient to control airborne levels. Keep container dry. Handle and open container with care. Wear suitable protective clothing, gloves and eye/face protection. When using do not eat, drink, or smoke. Keep away from sources of ignition.
Conditions for safe storage:	Keep only in the original container in a cool well-ventilated place. Keep away from incompatibles. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Avoid prolonged storage periods.
Storage incompatibilities:	Combustible substances, Store away from oxidizing agents

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits: No data available

Appropriate engineering controls:

Good general ventilation should be sufficient to control airborne levels. Ventilation is normally required when handling or using this product. Eyewash fountains should be provided in areas where there is any possibility that workers could be exposed to the substance. Follow safe industrial engineering/laboratory practices when handling any chemical.

Personal protective equipment

Respiratory protection:	Vapor respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Hand protection:	Nitrile gloves.
Eye protection:	Wear eye protection (splash goggles) and face protection (full length face shield).
Skin and body protection:	Lab coat.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state (20°C):	Liquid		
Form:	Clear		
Color:	Colorless - Almost colorless		
Odor:	Odorless		
Odor threshold:	No data available		
Melting point/freezing point:	No data available	pH:	No data available
Boiling point/range:	215°C (419°F)/0.5kPa	Vapor pressure:	1.1x10 ⁻⁵ Pa /25°C
Decomposition temperature:	No data available	Vapor density:	15
Relative density:	0.93	Dynamic Viscosity:	No data available
Kinematic Viscosity:	No data available		
Partition coefficient: n-octanol/water (log P_{ow})	4.23	Evaporation rate: (Butyl Acetate = 1)	No data available
Flash point:	204°C (399°F)	Autoignition temperature:	370°C (698°F)
Flammability (solid, gas):	No data available	Flammability or explosive limits:	
		Lower:	No data available
		Upper:	No data available
Solubility(ies):			
Water:	Insoluble (0.6mg/L, 24°C)		
Soluble:	Ether, Alcohols, Acetone		

10. STABILITY AND REACTIVITY

Reactivity:	Not Available.
Chemical Stability:	Stable under recommended storage conditions. (See Section 7)
Possibility of Hazardous Reactions:	No hazardous reactivity has been reported.
Conditions to avoid:	Avoid excessive heat and light.
Incompatible materials:	Oxidizing agents
Hazardous Decomposition Products:	No data available

11. TOXICOLOGICAL INFORMATION

RTECS Number: MP0770000

Acute Toxicity:ihl-gpg LC50:450 mg/m³/30M

orl-mus LD50:12800 mg/kg

orl-rat LD50:37 g/kg

skn-rbt LD50:20 g/kg

Skin corrosion/irritation:

skn-rbt 250 mg MOD

Serious eye damage/irritation:

eye-rbt 500 mg MLD

Respiratory or skin sensitization:

No data available

Germ cell mutagenicity:

mtr-mus-fbr 0.1 mg/L/21D (-S9)

Carcinogenicity:

orl-mus TDLo:257.5 g/kg/103W-I

orl-rat TDLo:1030 g/kg/103W-I

*Toxic Effects:**Toxic Effects:*

Tumorigenic - Neoplastic by RTECS criteria.

Tumorigenic - Carcinogenic by RTECS criteria.

Endocrine - adrenal cortex tumors.

Liver - tumors.

Toxic Effects:

Tumorigenic - Neoplastic by RTECS criteria.

Endocrine - thyroid tumors.

IARC: No data available**NTP:** No data available**OSHA:** No data available**Reproductive toxicity:**

No data available

Routes of Exposure:

Inhalation, Eye contact, Ingestion, Skin contact.

Symptoms related to exposure:

Skin contact may result in inflammation; characterized by itching, scaling, reddening, or occasionally blistering. Skin contact may result in redness, pain or dry skin. Eye contact may result in redness or pain.

Potential Health Effects:

Skin and eye contact may result in irritation.

