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

1.1. Product identifier

<table>
<thead>
<tr>
<th>Product form</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Substance name</td>
<td>TETRAKIS(METHOXYETHOXYETHOXY)SILANE, tech-95</td>
</tr>
<tr>
<td>Product code</td>
<td>SIT7285.0</td>
</tr>
<tr>
<td>Formula</td>
<td>C20H44O12Si</td>
</tr>
<tr>
<td>Synonyms</td>
<td>TETRAMETHOXYETHOXYORTHOSILICATE</td>
</tr>
<tr>
<td></td>
<td>TETRAKIS[2-(2-METHOXYETHOXY)ETHYL] ORTHOSILICATE</td>
</tr>
<tr>
<td></td>
<td>SILICIC ACID, TETRAKIS[2-(2-METHOXYETHOXY)ETHYL] ESTER</td>
</tr>
<tr>
<td>Chemical family</td>
<td>SILICATE ESTER</td>
</tr>
</tbody>
</table>

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

GHS-US classification
Skin Irrit. 2 H315
Eye Irrit. 2A H319
Repr. 2 H361
STOT SE 3 H335

Full text of H statements: see section 16

2.2. Label elements

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

Signal word (GHS-US): Warning
Hazard statements (GHS-US):
- H315 - Causes skin irritation
- H319 - Causes serious eye irritation
- H335 - May cause respiratory irritation
- H361 - Suspected of damaging 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
- P261 - Avoid breathing vapors
- P264 - Wash hands thoroughly after handling
- P271 - Use only outdoors or in a well-ventilated area
- P302+P352 - If on skin: Wash with plenty of water
- P332+P313 - If skin irritation occurs: Get medical advice/attention
- 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
- P337+P313 - If eye irritation persists: Get medical advice/attention
- P308+P313 - If exposed or concerned: Get medical advice/attention
- P321 - Specific treatment (see first aid instructions on this label)
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>: Multi-constituent</th>
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<tbody>
<tr>
<td>Name</td>
<td>TETRAKIS(METHOXYETHOXYETHOXY)SILANE, tech-95</td>
</tr>
<tr>
<td>CAS No</td>
<td>24685-89-0</td>
</tr>
<tr>
<td>EC no</td>
<td>246-406-3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrakis(methoxyethoxyethoxy)silane</td>
<td>(CAS No) 24685-89-0</td>
<td>95-100</td>
<td>Skin Irr. 2, H315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2A, H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3, H335</td>
</tr>
<tr>
<td>Methoxyethoxyethanol</td>
<td>(CAS No) 111-77-3</td>
<td>0-5</td>
<td>Flam. Liq. 4, H227</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2A, H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Repr. 2, H361</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. Get medical advice/attention.

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: Suspected of damaging fertility or the unborn child.
Symptoms/injuries after inhalation: May cause respiratory irritation.
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


Unsuitable extinguishing media: Do not use straight streams.

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

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

Protective equipment: Wear protective equipment as described in Section 8.
Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment: Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: “Exposure controls/personal 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

For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up: Clean up any spills as soon as possible, using an absorbent material to collect it.

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: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid all eye and skin contact and do not breathe vapor and mist. Use only outdoors or in a well-ventilated area.
Hygiene measures: Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Keep container tightly closed. Store locked up.
Incompatible materials: Oxidizing agent.
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

No additional information available

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: 504.65 g/mol
Color: No data available
Odor: Characteristic.
Odor threshold: No data available
Refractive index: 1.4395
pH: No data available
Relative evaporation rate (butyl acetate=1): No data available
Melting point: < 0 °C
Freezing point: No data available
Boiling point: 245 °C @ 1 mm Hg
Flash point: 238 °C
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): No data available
Vapor pressure: No data available
Relative vapor density at 20 °C: > 4
Relative density: 1.09
VOC content: < 1 %
Solubility: Reacts with water.
Log Pow: No data available
Log Kow: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: No data available
Oxidizing properties: No data available
Explosion 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 methoxyethoxyethanol. Hazardous polymerization can occur if product is heated over 120°C.

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

10.5. Incompatible materials
Oxidizing agent.

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity: Not classified

<table>
<thead>
<tr>
<th>Methoxyethoxyethanol (111-77-3)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral mouse</td>
<td>8222 mg/kg</td>
</tr>
<tr>
<td>LD50 oral rabbit</td>
<td>9190 mg/kg</td>
</tr>
<tr>
<td>LD50 oral guinea pig</td>
<td>4160 mg/kg</td>
</tr>
<tr>
<td>LD50 intraperitoneal rat</td>
<td>2722 mg/kg</td>
</tr>
<tr>
<td>LD50 intravenous mouse</td>
<td>2611 mg/kg</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: Suspected of damaging fertility or the unborn child.
The hydrolysis product of this product is methoxyethoxyethanol (diethyleneglycol, methyl ether). Methoxyethoxyethanol 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): May cause respiratory irritation.
Specific target organ toxicity (repeated exposure): Not classified
Aspiration hazard: Not classified
Potential Adverse human health effects and symptoms:
- Material generates methoxyethoxyethanol on contact with water or moisture in skin, eyes and mucous membranes and has an irritating, dehydrating effect on overexposed tissue.
- May cause respiratory irritation.
- Causes skin irritation.
- Causes serious eye irritation.
- May be harmful if swallowed.
Reason for classification: Expert judgment

SECTION 12: Ecological information
12.1. Toxicity
No additional information available
12.2. Persistence and degradability
No additional information available
12.3. Bioaccumulative potential
No additional information available
12.4. Mobility in soil
No additional information available
12.5. Other adverse effects
Other adverse effects: This substance may be hazardous to the environment.
Effect on ozone layer: No additional information available
Effect on the global warming: No known effects from this product.

SECTION 13: Disposal considerations
13.1. Waste treatment methods
Sewage disposal recommendations: Do not dispose of waste into sewer.
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(methoxyethoxyethoxy)silane (24685-89-0)
  Listed on the United States TSCA (Toxic Substances Control Act) inventory
- Methoxyethoxyethanol (111-77-3)
  Listed on the United States TSCA (Toxic Substances Control Act) inventory
15.2. International regulations
TETRAKIS(METHOXYETHOXYETHOXY)SILANE, tech-95
Safety Data Sheet

Tetrakis(methoxyethoxyethoxy)silane (24685-89-0)
Listed on the AICS (Australian Inventory of Chemical Substances)
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 PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Methoxyethoxyethanol (111-77-3)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Canadian DSL (Domestic Substances List)
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)
Listed on CICR (Turkish Inventory and Control of Chemicals)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

15.3. US State regulations

TETRAKIS(METHOXYETHOXYETHOXY)SILANE, tech-95(24685-89-0)

<table>
<thead>
<tr>
<th>State</th>
<th>Proposition 65</th>
<th>Carcinogens List</th>
<th>Developmental Toxicity</th>
<th>Reproductive Toxicity - Female</th>
<th>Reproductive Toxicity - Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - California</td>
<td>-</td>
<td>No</td>
<td>No</td>
<td>Non-significant risk level (NSRL)</td>
<td></td>
</tr>
</tbody>
</table>

Tetrakis(methoxyethoxyethoxy)silane (24685-89-0)

<table>
<thead>
<tr>
<th>State</th>
<th>Proposition 65</th>
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<tbody>
<tr>
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<td>-</td>
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<td></td>
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Methoxyethoxyethanol (111-77-3)

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<tr>
<th>State</th>
<th>Proposition 65</th>
<th>Carcinogens List</th>
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<tbody>
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<td>U.S. - California</td>
<td>-</td>
<td>No</td>
<td>No</td>
<td>Non-significant risk level (NSRL)</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 16: Other information

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 unless otherwise stated; mm: millimeters Hg, 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 Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development.

Full text of H-phrases:
- H227: Combustible liquid
- H315: Causes skin irritation
- H319: Causes serious eye irritation
- H335: May cause respiratory irritation
- H361: Suspected of damaging fertility or the unborn child

HMIS III Rating
- Health: 2 Moderate Hazard - Temporary or minor injury may occur
- Flammability: 1 Slight Hazard
- Physical: 0 Minimal Hazard
Prepared by safety and environmental affairs.

Date of issue: 08/19/2016 Version: 1.0

SDS US (GHS HazCom 2012) - Custom

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

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