

SAFETY DATA SHEET

Creation Date 09-Feb-2011

Revision Date 19-Dec-2025

Revision Number 5

This safety data sheet was created pursuant to the requirements of: US OSHA Hazard Communication Standard 2024 (29 CFR 1910.1200)

1. Identification

Product Name Tris(2-butoxyethyl) phosphate

Cat No. : AC157240000; AC157240050; AC157241000; AC157245000

CAS No 78-51-3

Synonyms 2-Butoxyethanol, phosphate; Phosphoric acid, tris(2-butoxyethyl)ester; Tri(2-butoxyethyl) phosphate; Tri(2-butoxyethanol)phosphate

Recommended Use Laboratory chemicals.

Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99
CHEMTREC Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

2. Hazard(s) identification

Classification

Classification according to [US] OSHA (29 CFR 1910.1200, 2024)

| | |
|--|------------|
| Skin Corrosion/Irritation | Category 2 |
| Serious Eye Damage/Eye Irritation | Category 2 |
| Specific target organ toxicity (single exposure) | Category 3 |
| Target Organs - Respiratory system. | |

Label Elements

Signal Word

Warning

Hazard Statements

Causes skin irritation
Causes eye irritation
May cause respiratory irritation

**Precautionary Statements****Prevention**

Wear protective gloves/protective clothing/eye protection/face protection
Wash face, hands and any exposed skin thoroughly after handling
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area

Response

Call a POISON CENTER or doctor if you feel unwell

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing

Skin

IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing
If skin irritation occurs: Get medical advice/attention

Eyes

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/attention

Storage

Store locked up
Store in corrosive resistant stainless steel container with a resistant inliner

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)**Hazards classified under paragraph (d)(1)(ii) of 1910.1200**

No information available

Other hazards

May be harmful if swallowed.

3. Composition/information on Ingredients

| Component | CAS No | Weight % |
|--------------------------|---------|----------|
| Tributoxyethyl phosphate | 78-51-3 | >95 |

4. First-aid measures

Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact

Wash off immediately with plenty of water for at least 15 minutes. Get medical attention.

Inhalation

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

| | |
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| Ingestion | Do NOT induce vomiting. Get medical attention. |
| Most important symptoms and effects | No information available. |
| Notes to Physician | Treat symptomatically |

5. Fire-fighting measures

| | |
|---|---|
| Suitable Extinguishing Media | Water spray. Carbon dioxide (CO ₂). Dry chemical. Alcohol resistant foam. |
| Unsuitable Extinguishing Media | No information available |
| Flash Point | 132 °C / 269.6 °F |
| Method - | No information available |
| Autoignition Temperature | No information available |
| Explosion Limits | |
| Upper | No data available |
| Lower | No data available |
| Sensitivity to Mechanical Impact | No information available |
| Sensitivity to Static Discharge | No information available |

Specific Hazards Arising from the Chemical

Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO₂). Oxides of phosphorus. Phosphorus trihydride (phosphine).

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health
2

Flammability
1

Instability
0

Physical hazards
N/A

6. Accidental release measures

| | |
|----------------------------------|---|
| Personal Precautions | Ensure adequate ventilation. Use personal protective equipment as required. |
| Environmental Precautions | See Section 12 for additional Ecological Information. Do not flush into surface water or sanitary sewer system. |

| | |
|---|---|
| Methods for Containment and Clean Up | Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Sweep up and shovel into suitable containers for disposal. |
|---|---|

7. Handling and Storage

| | |
|-----------------|---|
| Handling | Avoid contact with skin and eyes. Avoid contact with skin and clothing. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Avoid breathing vapors or mists. Do not ingest. If swallowed then seek immediate medical assistance. Wash thoroughly after handling. |
| Storage. | Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Incompatible Materials. Strong oxidizing agents. Strong bases. |

8. Exposure controls / personal protection

| | |
|----------------------------|---|
| Exposure Guidelines | This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies. |
|----------------------------|---|

Engineering Measures None under normal use conditions.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection No protective equipment is needed under normal use conditions.

Recommended Filter type: Particle filter.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Physical State Liquid
Color Clear
Odor pungent
Odor Threshold No information available

Property

| | <u>Values</u> | <u>Remarks</u> | <u>• Method</u> |
|---------------------------------|-------------------------------|--|------------------------|
| Melting Point/Range | -70 °C / -94 °F | | |
| Softening Point | No data available | | |
| Boiling Point/Range | 215 - 228 °C / 419 - 442.4 °F | @ 4 mmHg | |
| Flash Point | 132 °C / 269.6 °F | Method - No information available | |
| Flammability (liquid) | No data available | | |
| Flammability (solid,gas) | Not applicable | Liquid | |
| Explosion Limits | No data available | | |

| | | | |
|--|--------------------------|--------------|--|
| Autoignition Temperature | No data available | | |
| Decomposition Temperature | No data available | | |
| pH | @ 20°C | 1 g/l aq.sol | |
| Viscosity | No data available | | |
| Water Solubility | 1.3 g/L (20°C) | | |
| Solubility in other solvents | No information available | | |
| Partition Coefficient (n-octanol/water) | | | |
| Component | log Pow | | |
| Tributoxyethyl phosphate | 3.65 | | |
| Vapor Pressure | No data available | | |
| Density / Specific Gravity | 1.000 | | |
| Bulk Density | Not applicable | Liquid | |
| Vapor Density | No data available | (Air = 1.0) | |
| Particle characteristics | Not applicable (liquid) | | |

Other Information

Molecular Formula C18 H39 O7 P
Molecular Weight 398.47

10. Stability and reactivity

| | |
|---|--|
| Reactive Hazard | None known, based on information available |
| Stability | Stable under normal conditions. |
| Conditions to Avoid | Incompatible products. |
| Incompatible Materials | Strong oxidizing agents, Strong bases |
| Hazardous Decomposition Products | Carbon monoxide (CO), Carbon dioxide (CO ₂), Oxides of phosphorus, Phosphorus trihydride (phosphine) |
| Hazardous Polymerization | Hazardous polymerization does not occur. |
| Hazardous Reactions | None under normal processing. |

11. Toxicological information

Information on expected route of exposure

| | |
|-------------------|--|
| Inhalation | Not an expected route of exposure. |
| Ingestion | No known effect based on information supplied. |
| Eyes | Not an expected route of exposure. |
| Skin | No known effect based on information supplied. |

Toxicology data for the components

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|--------------------------|-----------------------|------------------------------|-----------------------|
| Tributyoxethyl phosphate | LD50 = 3 g/kg (Rat) | LD50 > 5000 mg/kg (Rabbit) | >6.4 mg/L (Rat) 4 h |

| | |
|---|--------------------------|
| Toxicologically Synergistic Products | No information available |
|---|--------------------------|

| | |
|---------------------------------------|-------------------|
| (b) skin corrosion/irritation; | No data available |
|---------------------------------------|-------------------|

| | |
|---|-------------------|
| (c) serious eye damage/irritation; | No data available |
|---|-------------------|

| | |
|---|-------------------|
| (d) respiratory or skin sensitization; | |
| Respiratory | No data available |
| Skin | No data available |

| | |
|------------------------------------|-------------------|
| (e) germ cell mutagenicity; | No data available |
|------------------------------------|-------------------|

(f) carcinogenicity;

The table below indicates whether each agency has listed any ingredient as a carcinogen

| Component | CAS No | IARC | NTP | ACGIH | OSHA | Mexico |
|--------------------------|---------|------------|------------|------------|------------|------------|
| Tributyoxethyl phosphate | 78-51-3 | Not listed | Not listed | Not listed | Not listed | Not listed |

| | |
|-----------------------------------|-------------------|
| (g) reproductive toxicity; | No data available |
|-----------------------------------|-------------------|

| | |
|----------------------------------|-------------------|
| (h) STOT-single exposure; | No data available |
|----------------------------------|-------------------|

| | |
|--|--|
| (i) STOT-repeated exposure; | No data available |
| Target Organs | No information available. |
| (j) aspiration hazard; | No data available |
| Other Adverse Effects | The toxicological properties have not been fully investigated. |
| Symptoms / effects, both acute and delayed | No information available. |
| Other Adverse Effects | The toxicological properties have not been fully investigated. |
| Endocrine Disrupting Properties | This product does not contain any known or suspected endocrine disruptors. |

