





#### 4.1 Description of first aid measures

##### General information:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

##### Following inhalation:

Move person to fresh air; if effects occur, consult a physician.

##### Following skin contact:

Wash off with plenty of water. Suitable emergency safety shower facility should be available in work area.

##### Following eye contact:

Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

##### Following ingestion:

No emergency medical treatment necessary.

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

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

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

Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

### Section 5 – Fire Fighting Measures

#### 5.1 Extinguishing media

**Suitable extinguishing media:** Water spray Alcohol-resistant foam Carbon dioxide (CO<sub>2</sub>). Dry chemical

**Unsuitable extinguishing media:** High volume water jet. Do not use direct water stream.

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

**Hazardous combustion products:** Carbon oxides. Silicon oxides. Formaldehyde Metal oxides.

**Unusual Fire and Explosion Hazards:** Flash back possible over considerable distance. Exposure to combustion products may be a hazard to health. Fire burns more vigorously than would be expected. Vapours may form explosive mixtures with air.

#### 5.3 Advice for firefighters

**Fire Fighting Procedures:** Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Do not use a solid water stream as it may scatter and spread fire.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Collect contaminated fire extinguishing

water separately. This must not be discharged into drains. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.

**Special protective equipment for firefighters:** In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

## Section 6 - Accidental Release Measures

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

Remove all sources of ignition. Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

### 6.2 Environmental precautions

Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

### 6.3 Methods and materials for containment and cleaning up

Non-sparking tools should be used. Soak up with inert absorbent material. Suppress (knock down) gases/vapours/mists with a water spray jet. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the clean-up of releases. You will need to determine which regulations are applicable. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, Sections 13 and 15 of this SDS provide information regarding certain local or national requirements. Dispose of saturated absorbent or cleaning materials appropriately since spontaneous heating may occur.

### 6.4 Additional advice

Wear protective PVC gloves, chemical goggles and PVC boots. Contain spill with earth and sand.

## Section 7 - Handling and Storage

### 7.1 Precautions for safe handling

Do not get on skin or clothing. Avoid inhalation of vapour or mist. Do not swallow. Do not get in eyes. Keep container tightly closed. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment. Non-sparking tools should be used. Handle in accordance with good industrial hygiene and safety practice.

Use with local exhaust ventilation. Use only in an area equipped with explosion proof exhaust ventilation. Ensure all equipment is electrically grounded before beginning transfer operations. This material can accumulate static charge due to its inherent physical properties and can therefore cause an electrical ignition source to vapours. In order to prevent a fire hazard, as bonding and grounding may be insufficient to remove static electricity, it is necessary to provide an inert gas purge before beginning transfer operations. Restrict flow velocity in order to reduce the accumulation of static electricity. Ground and bond container and receiving equipment.

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

Keep in properly labelled containers. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.

### 7.3 Specific end use(s)

Do not store with the following product types: Strong oxidizing agents. Organic peroxides. Flammable solids. Pyrophoric liquids. Pyrophoric solids. Self-heating substances and mixtures. Substances and mixtures, which in contact with water, emit flammable gases. Explosives. Gases. Unsuitable materials for containers: None known.

## Section 8 - Exposure Controls / Personal Protection

### 8.1 Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value/Notation
Octamethyltrisiloxane	IHG	TWA	20 ppm

The following substance(s), which have Occupational Exposure Limit(s) (OEL), may be formed during handling or processing:

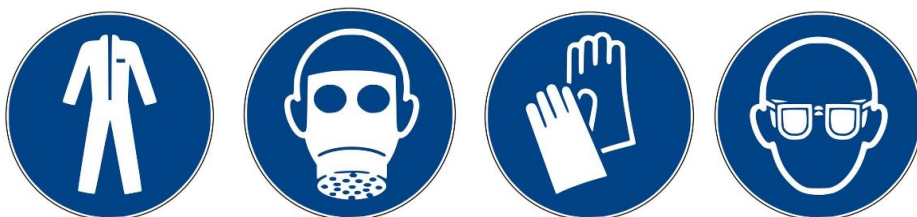
- Propyl alcohol
- Ethylene glycol monobutyl ether
- Butanol

### 8.2 Exposure controls

#### Engineering Controls:

Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

#### Personal Protection Equipment



<b>Respiratory</b>	Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge.
<b>Hands</b>	Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. Examples of acceptable glove barrier materials include: Natural rubber ("latex"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

<b>Eyes</b>	Use chemical goggles.
<b>Other protection</b>	Wear long-sleeved impervious protective clothing. Wear flame retardant anti-static protective equipment. Wear appropriate personal protective clothing and equipment according to the concentrations and quantities of hazardous substances in the workplace.

