# SAFETY DATA SHEET

according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended

**Creation Date** 22-Sep-2009 **Revision Date** 27-Oct-2026 **Revision Number** 6

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THECOMPANY/UNDERTAKING

### 1.1. Product identifier

| | |
|---|---|
| **Product Description:** | **Trimethyl phosphate** |
| **Cat No. :** | **A10595** |
| **CAS No** | 512-56-1 |
| **EC No** | 208-144-8 |
| **Molecular Formula** | C3 H9 O4 P |
| **REACH registration number** | 01-2120758624-47-0005 |

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

| | |
|---|---|
| **Recommended Use** | Laboratory chemicals |
| **Uses advised against** | No Information available |

### 1.3. Details of the supplier of the safety data sheet

**Company**

Avocado Research Chemicals Ltd.
(Part of Thermo Fisher Scientific)
Shore Road, Heysham
Lancashire, LA3 2XY,
United Kingdom
Office Tel: +44 (0) 1524 850506
Office Fax: +44 (0) 1524 850608

**E-mail address** begel.sdsdesk@thermofisher.com

### 1.4. 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

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

**GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567**

**Physical hazards**

Based on available data, the classification criteria are not met

**Health hazards**

Acute oral toxicity Category 4 (H302)

| | |
|---|---|
| Germ Cell Mutagenicity | Category 1B (H340) |
| Carcinogenicity | Category 1B (H350) |
| Reproductive Toxicity | Category 1B (H360FD) |
| Specific target organ toxicity - (repeated exposure) | Category 2 (H373) |

**Environmental hazards**
Based on available data, the classification criteria are not met

*Full text of Hazard Statements: see section 16*

### 2.2. Label elements



**Signal Word** **Danger**

**Hazard Statements**
H302 - Harmful if swallowed
H340 - May cause genetic defects
H350 - May cause cancer
H360FD - May damage fertility. May damage the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

**Precautionary Statements**
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P312 - Call a POISON CENTER or doctor if you feel unwell
P264 - Wash face, hands and any exposed skin thoroughly after handling
P201 - Obtain special instructions before use
P280 - Wear protective gloves/protective clothing/eye protection/face protection

**Additional EU labelling**
Restricted to professional users

### 2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

Toxic to terrestrial vertebrates
This product does not contain any known or suspected endocrine disruptors

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

| Component | CAS No | EC No | Weight % | GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567 |
|---|---|---|---|---|
| Trimethylphosphate | 512-56-1 | EEC No. 208-144-8 | >95 | Carc. 1B (H350)<br>Muta. 1B (H340)<br>Repr. 1B (H360FD)<br>Acute Tox. 4 (H302) |

| | | | | |
|---|---|---|---|---|
| | | | | STOT RE 2 (H373) |

| | |
|---|---|
| **REACH registration number** | 01-2120758624-47-0005 |

*Full text of Hazard Statements: see section 16*

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

**General Advice** If symptoms persist, call a physician.

**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. If skin irritation persists, call a physician.

**Ingestion** Clean mouth with water and drink afterwards plenty of water.

**Inhalation** Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

**Self-Protection of the First Aider** Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

### 4.2. Most important symptoms and effects, both acute and delayed

None reasonably foreseeable.

### 4.3. Indication of any immediate medical attention and special treatment needed

**Notes to Physician** Treat symptomatically.

## SECTION 5: FIREFIGHTING MEASURES

### 5.1. Extinguishing media

**Suitable Extinguishing Media**
Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.

**Extinguishing media which must not be used for safety reasons**
No information available.

### 5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors.

**Hazardous Combustion Products**
Oxides of phosphorus, Phosphorus trihydride (phosphine).

### 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full

protective gear.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required.

### 6.2. Environmental precautions

Should not be released into the environment.

### 6.3. Methods and material for containment and cleaning up

Keep in suitable, closed containers for disposal. Soak up with inert absorbent material.

### 6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation.

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

### 7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place.

**Technical Rules for Hazardous Substances (TRGS) 510** Class 6.1C
**Storage Class (LGK) (Germany)**

### 7.3. Specific end use(s)

Use in laboratories

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

**Exposure limits**
List source(s):

**Biological limit values**
This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

**Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)**
See table for values

| Component | Acute effects local (Dermal) | Acute effects systemic (Dermal) | Chronic effects local (Dermal) | Chronic effects systemic (Dermal) |
|---|---|---|---|---|
| Trimethylphosphate 512-56-1 ( >95 ) | | | | DNEL = 0.2mg/kg bw/day |

| Component | Acute effects local (Inhalation) | Acute effects systemic (Inhalation) | Chronic effects local (Inhalation) | Chronic effects systemic (Inhalation) |
|---|---|---|---|---|
| Trimethylphosphate 512-56-1 ( >95 ) | | | | DNEL = 0.141mg/$m^3$ |

**Predicted No Effect Concentration (PNEC)**
See values below.

| Component | Fresh water | Fresh water sediment | Water Intermittent | Microorganisms in sewage treatment | Soil (Agriculture) |
|---|---|---|---|---|---|
| Trimethylphosphate 512-56-1 ( >95 ) | PNEC = 3.2mg/L | PNEC = 11523mg/kg sediment dw | PNEC = 10mg/L | PNEC = 100mg/L | PNEC = 427.2mg/kg soil dw |

| Component | Marine water | Marine water sediment | Marine water intermittent | Food chain | Air |
|---|---|---|---|---|---|
| Trimethylphosphate 512-56-1 ( >95 ) | PNEC = 0.32mg/L | PNEC = 11523mg/kg sediment dw | PNEC = 10mg/L | | |

**8.2. Exposure controls**

**Engineering Measures**
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.
Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

**Personal protective equipment**

**Eye Protection** Goggles (European standard - EN 166)

**Hand Protection** Protective gloves

| Glove material | Breakthrough time | Glove thickness | EU standard | Glove comments |
|---|---|---|---|---|
| Natural rubber<br>Nitrile rubber<br>Neoprene<br>PVC | See manufacturers recommendations | - | EN 374 | (minimum requirement) |

**Skin and body protection** Long sleeved clothing.

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

| | |
|---|---|
| **Respiratory Protection** | When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.<br>To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly |
| **Large scale/emergency use** | Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced<br>**Recommended Filter type:** conforming to EN14387 Organic gases and vapours filter Type A Brown |
| **Small scale/Laboratory use** | Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.<br>**Recommended half mask:-** Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141<br>When RPE is used a face piece Fit Test should be conducted |
| **Environmental exposure controls** | No information available. |

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| **Physical State** | Liquid | |
| **Appearance** | Clear | |
| **Odor** | No information available | |
| **Odor Threshold** | No data available | |
| **Melting Point/Range** | -46 °C / -50.8 °F | |
| **Softening Point** | No data available | |
| **Boiling Point/Range** | 197 °C / 386.6 °F | |
| **Flammability (liquid)** | No data available | |
| **Flammability (solid,gas)** | Not applicable | Liquid |
| **Explosion Limits** | No data available | |
| **Flash Point** | 107 °C / 224.6 °F | **Method -** No information available |
| **Autoignition Temperature** | No data available | |
| **Decomposition Temperature** | No data available | |
| **pH** | No information available | |
| **Viscosity** | No data available | |
| **Water Solubility** | 500 g/L (25°C) | |
| **Solubility in other solvents** | No information available | |
| **Partition Coefficient (n-octanol/water)** | | |
| **Vapor Pressure** | No data available | |
| **Density / Specific Gravity** | 1.197 | |
| **Bulk Density** | Not applicable | Liquid |
| **Vapor Density** | No data available | (Air = 1.0) |
| **Particle characteristics** | Not applicable (liquid) | |

### 9.2. Other information

| | |
|---|---|
| **Molecular Formula** | C3 H9 O4 P |
| **Molecular Weight** | 140.08 |

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

None known, based on information available

**10.2. Chemical stability**

Stable under normal conditions.

**10.3. Possibility of hazardous reactions**

**Hazardous Polymerization** Hazardous polymerization does not occur.
**Hazardous Reactions** None under normal processing.

**10.4. Conditions to avoid**

Incompatible products. Excess heat.

**10.5. Incompatible materials**

Strong oxidizing agents. Strong bases.

**10.6. Hazardous decomposition products**

Oxides of phosphorus. Phosphorus trihydride (phosphine).

## SECTION 11: TOXICOLOGICAL INFORMATION

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

**Product Information**

**(a) acute toxicity;**
**Oral** Category 4
**Dermal** Based on available data, the classification criteria are not met
**Inhalation** Based on available data, the classification criteria are not met

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|---|---|---|
| Trimethylphosphate | LD50 = 840 mg/kg ( Rat ) | LD50 = 3400 mg/kg ( Rabbit ) | - |

**(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;** Category 1B

Contains a known or suspected mutagen

**(f) carcinogenicity;** Category 1B

Possible cancer hazard. May cause cancer based on animal data. The table below indicates whether each agency has listed any ingredient as a carcinogen.

| Component | EU | UK | Germany | IARC |
|---|---|---|---|---|
| Trimethylphosphate | | | Cat. 2 | |

**(g) reproductive toxicity;** Category 1B

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

**(i) STOT-repeated exposure;** Category 2

**Target Organs** No information available.

**(j) aspiration hazard;** No data available

**Other Adverse Effects** May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. The toxicological properties have not been fully investigated.

**Symptoms / effects,both acute and delayed** No information available.

**11.2. Information on other hazards**

**Endocrine Disrupting Properties** Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

## SECTION 12: ECOLOGICAL INFORMATION

**12.1. Toxicity**

**Ecotoxicity effects** Do not empty into drains. .

| Component | Freshwater Fish | Water Flea | Freshwater Algae |
|---|---|---|---|
| Trimethylphosphate | LC50: 6480 - 7580 mg/L, 96h flow-through (Pimephales promelas) | | |

**12.2. Persistence and degradability**

**Persistence** Soluble in water, Persistence is unlikely, based on information available.

**Degradability** Not relevant for inorganic substances.

**12.3. Bioaccumulative potential** Bioaccumulation is unlikely

| Component | log Pow | Bioconcentration factor (BCF) |
|---|---|---|
| Trimethylphosphate | | 1.5 - 2.4 dimensionless |

**12.4. Mobility in soil** The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

**12.5. Results of PBT and vPvB assessment** Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).

**12.6. Endocrine disrupting properties**

**Endocrine Disruptor Information** This product does not contain any known or suspected endocrine disruptors

**12.7. Other adverse effects**

| | |
|---|---|
| **Persistent Organic Pollutant** | This product does not contain any known or suspected substance |
| **Ozone Depletion Potential** | This product does not contain any known or suspected substance |

## SECTION 13: DISPOSAL CONSIDERATIONS

**13.1. Waste treatment methods**

| | |
|---|---|
| **Waste from Residues/Unused Products** | Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations. |
| **Contaminated Packaging** | Dispose of this container to hazardous or special waste collection point. |
| **European Waste Catalogue (EWC)** | According to the European Waste Catalog, Waste Codes are not product specific, but application specific. |
| **Other Information** | Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. |

## SECTION 14: TRANSPORT INFORMATION

**IMDG/IMO** Not regulated

**14.1. UN number or ID number**
**14.2. UN proper shipping name**
**14.3. Transport hazard class(es)**
**14.4. Packing group**

**ADR** Not regulated

**14.1. UN number or ID number**
**14.2. UN proper shipping name**
**14.3. Transport hazard class(es)**
**14.4. Packing group**

**IATA** Not regulated

**14.1. UN number or ID number**
**14.2. UN proper shipping name**
**14.3. Transport hazard class(es)**
**14.4. Packing group**

| | |
|---|---|
| **14.5. Environmental hazards** | No hazards identified |
| **14.6. Special precautions for user** | No special precautions required. |
| **14.7. Maritime transport in bulk according to IMO instruments** | Not applicable, packaged goods |

## SECTION 15: REGULATORY INFORMATION

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

**International Inventories**

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

| Component | CAS No | EINECS | ELINCS | NLP | IECSC | TCSI | KECL | ENCS | ISHL |
|---|---|---|---|---|---|---|---|---|---|
| Trimethylphosphate | 512-56-1 | 208-144-8 | - | - | X | X | KE-28647 | X | X |

| Component | CAS No | TSCA | TSCA Inventory notification - Active-Inactive | DSL | NDSL | AICS | NZIoC | PICCS |
|---|---|---|---|---|---|---|---|---|
| Trimethylphosphate | 512-56-1 | X | ACTIVE | X | - | X | X | X |

**Legend:** X - Listed '-' - Not Listed **KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

**Authorisation/Restrictions according to EU REACH** Not applicable

| Component | CAS No | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|---|---|---|---|---|
| Trimethylphosphate | 512-56-1 | - | - | - |

**Seveso III Directive (2012/18/EC)**

| 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 |
|---|---|---|---|
| Trimethylphosphate | 512-56-1 | Not applicable | Not applicable |

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

| Component | CAS No | OECD HPV | Restriction of Hazardous Substances (RoHS) | Basel Convention (Hazardous Waste) |
|---|---|---|---|---|
| Trimethylphosphate | 512-56-1 | Listed | Not applicable | Not applicable |

**Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals**
Not applicable

**Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?**
Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .
Take note of Directive 94/33/EC on the protection of young people at work
Take note of Dir 92/85/EC on the protection of pregnant and breastfeeding women at work
Take note of Dir 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations

**National Regulations**

**UK** - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

**WGK Classification** See table for values

| Component | Germany - Water Classification (AwSV) | Germany - TA-Luft Class |
|---|---|---|
| Trimethylphosphate | WGK1 | |

### 15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

## SECTION 16: OTHER INFORMATION

**Full text of H-Statements referred to under sections 2 and 3**

H302 - Harmful if swallowed
H340 - May cause genetic defects
H350 - May cause cancer
H360FD - May damage fertility. May damage the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure
H360Fd - May damage fertility. Suspected of damaging the unborn child

**Legend**

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances
**IECSC** - Chinese Inventory of Existing Chemical Substances
**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
**ENCS** - Japanese Existing and New Chemical Substances
**AICS** - Australian Inventory of Chemical Substances
**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit
**ACGIH** - American Conference of Governmental Industrial Hygienists
**DNEL** - Derived No Effect Level
**RPE** - Respiratory Protective Equipment
**LC50** - Lethal Concentration 50%
**NOEC** - No Observed Effect Concentration
**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average
**IARC** - International Agency for Research on Cancer
Predicted No Effect Concentration (PNEC)
**LD50** - Lethal Dose 50%
**EC50** - Effective Concentration 50%
**POW** - Partition coefficient Octanol:Water
**vPvB** - very Persistent, very Bioaccumulative

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road
**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code
**OECD** - Organisation for Economic Co-operation and Development
**BCF** - Bioconcentration factor

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association
**MARPOL** - International Convention for the Prevention of Pollution from Ships
**ATE** - Acute Toxicity Estimate
**VOC** - (Volatile Organic Compound)

**Key literature references and sources for data**

https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.

| | |
|---|---|
| **Prepared By** | Health, Safety and Environmental Department |
| **Creation Date** | 22-Sep-2009 |
| **Revision Date** | 27-Oct-2026 |
| **Revision Summary** | SDS sections updated. |

**This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.**

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**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 Safety Data Sheet