Target organ(s):

No data available

12. ECOLOGICAL INFORMATION**Ecotoxicity****Fish:**

48h LC50:>500 ppm (Oryzias latipes)

96h LC50:>40 mg/L (Oryzias latipes)

Crustacea:

48h EC50:>40 mg/L (Daphnia magna)

Algae:

72h EC50:>40 mg/L (Selenastrum capricornutum)

Persistence and degradability:

0% (by BOD), 7% (by GC)

Bioaccumulative potential (BCF):

2.4 - 6.5 (conc. 2 ppm), 9.2 - 22 (conc. 0.2 ppm)

Mobility in soil:

No data available

Partition coefficient:

4.23

n-octanol/water (log P_{ow})**Soil adsorption (K_{oc}):**3.5 x 10⁶**Henry's Law:**8.0 x 10⁻³**constant (PaM³/mol)****Other adverse effects:**

Environmental Fate/Exposure Summary: Trioctyl phosphate's production and use as a hydrogen peroxide production cosolvent and as a low-temperature plasticizer for PVC resins may result in its release to the environment. If released to the atmosphere, trioctyl phosphate is expected to exist almost entirely in the particulate phase in the ambient atmosphere based on a measured vapor pressure of 8.2X10⁻⁸ mm Hg at 25 deg C. Particulate-phase trioctyl phosphate may be physically removed from the atmosphere by wet or dry deposition. If released to soil, an estimated K_{oc} of 3.5X10⁺⁶ suggests that trioctyl phosphate is expected to be immobile. Volatilization from wet and dry soil surfaces is not expected to occur based on an estimated Henry's Law constant of 7.9X10⁻⁸ atm-cu m/mole at 25 deg C and the measured vapor pressure, respectively. The biodegradation of trioctyl phosphate in water suggests that biodegradation in soil may be important. If released into water, the estimated K_{oc} for trioctyl phosphate suggests that this compound will adsorb strongly to suspended solids and sediment in the water column. Bioconcentration in aquatic organisms is expected to be low based on measured BCF values ranging from 2.4 to 22 in carp. Volatilization from water surfaces is not expected to be an important fate process given this compound's Henry's Law constant. Trioctyl phosphate biodegrades in river water with a rate of 26 to 75% over 30 days. Occupational exposure may occur through inhalation of dust particles and dermal contact with trioctyl phosphate at workplaces where it is produced or used. The general population may be exposed to trioctyl phosphate via inhalation of ambient air and ingestion of contaminated food and drinking water.

13. DISPOSAL CONSIDERATIONS

Disposal of product:	Recycle to process if possible. It is the generator's responsibility to comply with Federal, State and Local rules and regulations. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. This section is intended to provide assistance but does not replace these laws, nor does compliance in accordance with this section ensure regulatory compliance according to the law. US EPA guidelines for Identification and Listing of Hazardous Waste are listed in 40 CFR Parts 261. The product should not be allowed to enter the environment, drains, water ways, or the soil.
Disposal of container:	Dispose of as unused product. Do not re-use empty containers.
Other considerations:	Observe all federal, state and local regulations when disposing of the substance.

14. TRANSPORT INFORMATION

DOT (US)	Non-hazardous for transportation.
IATA	Non-hazardous for transportation.
IMDG	Non-hazardous for transportation.

15. REGULATORY INFORMATION**Toxic Substance Control Act (TSCA 8b.):**

This product is ON the EPA Toxic Substances Control Act (TSCA) inventory.

US Federal Regulations**CERCLA Hazardous substance and Reportable Quantity:**

SARA 313:	Not Listed
SARA 302:	Not Listed

State Regulations**State Right-to-Know**

Massachusetts	Not Listed
New Jersey	Not Listed
Pennsylvania	Not Listed
California Proposition 65:	Not Listed

Other Information**NFPA Rating:**

Health:	3
Flammability:	1
Instability:	0

HMIS Classification:

Health:	3
Flammability:	1
Physical:	0

International Inventories

WHMIS hazard class:	D2B: Materials causing other toxic effects. (Toxic)
Canada: DSL	On DSL
EC-No:	201-116-6

16. OTHER INFORMATION

Revision date: 10/06/2014
Revision number: 2

16. OTHER INFORMATION

TCI chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its affiliates or subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our SDS are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated SDS for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, face mask, fume hood). For proper handling and disposal, always comply with federal, state and local regulations.