

ALFAAL16644

## Tetra-n-propoxysilane

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

|   |  |
|---|--|
| <b>产品说明:</b><br><b>Product Description:</b>           | <b>四正丙氧基硅烷</b><br><b>Tetra-n-propoxysilane</b>   |
| <b>Cat No. :</b>                                      | <b>L16644</b>  |
| <b>Synonyms</b>                                       | Tetrapropyl orthosilicate  |
| <b>CAS No</b>   | 682-01-9   |
| <b>Molecular Formula</b>                              | C <sub>12</sub> H <sub>28</sub> O <sub>4</sub> Si  |
| <b>Supplier</b>                                       | Avocado Research Chemicals Ltd.<br>(Part of Thermo Fisher Scientific)<br>Shore Road, Heysham<br>Lancashire, LA3 2XY,<br>United Kingdom<br>Office Tel: +44 (0) 1524 850506<br>Office Fax: +44 (0) 1524 850608   |
| <b>Emergency Telephone Number</b>                     | For information <b>US</b> call: 001-800-227-6701 / <b>Europe</b> call: +32 14 57 52 11<br>Emergency Number <b>US</b> :001-201-796-7100 / <b>Europe</b> : +32 14 57 52 99<br><b>CHEMTREC</b> Tel. No. <b>US</b> :001-800-424-9300 / <b>Europe</b> :001-703-527-3887 |
| <b>E-mail address</b>                                 | begel.sdsdesk@thermofisher.com   |
| <b>Recommended Use</b><br><b>Uses advised against</b> | Laboratory chemicals.<br>No Information available  |

### SECTION 2. HAZARD IDENTIFICATION

|   |                                |   |
|---|--------------------------------|---|
| <b>Physical State</b><br>Liquid   | <b>Appearance</b><br>Colorless | <b>Odor</b><br>No information available |
| <b>Emergency Overview</b><br>Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. Moisture sensitive. |                                |   |

#### Classification of the substance or mixture

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

#### Label Elements


**Signal Word**
**Warning**

**Hazard Statements**

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H335 - May cause respiratory irritation

**Precautionary Statements****Prevention**

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P264 - Wash face, hands and any exposed skin thoroughly after handling

P271 - Use only outdoors or in a well-ventilated area

P280 - Wear protective gloves/protective clothing/eye protection/face protection

**Response**

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P312 - Call a POISON CENTER or doctor if you feel unwell

P362 + P364 - Take off contaminated clothing and wash it before reuse

**Storage**

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

**Disposal**

P501 - Dispose of contents/ container to an approved waste disposal plant

**Physical and Chemical Hazards**

None identified.

**Health Hazards**

Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation.

**Environmental hazards**

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.

This product does not contain any known or suspected endocrine disruptors.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Component  | CAS No   | Weight % |
|--|----------|----------|
| Silicic acid (H <sub>4</sub> SiO <sub>4</sub> ), tetrapropyl ester | 682-01-9 | > 99     |

**SECTION 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 soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention.

**Inhalation**

Remove from exposure, lie down. Remove to fresh air. If not breathing, give artificial respiration. Get medical attention.

**Ingestion**

Clean mouth with water. Get medical attention.

**Most important symptoms and effects**

Difficulty in breathing. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

**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.

**Notes to Physician**

Treat symptomatically. Symptoms may be delayed.

## SECTION 5. FIRE-FIGHTING MEASURES

### Suitable Extinguishing Media

Water spray. Carbon dioxide (CO<sub>2</sub>). Dry chemical. Chemical foam.

### Extinguishing media which must not be used for safety reasons

No information available.

### Specific Hazards Arising from the Chemical

Flammable.

### 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.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

### Personal Precautions

Ensure adequate ventilation.

### Environmental Precautions

See Section 12 for additional Ecological Information.

### 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.

Refer to protective measures listed in Sections 8 and 13.

## SECTION 7. HANDLING AND STORAGE

### Handling

Avoid contact with skin and eyes. Do not breathe mist/vapors/spray.

### Storage

Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat, sparks and flame.

### Specific Use(s)

Use in laboratories

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

### 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        |
|----------------|-------------------|-----------------|-------------|-----------------------|
| Nitrile rubber | See manufacturers | -               | EN 374      | (minimum requirement) |
| Viton (R)      | recommendations   |                 |             |                       |

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.

**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.

**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

**Small scale/Laboratory use** Maintain adequate ventilation

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

**Environmental exposure controls** No information available.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

|  |                          |  |
|--|--------------------------|--|
| <b>Appearance</b>                              | Colorless                |  |
| <b>Physical State</b>                          | Liquid                   |  |
| <b>Odor</b>                                    | No information available |  |
| <b>Odor Threshold</b>                          | No data available        |  |
| <b>pH</b>                                      | No information available |  |
| <b>Melting Point/Range</b>                     | No data available        |  |
| <b>Softening Point</b>                         | No data available        |  |
| <b>Boiling Point/Range</b>                     | 94 °C / 201.2 °F         | @ 5 mmHg                                 |
| <b>Flash Point</b>                             | 95 °C / 203 °F           | <b>Method -</b> No information available |
| <b>Evaporation Rate</b>                        | No data available        |  |
| <b>Flammability (solid,gas)</b>                | Not applicable           | Liquid                                   |
| <b>Explosion Limits</b>                        | No data available        |  |
| <b>Vapor Pressure</b>                          | No data available        |  |
| <b>Vapor Density</b>                           | 9.11                     | (Air = 1.0)                              |
| <b>Specific Gravity / Density</b>              | 0.916                    |  |
| <b>Bulk Density</b>                            | Not applicable           | Liquid                                   |
| <b>Water Solubility</b>                        | No information available |  |
| <b>Solubility in other solvents</b>            | No information available |  |
| <b>Partition Coefficient (n-octanol/water)</b> |                          |  |
| <b>Autoignition Temperature</b>                | No data available        |  |
| <b>Decomposition Temperature</b>               | No data available        |  |
| <b>Viscosity</b>                               | No data available        |  |
| <b>Explosive Properties</b>                    | No information available |  |
| <b>Oxidizing Properties</b>                    | No information available |  |
| <b>Molecular Formula</b>                       | C12 H28 O4 Si            |  |

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|                  |        |
|------------------|--------|
| Molecular Weight | 264.44 |
|------------------|--------|

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**SECTION 10. STABILITY AND REACTIVITY**

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|           |   |
|-----------|---|
| Stability | Stable under normal conditions. Moisture sensitive. |
|-----------|---|

|                          |                           |
|--------------------------|---------------------------|
| Hazardous Reactions      | No information available. |
| Hazardous Polymerization | No information available. |

|                     |  |
|---------------------|--|
| Conditions to Avoid | Incompatible products. Exposure to moist air or water. |
|---------------------|--|

|                    |  |
|--------------------|--|
| Materials to avoid | Strong oxidizing agents. Strong acids. |
|--------------------|--|

|                                  |   |
|----------------------------------|---|
| Hazardous Decomposition Products | Carbon monoxide (CO). Carbon dioxide (CO <sub>2</sub> ). Silicon dioxide. |
|----------------------------------|---|

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**SECTION 11. TOXICOLOGICAL INFORMATION**

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|                     |   |
|---------------------|---|
| Product Information | No acute toxicity information is available for this product |
|---------------------|---|

|                     |  |
|---------------------|--|
| (a) acute toxicity; |  |
|---------------------|--|

|                                |            |
|--------------------------------|------------|
| (b) skin corrosion/irritation; | Category 2 |
|--------------------------------|------------|

|                                    |            |
|------------------------------------|------------|
| (c) serious eye damage/irritation; | Category 2 |
|------------------------------------|------------|

|  |  |
|--|--|
| (d) respiratory or skin sensitization; |  |
|--|--|

|             |                   |
|-------------|-------------------|
| Respiratory | No data available |
| Skin        | No data available |

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

|                      |                   |
|----------------------|-------------------|
| (f) carcinogenicity; | No data available |
|----------------------|-------------------|

|  |   |
|--|---|
|  | There are no known carcinogenic chemicals in this product |
|--|---|

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

|                           |            |
|---------------------------|------------|
| (h) STOT-single exposure; | Category 3 |
|---------------------------|------------|

|                         |                    |
|-------------------------|--------------------|
| Results / Target organs | Respiratory system |
|-------------------------|--------------------|

|                             |                   |
|-----------------------------|-------------------|
| (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 | Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting |
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**SECTION 12. ECOLOGICAL INFORMATION**

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## Tetra-n-propoxysilane

|  |   |
|--|---|
| <b>Ecotoxicity effects</b>             | Contains no substances known to be hazardous to the environment or that are not degradable in waste water treatment plants. |
| <b>Persistence and Degradability</b>   | No information available  |
| <b>Bioaccumulative Potential</b>       | No information available  |
| <b>Mobility in soil</b>                | No information available  |
| <b>Endocrine Disruptor Information</b> | This product does not contain any known or suspected endocrine disruptors   |
| <b>Persistent Organic Pollutant</b>    | This product does not contain any known or suspected substance  |
| <b>Ozone Depletion Potential</b>       | This product does not contain any known or suspected substance  |

## SECTION 13. DISPOSAL CONSIDERATIONS

|  |  |
|--|--|
| <b>Waste from Residues/Unused Products</b> | 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. |
| <b>Contaminated Packaging</b>              | Dispose of this container to hazardous or special waste collection point.  |
| <b>Other Information</b>                   | 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

|                                |               |
|--------------------------------|---------------|
| <b>Road and Rail Transport</b> | Not Regulated |
| <b>IMDG/IMO</b>                | Not regulated |
| <b>IATA</b>                    | Not regulated |

|                                     |                                 |
|-------------------------------------|---------------------------------|
| <b>Special Precautions for User</b> | No special precautions required |
|-------------------------------------|---------------------------------|

## SECTION 15. REGULATORY INFORMATION

## International Inventories

X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

| Component  | The Inventory of Hazardous Chemicals (2015 Edition) | List of dangerous goods GB 12268 - 2012 | TCSI | IECSC | EINECS    | TSCA | DSL | PICCS | ENCS | ISHL | AICS | KECL     |
|--|---|---|------|-------|-----------|------|-----|-------|------|------|------|----------|
| Silicic acid (H <sub>4</sub> SiO <sub>4</sub> ), tetrapropyl ester | -   | -                                       | X    | X     | 211-659-0 | X    | X   | X     | X    | X    | X    | KE-31017 |

## National Regulations

## SECTION 16. OTHER INFORMATION

**Prepared By** Health, Safety and Environmental Department  
**Revision Date** 22-Apr-2024  
**Revision Summary** New emergency telephone response service provider.

**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.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Chemical incident response training.

**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

**PNEC** - Predicted No Effect Concentration

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**POW** - Partition coefficient Octanol:Water

**vPvB** - very Persistent, very Bioaccumulative

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**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

**Disclaimer**

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**End of Safety Data Sheet**