## Section 9 - Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

Appearance	Liquid
Colour	colourless
Odour	slight
Odour Threshold	Not available
pH	Not available
Freezing Point	Not available
Melting Point	Not available
Boiling Point (760 mmHg)	> 100 °C (> 212 °F)
Flash Point	<b>closed cup</b> 27 °C (81 °F)
Evaporation rate	Not available
Flammability	Not applicable
Explosive limits	Not available
Vapour pressure	Not available
Density (water = 1)	0.82
Relative vapour density	Not available
Solubility	Not available
Specific gravity	Not available
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available
Kinetic Viscosity	1.3 mm <sup>2</sup> /s at 25 °C (77 °F)
Refractive index	1.386
Explosive properties	Not explosive
Oxidising properties	The substance or mixture is not classified as oxidizing.
Decomposition temperature	Not available
Viscosity	Not available
Molecular weight	Not available
Particle size	Not applicable

NOTE: The physical data presented above as typical values and should not be constructed as a specification.

## Section 10 – Stability and Reactivity

### 10.1 Reactivity

Not classified as a reactivity hazard.

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Can react with strong oxidizing agents. Vapours may form explosive mixture with air. Flammable liquid and vapour.

### 10.4 Conditions to avoid

Heat, flames and sparks.

### **10.5 Incompatible materials**

Oxidizing agents.

### **10.6 Hazardous decomposition products**

Propyl alcohol. Ethylene glycol monobutyl ether. Butanol.

## **Section 11 - Toxicological Information**

Toxicological information appears in this section when such data is available.

### **Acute toxicity**

#### **Acute oral toxicity**

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product: Single dose oral LD50 has not been determined.

Based on information for component(s):

LD50, Rat, > 5,000 mg/kg Estimated.

#### **Acute dermal toxicity**

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:

Based on information for component(s):

LD50, > 5,000 mg/kg Estimated.

#### **Acute inhalation toxicity**

No adverse effects are anticipated from single exposure to mist. As product: The LC50 has not been determined.

### **Skin corrosion/irritation**

Brief contact may cause skin irritation with local redness.

### **Serious eye damage/eye irritation**

May cause moderate eye irritation.

May cause severe corneal injury.

May cause permanent impairment of vision

### **Sensitization**

For skin sensitization:

Contains component(s) which did not cause allergic skin sensitization in guinea pigs.

Contains component(s) which have not demonstrated the potential for contact allergy in mice.

For respiratory sensitization:

No relevant data found.

### **Specific Target Organ Systemic Toxicity (Single Exposure)**

Contains component(s) which are classified as specific target organ toxicant, single exposure, category 3.

### **Specific Target Organ Systemic Toxicity (Repeated Exposure)**

In animals, effects have been reported on the following organs: Liver.

This material contains octamethyltrisiloxane (L3). Repeated inhalation exposure in rats to L3 resulted in protoporphyrin accumulation in the liver. Without knowledge of the specific mechanism leading to the protoporphyrin accumulation the relevance of this finding to humans is unknown.

### **Carcinogenicity**

For the major component(s): Did not cause cancer in laboratory animals.

### **Teratogenicity**

For the major component(s): Did not cause birth defects or any other fetal effects in laboratory animals.

### **Reproductive toxicity**

For the major component(s): In animal studies, did not interfere with fertility. In animal studies, did not interfere with reproduction.

### **Mutagenicity**

For the major component(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

### **Aspiration Hazard**

Based on available information, aspiration hazard could not be determined.

## **COMPONENTS INFLUENCING TOXICOLOGY:**

### **Octamethyltrisiloxane**

#### **Acute inhalation toxicity**

LC50, Rat, male and female, 4 Hour, vapour, > 22.6 mg/l No deaths occurred at this concentration.

### **Tetrakis(2-butoxyethyl) orthosilicate**

#### **Acute inhalation toxicity**

Brief exposure (minutes) is not likely to cause adverse effects.

### **Tetra n-Butyl titanate**

#### **Acute inhalation toxicity**

LC50, Rat, 4 Hour, dust/mist, 11 mg/l

## **Section 12 - Ecotoxicological Information**

*Ecotoxicological information appears in this section when such data is available.*

### **12.1 Toxicity**

#### **Octamethyltrisiloxane**

##### **Acute toxicity to fish**

Not expected to be acutely toxic to aquatic organisms.

No toxicity at the limit of solubility

LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, > 0.0191 mg/l, OECD Test Guideline 203



### **Acute toxicity to aquatic invertebrates**

No toxicity at the limit of solubility

EC50, Daphnia magna (Water flea), flow-through test, 48 Hour, > 0.02 mg/l, OECD Test Guideline 202

### **Acute toxicity to algae/aquatic plants**

No toxicity at the limit of solubility

EC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate inhibition, > 0.0094 mg/l, OECD Test Guideline 201

### **Toxicity to bacteria**

For similar material(s):

EC50, activated sludge, static test, 3 Hour, Respiration rates., > 100 mg/l, OECD Test Guideline 209

### **Chronic toxicity to fish**

No toxicity at the limit of solubility

NOEC, Oncorhynchus mykiss (rainbow trout), 90 d, > 0.027 mg/l

### **Chronic toxicity to aquatic invertebrates**

No toxicity at the limit of solubility

NOEC, Daphnia magna (Water flea), flow-through test, 21 d, > 0.015 mg/l

## **Tetrakis(2-butoxyethyl) orthosilicate**

### **Acute toxicity to fish**

Material is practically non-toxic to fish on an acute basis (LC50 > 100 mg/L).

LC50, Danio rerio (zebra fish), 96 Hour, > 201 mg/l, OECD Test Guideline 203

### **Acute toxicity to aquatic invertebrates**

No toxicity at the limit of solubility

EC50, Daphnia sp. (water flea), 48 Hour, > 90 mg/l, EG 84/449

### **Acute toxicity to algae/aquatic plants**

ErC50, Scenedesmus subspicatus, 72 Hour, > 161 mg/l, 88/302/EC

## **Tetra n-Butyl titanate**

### **Acute toxicity to fish**

No relevant data found.

## **12.2 Persistence and degradability**

### **Octamethyltrisiloxane**

**Biodegradability:** Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).

10-day Window: Not applicable

**Biodegradation:** 0 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 310 or Equivalent

### **Photodegradation**

**Atmospheric half-life:** 8.94 d

**Method:** Estimated.

### **Tetrakis(2-butoxyethyl) orthosilicate**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

**Biodegradation:** 83 %

**Method:** OECD Test Guideline 301B

### **Tetra n-Butyl titanate**

**Biodegradability:** No relevant data found.

## **12.3 Bioaccumulative potential**

### **Octamethyltrisiloxane**

**Bioaccumulation:** Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

**Partition coefficient: n-octanol/water(log Pow):** 5.35 Estimated.

**Bioconcentration factor (BCF):** >= 500 Pimephales promelas (fathead minnow) OECD Test Guideline 305

### **Tetrakis(2-butoxyethyl) orthosilicate**

**Bioaccumulation:** No relevant data found.

### **Tetra n-Butyl titanate**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 0.88 Estimated.

## **12.4 Mobility in soil**

### **Octamethyltrisiloxane**

Potential for mobility in soil is slight (Koc between 2000 and 5000).

**Partition coefficient (Koc):** 3179 Estimated.

### **Tetrakis(2-butoxyethyl) orthosilicate**

No relevant data found.

### **Tetra n-Butyl titanate**

No relevant data found.

## **Section 13 - Disposal Considerations**

### **13.1 Disposal Method**

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device. For additional information, refer to: Handling & Storage Information, MSDS Section 7 Stability & Reactivity Information, MSDS Section 10 Regulatory Information, MSDS Section 15.

**Treatment and disposal methods of used packaging:** Empty containers should be recycled or otherwise disposed of by an approved waste management facility. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. Do not re-use containers for any purpose.

## Section 14 – Transport Information



	DOT	Sea Transport (IMO-IMDG)	Air Transport (IATA)
UN No	UN 1993	UN 1993	UN 1993
Proper Shipping Name	Flammable liquids	Flammable liquids	Flammable liquids
Class	3	3	3
Packing Group	III	III	III
Marine Pollutant	No	No	No

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

## Section 15 – Regulatory Information

### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Flammable (gases, aerosols, liquids, or solids)  
 Hazard not otherwise classified (physical hazards)  
 Skin corrosion or irritation  
 Serious eye damage or eye irritation

### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

### Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103

Calculated RQ exceeds reasonably attainable upper limit.

Components	CASRN	RQ (RCRA Code)
Butanol	71-36-3	5000 lbs RQ
Butanol	71-36-3	100 lbs RQ (F003)
Butanol	71-36-3	5000 lbs RQ
Butanol	71-36-3	100 lbs RQ (F003)

### Pennsylvania Right to Know

The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components	CASRN
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Octamethyltrisiloxane	107-51-7
Tetrapropyl orthosilicate	682-01-9
Tetrakis(2-butoxyethyl) orthosilicate	18765-38-3
Tetra n-Butyl titanate	5593-70-4

### United States TSCA Inventory (TSCA)

All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

## Section 16 – Other Information

### Hazard Rating System

#### NFPA

Health	Flammability	Instability
<b>3</b>	<b>3</b>	<b>0</b>

#### NFPA

Health	Flammability	Physical Hazard
<b>3/</b>	<b>3</b>	<b>0</b>

### Revision

Issue Date: 24/08/2021

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

### Legend

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule;

ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-

Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative.