

# Safety Data Sheet

Version 4.0

Revision Date 12/08/2016

SDS Number 300000005308

Print Date 12/02/2017

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TOMCATS Precursor

Chemical formula : C<sub>4</sub>H<sub>16</sub>O<sub>4</sub>Si<sub>4</sub>

Synonyms : 1,3,5,7, Tetramethylcyclotetrasiloxane; Cyclotetrasiloxane 2,4,6,8 Tetramethyl; TMCTS

Product Use Description : Semiconductor Processing

Manufacturer/Importer/Distributor : Versum Materials US, LLC  
8555 South River Parkway  
Tempe, AZ 85284  
Exporter EIN No. 475632014  
www.versummaterials.com

Telephone : (602)282-1000

Emergency telephone number (24h) : 800-523-9374 USA  
+1 610 481 7711 International

## 2. HAZARDS IDENTIFICATION

### GHS classification

Flammable liquids - Category 3  
Eye irritation - Category 2A

### GHS label elements

#### Hazard pictograms/symbols



Signal Word: Warning

Hazard Statements:

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H226:Flammable liquid and vapour.

H319:Causes serious eye irritation.

## Precautionary Statements:

- Prevention : P210:Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.  
P233:Keep container tightly closed.  
P240:Ground/Bond container and receiving equipment.  
P241:Use explosion-proof electrical/ventilating/lighting/equipment.  
P280a:Wear protective gloves and eye/face protection.
- Response : P303+P361+P353 :IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P305+P351+P338 :IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337+P313 :If eye irritation persists: Get medical advice/attention.  
P370+P378 :In case of fire, use recommended extinguishing media for extinction.
- Storage : P403+P235:Store in a well-ventilated place. Keep cool.

## Hazards not otherwise classified

Keep away from heat and sources of ignition.  
Flammable.  
Moderate respiratory irritant.  
Moderate skin irritant.  
Irritating to eyes.  
Decomposes in contact with water.  
Harmful in contact with skin.  
Harmful if swallowed.  
May react with water to generate flammable hydrogen gas.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Concentration (Weight)
2,4,6,8-Tetramethylcyclotetrasiloxane	2370-88-9	100 %

Concentration is nominal. For the exact product composition, please refer to technical specifications. Contains no other components or impurities which will influence the classification of the product.

## 4. FIRST AID MEASURES

- General advice : Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.

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Eye contact	: Rinse immediately with plenty of water also under the eyelids for at least 20 minutes. Remove contact lenses.
Skin contact	: Wash off immediately with plenty of water for at least 20 minutes. Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay.
Ingestion	: If a person vomits when lying on his back, place him in the recovery position. Do not induce vomiting. Never give anything by mouth to an unconscious person. Gently wipe or rinse the inside of the mouth with water. Prevent aspiration of vomit. Turn victim's head to the side.
Inhalation	: If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Move to fresh air.
Most important symptoms/effects - acute and delayed	: Repeated and/or prolonged exposure to low concentrations of vapors and/or aerosols may cause: Sore throat. Adverse respiratory effects (such as cough, tightness of chest or shortness of breath). Asthma. Skin disorders and Allergies. Adverse skin effects (such as rash, irritation or corrosion). Adverse eye effects (such as conjunctivitis or corneal damage). Eye disease.

## 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	: For smaller fires, use dry chemical or carbon dioxide, do not use water. For large fires, flood fire area with water from as far as possible, using a protective barrier and appropriate personal protective equipment. Carbon dioxide (CO2). Dry chemical. Dry sand. Limestone powder.
Extinguishing media which must not be used for safety reasons.	: Water. Alcohol-resistant foam.
Specific hazards	: Fire or intense heat may cause violent rupture of packages. Flash back possible over considerable distance. May form explosive mixtures in air. Burning produces noxious and toxic fumes. Decomposes in contact with water.
Special protective equipment for fire-fighters	: Avoid contact with the skin. Use personal protective equipment. Wear self contained breathing apparatus for fire fighting if necessary.
Further information	: Do not allow run-off from fire fighting to enter drains or water courses.

