SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form: Substance
Physical state: Liquid
Substance name: TETRAKIS(METHOXYETHOXY)SILANE, tech-95
Product code: SIT7286.0
Formula: C12H28O8Si
Synonyms: SILICON TETRAMETHOXYETHOXIDE
Chemical family: SILICATE ESTER

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

Use of the substance/mixture: Chemical intermediate
For research and industrial use only

1.3. Details of the supplier of the safety data sheet

GELEST, INC.
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)
Skin Irrit. 2 H315
Eye Irrit. 2A H319
Repr. 1B H360

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling
Hazard pictograms (GHS-US): 

<table>
<thead>
<tr>
<th>GHS07</th>
<th>GHS08</th>
</tr>
</thead>
</table>

Signal word (GHS-US): Danger

Hazard statements (GHS-US): H315 - Causes skin irritation
H319 - Causes serious eye irritation
H360 - May damage fertility or the unborn child

Precautionary statements (GHS-US): P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P264 - Wash hands thoroughly after handling
P308+P313 - If exposed or concerned: Get medical advice/attention
P302+P352 - If on skin: Wash with plenty of water
P332+P313 - If skin irritation occurs: Get medical advice/attention
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
P362 - Take off contaminated clothing and wash before reuse
P405 - Store locked up
P501 - Dispose of contents/container to licensed waste disposal facility.

2.3. Other hazards

No additional information available
2.4. Unknown acute toxicity (GHS-US)
No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

<table>
<thead>
<tr>
<th>Substance type</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-constituent</td>
<td>TETRAKIS(METHOXYETHOXY)SILANE, tech-95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance type</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS No</td>
<td>EC no</td>
</tr>
<tr>
<td>2157-45-1</td>
<td>218-470-2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrakis(methoxyethoxy)silane (CAS No 2157-45-1)</td>
<td>&gt; 95</td>
<td>Skin Irrit. 2, H315 Eye Irrit. 2A, H319</td>
<td></td>
</tr>
<tr>
<td>2-Methoxyethanol (CAS No 109-86-4)</td>
<td>&lt; 5</td>
<td>Flam. Liq. 3, H226 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Repr. 1B, H360</td>
<td></td>
</tr>
</tbody>
</table>

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general:
Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation:
Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact:
Wash with plenty of soap and water.

First-aid measures after eye contact:
Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

First-aid measures after ingestion:
Never give anything by mouth to an unconscious person. Get medical advice/attention.

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

Symptoms/injuries after inhalation: May cause irritation to the respiratory tract.

Symptoms/injuries after skin contact: Causes skin irritation.

Symptoms/injuries after eye contact: Causes serious eye irritation.

Symptoms/injuries after ingestion: May be harmful if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed
No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media


5.2. Special hazards arising from the substance or mixture

Fire hazard: Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

5.3. Advice for firefighters

Firefighting instructions: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapor and mist.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders
Protective equipment: Equip cleanup crew with proper protection.

6.2. Environmental precautions
Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.
6.3. Methods and material for containment and cleaning up
Methods for cleaning up: Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or shovel spills into appropriate container for disposal.

6.4. Reference to other sections
See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Use only in well ventilated areas. Avoid all eye and skin contact and do not breathe vapor and mist.
Hygiene measures: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Keep container tightly closed.
Storage area: Store in a well-ventilated place. Store away from heat.

7.3. Specific end use(s)
No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
2-Methoxyethanol (109-86-4)

<table>
<thead>
<tr>
<th></th>
<th>ACGIH TWA (ppm)</th>
<th>USA NIOSH NIOSH REL (TWA) (mg/m³)</th>
<th>USA NIOSH NIOSH REL (TWA) (ppm)</th>
<th>USA OSHA OSHA PEL (TWA) (mg/m³)</th>
<th>USA OSHA OSHA PEL (TWA) (ppm)</th>
<th>USA IDLH US IDLH (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>0.1 ppm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USA NIOSH</td>
<td></td>
<td>0.3 mg/m³</td>
<td>0.1 ppm</td>
<td>80 mg/m³</td>
<td>25 ppm</td>
<td>200 ppm</td>
</tr>
</tbody>
</table>

8.2. Exposure controls
Appropriate engineering controls: Provide local exhaust or general room ventilation.
Personal protective equipment: Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Hand protection: Neoprene or nitrile rubber gloves.
Eye protection: Chemical goggles. Contact lenses should not be worn.
Skin and body protection: Wear suitable protective clothing.
Respiratory protection: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified organic vapor (black cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
Physical state: Liquid
Appearance: Clear liquid.
Molecular mass: 328.43 g/mol
Color: No data available
Odor: Characteristic.
Odor threshold: No data available
Refractive index: 1.4219
pH: No data available
Relative evaporation rate (butyl acetate=1): No data available
Melting point: < 0 °C
Freezing point: No data available
Boiling point: 179 - 182 °C @ 10 mm Hg
Flash point: 118 °C
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): No data available
TETRAKIS(METHOXYETHOXY)SILANE, tech-95
Safety Data Sheet

Vapor pressure: No data available
Relative vapor density at 20 °C: > 4
Relative density: 1.079
VOC content: < 1 %
Solubility: Reacts with water.
Log Pow: No data available
Log Kow: No data available
Viscosity, kinematic: 4 cSt
Viscosity, dynamic: No data available
Explosive properties: No data available
Oxidizing properties: No data available
Explosive limits: No data available

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Material decomposes slowly in contact with moist air or with water liberating methoxyethanol.

10.4. Conditions to avoid
Heat. Open flame. Sparks.

10.5. Incompatible materials
Moisture. Water.

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Not classified

<table>
<thead>
<tr>
<th>2-Methoxyethanol (109-86-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
</tr>
<tr>
<td>LC50 inhalation rat (ppm)</td>
</tr>
<tr>
<td>ATE US (oral)</td>
</tr>
<tr>
<td>ATE US (dermal)</td>
</tr>
<tr>
<td>ATE US (gases)</td>
</tr>
<tr>
<td>ATE US (vapors)</td>
</tr>
<tr>
<td>ATE US (dust, mist)</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Causes skin irritation.
Serious eye damage/irritation: Causes serious eye irritation.
Respiratory or skin sensitization: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified

Reproductive toxicity: May damage fertility or the unborn child.
The hydrolysis product of this product is methoxyethanol (ethyleneglycol, methyl ether). Methoxyethanol has been found to affect female and male reproductive systems. Additional laboratory studies with methoxyethoxyethanol observed birth defects, fetotoxicity, embryolethality, immunosuppression and damage to male reproductive tissues.

Specific target organ toxicity (single exposure): Not classified
Specific target organ toxicity (repeated exposure): Not classified
Aspiration hazard: Not classified
Potential Adverse human health effects and symptoms: Material generates methoxyethanol on contact with water or moisture in skin, eyes and mucous membranes and has an irritating, dehydrating effect on overexposed tissue.
Symptoms/injuries after inhalation: May cause irritation to the respiratory tract.
Symptoms/injuries after skin contact: Causes skin irritation.
Symptoms/injuries after eye contact: Causes serious eye irritation.
Symptoms/injuries after ingestion: May be harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

2-Methoxyethanol (109-86-4)

<table>
<thead>
<tr>
<th>LC50 fish 1</th>
<th>10000 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 2</td>
<td>9650 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential

2-Methoxyethanol (109-86-4)

| Log Pow | -0.85 |

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects

Effect on ozone layer: No additional information available
Effect on the global warming: No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations: Incinerate. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.

Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number
Not regulated for transport.

14.2. UN proper shipping name
Not applicable

14.3. Additional information

Other information: No supplementary information available.

Transport by sea
No additional information available

Air transport
No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

Tetrakis(methoxyethoxy)silane (2157-45-1)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

2-Methoxyethanol (109-86-4)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on United States SARA Section 313

EPA TSCA Regulatory Flag: S - S - indicates a substance that is identified in a proposed or final Significant New Uses Rule.

SARA Section 313 - Emission Reporting: 1.0 %
# TETRAKIS(METHOXYETHOXY)SILANE, tech-95

## Safety Data Sheet

### Tetrakis(methoxyethoxy)silane (2157-45-1)

- Listed on the AICS (Australian Inventory of Chemical Substances)
- Listed on the Canadian DSL (Domestic Substances List)
- Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
- Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
- Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
- Listed on the Korean ECL (Existing Chemicals List)
- Listed on NZIoC (New Zealand Inventory of Chemicals)
- Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### 2-Methoxyethanol (109-86-4)

- Listed on the AICS (Australian Inventory of Chemical Substances)
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- Listed on the Korean ECL (Existing Chemicals List)
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- Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

### 15.3. US State regulations

#### TETRAKIS(METHOXYETHOXY)SILANE, tech-95 (2157-45-1)

<table>
<thead>
<tr>
<th>State</th>
<th>Regulation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>Proposition 65 - Carcinogens List</td>
<td>No</td>
</tr>
<tr>
<td>California</td>
<td>Proposition 65 - Developmental Toxicity</td>
<td>No</td>
</tr>
<tr>
<td>California</td>
<td>Proposition 65 - Reproductive Toxicity - Female</td>
<td>No</td>
</tr>
<tr>
<td>California</td>
<td>Proposition 65 - Reproductive Toxicity - Male</td>
<td>No</td>
</tr>
</tbody>
</table>

#### 2-Methoxyethanol (109-86-4)

<table>
<thead>
<tr>
<th>State</th>
<th>Regulation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>Proposition 65 - Maximum Allowable Dose Levels (MADL)</td>
<td>No</td>
</tr>
<tr>
<td>California</td>
<td>SCAQMD - Toxic Air Contaminants - Non-Cancer Acute</td>
<td>No significance risk level (NSRL)</td>
</tr>
<tr>
<td>California</td>
<td>SCAQMD - Toxic Air Contaminants - Non-Cancer Chronic</td>
<td>No significance risk level (NSRL)</td>
</tr>
<tr>
<td>California</td>
<td>Toxic Air Contaminant List (AB 1907, AB 2728)</td>
<td>No</td>
</tr>
<tr>
<td>California</td>
<td>Non-Cancer Chronic Toxic Air Pollutants - Acceptable Ambient Concentrations</td>
<td>No</td>
</tr>
<tr>
<td>California</td>
<td>Non-Carcinogenic Toxic Air Pollutants - Emission Levels (ELs)</td>
<td>No</td>
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<tr>
<td>California</td>
<td>Occupational Exposure Limits - TWAs</td>
<td>No</td>
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<tr>
<td>California</td>
<td>Toxic Air Contaminants</td>
<td>No</td>
</tr>
<tr>
<td>Maine</td>
<td>Chemicals of High Concern</td>
<td>No</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>Allowable Ambient Limits (AALs)</td>
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<tr>
<td>Massachusetts</td>
<td>Allowable Threshold Concentrations (ATCs)</td>
<td>No</td>
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<tr>
<td>Massachusetts</td>
<td>Oil &amp; Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 1</td>
<td>No</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>Oil &amp; Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 2</td>
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<tr>
<td>Massachusetts</td>
<td>Oil &amp; Hazardous Material List - Reportable Quantity</td>
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<td>Massachusetts</td>
<td>Soil Reportable Concentration - Reporting Category 1</td>
<td>No</td>
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<tr>
<td>Massachusetts</td>
<td>Oil &amp; Hazardous Material List - Soil Reportable Concentration - Reporting Category 2</td>
<td>No</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>Right To Know List</td>
<td>No</td>
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<td>Massachusetts</td>
<td>Threshold Effects Exposure Limits (TELs)</td>
<td>No</td>
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<tr>
<td>Massachusetts</td>
<td>Toxics Use Reduction Act</td>
<td>No</td>
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<tr>
<td>Michigan</td>
<td>Occupational Exposure Limits - Skin Designations</td>
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<tr>
<td>Michigan</td>
<td>Occupational Exposure Limits - TWAs</td>
<td>No</td>
</tr>
<tr>
<td>Minnesota</td>
<td>Chemicals of High Concern</td>
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</tr>
<tr>
<td>Minnesota</td>
<td>Hazardous Substance List</td>
<td>No</td>
</tr>
</tbody>
</table>

**SDS ID:** SIT7286.0

**Date:** 01/09/2015

**EN (English US)**
ABBREVIATIONS AND ACRONYMS

Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °C: °C unless otherwise stated; mmHg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Index Number; OECD: The Organisation for Economic Co-operation and Development.

Full text of H-phrases:

Acute Tox. 4 (Dermal)  Acute toxicity (dermal) Category 4
Acute Tox. 4 (Inhalation)   Acute toxicity (inhalation) Category 4
Eye Irrit. 2A    Serious eye damage/eye irritation Category 2A
Flam. Liqu. 3   Flammable liquids Category 3
Repr. 1B       Reproductive toxicity Category 1B
Skin Irrit. 2  Skin corrosion/irritation Category 2
H226     Flammable liquid and vapor
H312    Harmful in contact with skin
H315   Causes skin irritation
H319    Causes serious eye irritation
H332        Harmful if inhaled
H360    May damage fertility or the unborn child

HMIS III RATING

Health: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
Flammability: 1 Slight Hazard
Physical: 0 Minimal Hazard

Prepared by safety and environmental affairs.

Date of issue: 01/09/2015  Version: 1.0

01/09/2015  EN (English US)  SDS ID: SIT7286.0  7/8
Safety Data Sheet

TETRAKIS(METHOXYETHOXY)SILANE, tech-95

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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