

# Material Safety Data Sheet

## Tri-n-butyl phosphate

ACC# 01643

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Tri-n-butyl phosphate**Catalog Numbers:** AC169930000, AC169930010, AC169930025, AC169930050, AC169932500, AC220240000, AC220240010, AC220240050, AC220242500, B404-4, B404-500**Synonyms:** TBP; Phosphoric acid, tributyl ester; n-Butyl phosphate; Tributyl phosphate.**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100**Emergency Number:** 201-796-7100**For CHEMTREC assistance, call:** 800-424-9300**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
126-73-8	Tributyl phosphate	>99	204-800-2

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: clear colorless to pale yellow liquid.

**Warning!** Causes eye and skin irritation. Inhalation of a mist of this material may cause irritation of the lungs. May be harmful if swallowed. Cholinergic (interferes with nerve impulse transmission). Weak cholinesterase inhibitor. Initial symptoms of cholinesterase inhibition may include salivation, sweating, headache, nausea, muscle twitching, tremors, incoordination, blurred vision, tears, abdominal cramps, diarrhea, & chest discomfort.

**Target Organs:** Respiratory system, eyes, nervous system, skin.**Potential Health Effects****Eye:** Causes eye irritation.**Skin:** Causes skin irritation. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts. Tributyl phosphate was non-sensitizing after dermal application in guinea pigs.**Ingestion:** May be harmful if swallowed.**Inhalation:** Inhalation of a mist of this material may cause respiratory tract irritation. Material has a very low vapor pressure at room temperature, so inhalation exposures are not expected unless material is heated or misted. Workers exposed at 15 mg/m<sup>3</sup> of TBP have complained of nausea and headache.**Chronic:** Prolonged or repeated skin contact may cause dermatitis. Repeated oral administration of TBP has caused pathological changes in the rat bladder

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

**Skin:** In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.

**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**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. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** 146-165 deg C

**Autoignition Temperature:** > 482 deg C (> 899.60 deg F)

**Explosion Limits, Lower:** None found.

**Upper:** None found.

**NFPA Rating:** (estimated) Health: 2; 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. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid breathing vapors from heated material. Avoid contact with eyes, skin, and clothing. Avoid breathing spray or mist. Temperatures from 80-100 °F (27-37.8 °C) provide good rates of flow.

**Storage:** Store in a cool, dry place. Keep from contact with oxidizing materials. Keep containers tightly closed.

## 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

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Tributyl phosphate	0.2 ppm TWA	0.2 ppm TWA; 2.5 mg/m <sup>3</sup> TWA 30 ppm	5 mg/m <sup>3</sup> TWA

IDLH

**OSHA Vacated PELs:** Tributyl phosphate: 0.2 ppm TWA; 2.5 mg/m<sup>3</sup> TWA

**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.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** clear colorless to pale yellow

**Odor:** odorless

**pH:** Not available.

**Vapor Pressure:** 0.00012 mm Hg @ 25 deg C.

**Vapor Density:** 9.12 (air=1)

**Evaporation Rate:** Negligible.

**Viscosity:** 3.39 cps @ 25 deg C

**Boiling Point:** 289 deg C

**Freezing/Melting Point:** < -80 deg C

**Decomposition Temperature:** 289 deg C

**Solubility:** Slightly soluble in water.

**Specific Gravity/Density:** .9790

**Molecular Formula:** C<sub>12</sub>H<sub>27</sub>O<sub>4</sub>P

**Molecular Weight:** 266.32

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures. Decomposes when heated forming phosphoric acid and butene, or on contact with warm water forming phosphoric acid and butanol.

**Conditions to Avoid:** Moisture, excess heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents, alkalis.

**Hazardous Decomposition Products:** Carbon monoxide, oxides of phosphorus, carbon dioxide, n-butanol, phosphoric acid.

**Hazardous Polymerization:** Will not occur.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS# 126-73-8:** TC7700000

**LD50/LC50:**

CAS# 126-73-8:

Draize test, rabbit, eye: 500 mg Severe;

Inhalation, mouse: LC50 = 1300 mg/m<sup>3</sup>;

Inhalation, rat: LC50 = 28 gm/m<sup>3</sup>/1H;

Oral, mouse: LD50 = 1189 mg/kg;

Oral, rat: LD50 = 3 gm/kg;

Skin, rabbit: LD50 = >3100 mg/kg;

**Carcinogenicity:**

CAS# 126-73-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information available.

**Teratogenicity:** No information available.

**Reproductive Effects:** No information available.

**Mutagenicity:** No information available.

**Neurotoxicity:** No information available.

**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** Fish: Rainbow trout: LC50 = 5.0-9.0 mg/L; 96 Hr.; Unspecified Fish: Carp: LC50 = 5.0-9.0 mg/L; 96 Hr.; Unspecified No data available.

**Environmental:** TERRESTRIAL FATE: If applied to soil, tributyl phosphate would be expected to adsorb to soil and biodegrade. Tributyl phosphate applied to land as sludge, tilled and irrigated with wastewater was completely degraded. AQUATIC FATE: If released in water, tributyl phosphate will adsorb to sediment and particulate matter in the water column and biodegrade. In a study of contamination of the lower Weser River, Germany it was found that in the high water periods in the cold months (flow rate >400 cu m/s, avg temp 6.9 deg C).

**Physical:** ATMOSPHERIC FATE: In the atmosphere, tributyl phosphate should exist primarily as a vapor, based upon the vapor pressure of  $1.2 \times 10^{-4}$  mm Hg at 25 deg C and degrade due to reaction with photochemically-produced hydroxyl radicals. Its estimated half-life with hydroxyl radical is 4.9 hr. Tributyl phosphate partitions into fog water in the atmosphere to an extent which is ten times greater than that predicted from the Henry's Law constant. The aqueous-phase enrichment is 1.6 million as determined from the concns in fog water and interstitial air.

**Other:** According to a suggested classification scheme, this estimated Koc suggests that tributyl phosphate would have low mobility in soil. The partition coefficient between marine sediment and water is 3.5.

## 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

	US DOT	Canada TDG
<b>Shipping Name:</b>	Not regulated	Not Regulated
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

## Section 15 - Regulatory Information

### US FEDERAL

**TSCA**

CAS# 126-73-8 is listed on the TSCA inventory.

**Health & Safety Reporting List**

CAS# 126-73-8: Effective 6/18/86, Sunset 6/18/96

**Chemical Test Rules**

CAS# 126-73-8: 40 CFR 799.4360

**Section 12b**

None of the chemicals are listed under TSCA Section 12b.

**TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

**CERCLA Hazardous Substances and corresponding RQs**

None of the chemicals in this material have an RQ.

**SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 126-73-8: immediate, delayed.

**Section 313** No chemicals are reportable under Section 313.

**Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

CAS# 126-73-8 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

**California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations****European Labeling in Accordance with EC Directives****Hazard Symbols:**

XN

**Risk Phrases:**

R 22 Harmful if swallowed.

R 38 Irritating to skin.

R 40 Limited evidence of a carcinogenic effect.

**Safety Phrases:**

S 36/37 Wear suitable protective clothing and gloves.

S 46 If swallowed, seek medical advice immediately and show this container or label.

**WGK (Water Danger/Protection)**

CAS# 126-73-8: 2

**Canada - DSL/NDSL**

CAS# 126-73-8 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

CAS# 126-73-8 is listed on the Canadian Ingredient Disclosure List.

## Section 16 - Additional Information

**MSDS Creation Date:** 6/17/1999

**Revision #8 Date:** 6/19/2006

*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 Fisher 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 Fisher has been advised of the possibility of such damages.*