## 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures	: Use self-contained breathing apparatus and chemically protective clothing. Wear suitable protective clothing, gloves and eye/face protection. Remove all sources of ignition. Evacuate personnel to safe areas.
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Environmental precautions	: Shut off or remove all ignition sources. Construct a dike to prevent spreading.
Methods for cleaning up	: Approach suspected leak areas with caution. Call Emergency Response number for advice. Absorb with inert absorbent materials such as: Dry sand. Vermiculite. Activated charcoal. Place in appropriate chemical waste container.
Additional advice	: Protect from water. If possible, stop flow of product.

## 7. HANDLING AND STORAGE

### Handling

Do not breathe vapors/dust. Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations. Avoid contact with eyes. See "Flammable and Combustible Liquid Code" NFPA No. 30, National Fire Protection Association, Boston, MA. This product may contain Silicon hydride impurities. Silicon hydrides can be highly reactive and require special attention. If products containing Silicon hydrides are not stored and/or handled safely, they can react with water, alcohol, and many other substances to cause serious incidents, such as fire or explosion. Use personal protective equipment. When using, do not eat, drink or smoke.

### Storage

To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Keep in a dry, cool place. Keep away from oxidizers. Store in an area suitable for water reactive materials. Minimize exposure to air. Exposure may cause material to degrade. Store under a nitrogen atmosphere.

### Technical measures/Precautions

Keep away from open flames, hot surfaces and sources of ignition. Keep away from heat, sparks, open flame, water, alcohols, silanols or other hydroxyl containing compounds.

Storage Temperature : 32 - 104 °F (0 - 40 °C)

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Engineering measures

Use explosion-proof equipment.  
Provide readily accessible eye wash stations and safety showers.  
Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

### Personal protective equipment

Respiratory protection	: Wear appropriate respirator when ventilation is inadequate. Wear a full-face respirator with organic vapor cartridges when exposure is likely.
Hand protection	: Impervious gloves. Butyl-rubber Viton gloves.

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Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Chemical safety glasses.  
Chemical resistant goggles must be worn.

Skin and body protection : Long sleeve shirts and trousers without cuffs.  
Impervious clothing.

Environmental exposure controls : Shut off or remove all ignition sources.

Special instructions for protection and hygiene : Provide readily accessible eye wash stations and safety showers. Wash hands at the end of each workshift and before eating, smoking or using the toilet. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Provide readily accessible eye wash stations and safety showers.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid. Colorless.

Odor : Ether-like.

Odor threshold : No data available.

pH : No data available.

Melting point/range : -85 °F (-65 °C)

Boiling point/range : 275 °F (135 °C)

Flash point : 75 °F (24 °C)

Evaporation rate : No data available.

Flammability (solid, gas) : Not applicable.

Upper/lower explosion/flammability limit : > 10.0 %(V) / 0.7 %(V)

Vapor pressure : 7.02 mmHg at 68 °F (20 °C)

Water solubility : Insoluble.  
Decomposes in contact with water.

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Relative vapor density : 8 (air = 1) Heavier than air.

Relative density : 0.991 (water = 1)

Partition coefficient (n-octanol/water) : No data available.

Auto-ignition temperature : 250 °C

Decomposition temperature : No data available.

Viscosity : No data available.

Molecular Weight : 240.51 g/mol

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## 10. STABILITY AND REACTIVITY

Chemical Stability : Stable under normal conditions.

Conditions to avoid : Heat, flames and sparks. Exposure to moisture.

Materials to avoid : Oxidizing agents.  
Humid air.  
Water.  
Acids.  
Bases.  
Alcohols.  
Hydroxyl containing compounds.  
Silanols.  
Heavy metals.

Hazardous decomposition products : Hazardous combustion products:  
Hydrogen.  
Carbon monoxide.  
Carbon dioxide (CO<sub>2</sub>).  
Silica.

Possibility of hazardous Reactions/Reactivity : Decomposes in contact with water.

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## 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

#### Likely routes of exposure

Effects on Eye : Contact with eyes may cause irritation.

Effects on Skin : Causes skin irritation. Harmful in contact with skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

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- Inhalation Effects : May cause nose, throat, and lung irritation. Inhalation of vapors and/or aerosols in high concentration may cause irritation of respiratory system.
- Ingestion Effects : Harmful if swallowed.
- Symptoms : Repeated and/or prolonged exposure to low concentrations of vapors and/or aerosols may cause: Sore throat. Adverse respiratory effects (such as cough, tightness of chest or shortness of breath)., Asthma., Skin disorders and Allergies., Adverse skin effects (such as rash, irritation or corrosion)., Adverse eye effects (such as conjunctivitis or corneal damage)., Eye disease.

## Acute toxicity

- Acute Oral Toxicity : Harmful if swallowed.
- Inhalation : No data is available on the product itself.
- Acute Dermal Toxicity : Harmful in contact with skin.
- Skin corrosion/irritation : Skin irritation.
- Serious eye damage/eye irritation : Eye irritation.
- Sensitization. : No data available.

## Chronic toxicity or effects from long term exposures

- Carcinogenicity : No data available.
- Reproductive toxicity : No data is available on the product itself.
- Germ cell mutagenicity : No data is available on the product itself.
- Specific target organ systemic toxicity (single exposure) : No data available.
- Specific target organ systemic toxicity (repeated exposure) : No data available.
- Aspiration hazard : No data available.

## Delayed and Immediate Effects and Chronic Effects from Short and Long Term Exposure

This product contains no listed carcinogens according to IARC, ACGIH, NTP and/or OSHA in concentrations of 0.1 percent or greater. Adverse respiratory effects (such as cough, tightness of chest or shortness of breath)., Asthma., Skin disorders and Allergies., Adverse skin effects (such as rash, irritation or corrosion)., Adverse eye effects (such as conjunctivitis or corneal damage)., Eye disease.

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## 12. ECOLOGICAL INFORMATION

### Ecotoxicity effects

Aquatic toxicity : No data is available on the product itself.

Toxicity to other organisms : No data available.

### Persistence and degradability

Biodegradability : No data is available on the product itself.

Mobility : No data available.

Bioaccumulation : No data is available on the product itself.

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## 13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products : Contact supplier if guidance is required.

Contaminated packaging : Dispose of container and unused contents in accordance with federal, state, and local requirements.

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## 14. TRANSPORT INFORMATION

### DOT

UN/ID No. : UN1993  
Proper shipping name : Flammable liquids, n.o.s., (2,4,6,8-Tetramethylcyclotetrasiloxane)  
Class or Division : 3  
Packing group : III  
Label(s) : 3  
Marine Pollutant : No

### IATA

UN/ID No. : UN1993  
Proper shipping name : Flammable liquid, n.o.s., (2,4,6,8-Tetramethylcyclotetrasiloxane)  
Class or Division : 3  
Packing group : III  
Label(s) : 3  
Marine Pollutant : No



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## IMDG

UN/ID No. : UN1993  
Proper shipping name : FLAMMABLE LIQUID, N.O.S., (2,4,6,8-Tetramethylcyclotetrasiloxane)  
Class or Division : 3  
Packing group : III  
Label(s) : 3  
Marine Pollutant : No

## TDG

UN/ID No. : UN1993  
Proper shipping name : FLAMMABLE LIQUID, N.O.S., (2,4,6,8-Tetramethylcyclotetrasiloxane)  
Class or Division : 3  
Packing group : III  
Label(s) : 3  
Marine Pollutant : No

## Further Information

The transportation information is not intended to convey all specific regulatory data relating to this material. For complete transportation information, contact customer service.

## 15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA) 12(b) Component(s):

None.

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
Canada	DSL	Not on Inventory.
Australia	AICS	Included on Inventory.
Japan	ENCS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification  
Fire Hazard.

Acute Health Hazard

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

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This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm.

## 16. OTHER INFORMATION

### NFPA Rating

Health	:	1
Fire	:	3
Instability	:	1
Special	:	W 2

### HMIS Rating

Health	:	1
Flammability	:	3
Physical hazard	:	1

Prepared by : Versum Materials, Product Regulatory Department

Telephone : (602)282-1000

Preparation Date : 12/02/2017

For additional information, please visit Versum Materials' Product Stewardship web site.  
<http://www.versummaterials.com/productstewardship/>