12. Ecological information

Ecotoxicity

Do not empty into drains. Do not flush into surface water or sanitary sewer system. Contains a substance which is: Harmful to aquatic organisms. The product contains following substances which are hazardous for the environment.

| Component | Freshwater Algae | Freshwater Fish | Microtox | Water Flea |
|--------------------------|------------------|----------------------------|------------|--------------------|
| Tributoxyethyl phosphate | Not listed | LC50 = 10.4-12.0 mg/L 96 h | Not listed | EC50 = 75 mg/L 48h |

Persistence and Degradability Persistence is unlikely

Bioaccumulation/ Accumulation No information available.

Mobility . Will likely be mobile in the environment due to its water solubility.

| Component | log Pow |
|--------------------------|---------|
| Tributoxyethyl phosphate | 3.65 |

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

| | |
|----------|---------------|
| DOT | Not regulated |
| TDG | Not regulated |
| IATA | Not regulated |
| IMDG/IMO | Not regulated |

15. Regulatory Information

United States of America Inventory

| Component | CAS No | TSCA | TSCA Inventory notification - Active-Inactive | TSCA - EPA Regulatory Flags |
|--------------------------|---------|------|---|-----------------------------|
| Tributoxyethyl phosphate | 78-51-3 | X | ACTIVE | - |

Legend:

TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)

Not applicable

TSCA 12(b) - Notices of Export

Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

| Component | CAS No | DSL | NDSL | EINECS | PICCS | ENCS | ISHL | AICS | IECSC | KECL |
|--------------------------|---------|-----|------|-----------|-------|------|------|------|-------|----------|
| Tributoxyethyl phosphate | 78-51-3 | X | - | 201-122-9 | X | X | X | X | X | KE-04136 |

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations Not applicable

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH Not applicable

| Component | CAS No | REACH (1907/2006) - Annex XIV - Substances | REACH (1907/2006) - Annex XVII - Restrictions | REACH Regulation (EC 1907/2006) article 59 - |
|-----------|--------|--|---|--|
|-----------|--------|--|---|--|

| | | Subject to Authorization | on Certain Dangerous Substances | Candidate List of Substances of Very High Concern (SVHC) |
|--------------------------|---------|--------------------------|---------------------------------|--|
| Tributoxyethyl phosphate | 78-51-3 | - | - | - |

Safety, health and environmental regulations/legislation specific for the substance or mixture

| Component | CAS No | OECD HPV | Persistent Organic Pollutant | Ozone Depletion Potential | Restriction of Hazardous Substances (RoHS) |
|--------------------------|---------|----------|------------------------------|---------------------------|--|
| Tributoxyethyl phosphate | 78-51-3 | Listed | Not applicable | Not applicable | Not applicable |

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

Other International Regulations

| Component | CAS No | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements | Rotterdam Convention (PIC) | Basel Convention (Hazardous Waste) |
|--------------------------|---------|---|--|----------------------------|------------------------------------|
| Tributoxyethyl phosphate | 78-51-3 | Not applicable | Not applicable | Not applicable | Not applicable |

16. Other Information

| | |
|-------------------------|---|
| Prepared By | Product stewardship (Regulatory Affairs) Thermo Fisher Scientific email - begel.sdsdesk@thermofisher.com |
| Creation Date | 09-Feb-2011 |
| Revision Date | 19-Dec-2025 |
| Print Date | 19-Dec-2025 |
| Revision Summary | Updated to the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) which published its Final Rule in the Federal Register revising the Hazard Communication Standard (HCS/HazCom), 29 CFR 1910.1200 (2024) (HCS §1910.1200, 2024), May 20, 2024, effective July 19, 2024. |

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS