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

1.1. Product identifier

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Substance/Chemical Name</th>
<th>Product Code</th>
<th>Formula</th>
<th>Synonyms</th>
<th>Chemical Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
<td>TETRAFLUOROSILANE</td>
<td>SIT7120.0</td>
<td>HF₄Si</td>
<td>SILICON TETRAFLUORIDE; SILICON FLUORIDE</td>
<td>SILICON COMPOUND</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: Emergency telephone number

2.1. Classification of the substance or mixture

GHS-US classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>H280</th>
<th>H330</th>
<th>H314</th>
<th>H315</th>
<th>H318</th>
<th>H335</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquefied gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Tox. 2 (Inhalation:gas)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin Corr. 1B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye Dam. 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STOT SE 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Full text of H statements: see section 16

2.2. Label elements

GHS-US labeling

<table>
<thead>
<tr>
<th>Hazard pictograms (GHS-US)</th>
<th>GHS04</th>
<th>GHS05</th>
<th>GHS06</th>
<th>GHS07</th>
</tr>
</thead>
</table>

Signal word (GHS-US): Danger

Hazard statements (GHS-US): 
- H280 - Contains gas under pressure; may explode if heated
- H314 - Causes severe skin burns and eye damage
- H330 - Fatal if inhaled
- H335 - May cause respiratory irritation

Precautionary statements (GHS-US): 
- P280 - Wear protective gloves/protective clothing/eye protection/face protection
- P284 - In case of inadequate ventilation wear respiratory protection
- P310 - Immediately call a doctor
- P260 - Do not breathe gas
- P264 - Wash hands thoroughly after handling
- P371 - Use only outdoors or in a well-ventilated area
- P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
- P303+P361+P353 - If on skin (or hair): take off immediately all contaminated clothing. Rinse skin with water/shower
- 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 doctor if you feel unwell
- P320 - Specific treatment is urgent (see first aid instructions on this label)
- P363 - Wash contaminated clothing before reuse
TETRAFLUOROSILANE
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P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P410+P403 - Protect from sunlight. Store in a well-ventilated place
P501 - Dispose of contents/container to licensed waste disposal facility

2.3. Other hazards

Other hazards not contributing to the classification:

Hydrogen fluoride may be formed by reaction with water and moisture in air. The US OSHA PEL (TWA) for hydrogen fluoride is 3 ppm.

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/Information on ingredients

3.1. Substance

Substance type: Mono-constituent
Name: TETRAFLUOROSILANE
CAS No: 7783-61-1
EC no: 232-015-5

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrafluorosilane</td>
<td>(CAS No) 7783-61-1</td>
<td>95-100</td>
<td>Liquefied gas, H280</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 2 (Inhalation), H330</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 3 (Inhalation:gas), H331</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin Corr. 1B, H314</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Dam. 1, H318</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3, H335</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:
Flush with water, then wash with saturated solution of sodium carbonate or 3% aqueous ammonia. Get immediate 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 immediate medical advice/attention.

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

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

Symptoms/injuries:
Causes severe skin burns and eye damage.

Symptoms/injuries after inhalation:
Fatal if inhaled. May cause respiratory irritation. Danger of serious damage to health by prolonged exposure through inhalation.

Symptoms/injuries after skin contact:
Causes (severe) skin burns.

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

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

Symptoms/injuries upon intravenous administration:
For ingestion, calcium gluconate intravenously and calcium lactate orally may be considered.

Chronic symptoms:
Hydrofluoric acid, the hydrolysis product has demonstrated mutagenicity and teratogenicity in laboratory bioassay.

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

NOTE TO PHYSICIAN: This product reacts with water and human tissues to form hydrofluoric acid. Massage a paste of 20% magnesium oxide in glycerol onto the burned areas. Inject 2-5 cc of 10% calcium gluconate beneath and around the burned areas. Gastric lavage, if swallowed, using 5% calcium chloride followed by saline catharsis.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:
Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media:
Water.

5.2. Special hazards arising from the substance or mixture

Fire hazard:
Contains gas under pressure; may explode if heated. Irritating fumes, hydrogen fluoride and organic acid vapors may develop when material is exposed to moist air.

05/06/2016 EN (English US) SDS ID: SIT7120.0 2/7
5.3. Advice for firefighters

Firefighting instructions: Exercise caution when fighting any chemical fire.
Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Avoid contact with skin and eyes. Do not breathe gas.
Other information: TETRAFLUOROSILANE is not combustible.

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 product 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: Avoid contact with skin and eyes. Do not breathe gas. 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. Store in cylinders. Protect from sunlight. Store in a well-ventilated place.
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 or face shield. 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 combination organic vapor/acid gas (yellow cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
Physical state: Gas
Appearance: Colorless gas. Fumes in moist air.
Molecular mass: 104.08 g/mol
Color: No data available
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Odor: Pungent suffocating odor.
Odor threshold: No data available
Refractive index: No data available
pH: No data available
Relative evaporation rate (butyl acetate=1): No data available
Melting point: No data available
Freezing point: -90 °C
Boiling point: 95.7 °C
Flash point: not flammable
Critical temperature: -14.15 °C
Auto-ignition temperature: not combustible
Decomposition temperature: No data available
Flammability (solid, gas): No data available
Vapor pressure: 515 mm Hg @ -100°C
Critical pressure: 37.3 atm
Relative vapor density at 20 °C: 3.63
Relative density: 1.66
VOC content: 100 %
Solubility: Reacts vigorously 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
Gas group: Liquefied gas

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable in sealed plastic containers.

10.3. Possibility of hazardous reactions
Reacts with water and moisture in air liberating hydrogen fluoride.

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
Moisture. Water.

10.6. Hazardous decomposition products
Hydrogen fluoride.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Inhalation:gas: Fatal if inhaled.

<table>
<thead>
<tr>
<th>TETRAFLUOROSILANE (7783-61-1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE US (gases)</td>
<td>100,000 ppmV/4h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tetrafluorosilane (7783-61-1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 inhalation rat (ppm)</td>
<td>2272 ppm/4h 3 days: Sense organs and special senses (nose, eye, ear, and taste): eye: lacrimation; lungs, thorax, or respiration: acute pulmonary edema; lungs, thorax, or respiration: dyspnea</td>
</tr>
<tr>
<td>ATE US (gases)</td>
<td>2272.000 ppmV/4h</td>
</tr>
<tr>
<td>ATE US (vapors)</td>
<td>0.500 mg/l/4h</td>
</tr>
<tr>
<td>ATE US (dust, mist)</td>
<td>0.050 mg/l/4h</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>Property/Condition</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>Not classified</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
<tr>
<td>Potential Adverse human health effects and symptoms</td>
<td>On contact with water and human tissue this compound liberates hydrogen fluoride (hydrofluoric acid).</td>
</tr>
<tr>
<td>Symptoms/injuries after inhalation</td>
<td>Fatal if inhaled. May cause respiratory irritation. Danger of serious damage to health by prolonged exposure through inhalation.</td>
</tr>
<tr>
<td>Symptoms/injuries after skin contact</td>
<td>Causes (severe) skin burns.</td>
</tr>
<tr>
<td>Symptoms/injuries after eye contact</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>Symptoms/injuries after ingestion</td>
<td>May be harmful if swallowed.</td>
</tr>
<tr>
<td>Symptoms/injuries upon intravenous administration</td>
<td>For ingestion, calcium gluconate intravenously and calcium lactate orally may be considered.</td>
</tr>
<tr>
<td>Chronic symptoms</td>
<td>Hydrofluoric acid, the hydrolysis product has demonstrated mutagenicity and teratogenicity in laboratory bioassay.</td>
</tr>
<tr>
<td>Reason for classification</td>
<td>Expert judgment</td>
</tr>
</tbody>
</table>

**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 ecological damage caused by this product.

**SECTION 13: Disposal considerations**

13.1. **Waste treatment methods**
Sewage disposal recommendations: Do not dispose of waste into sewer.
Waste disposal recommendations: 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**
UN-No.(DOT): 1859
DOT NA no.: UN1859

14.2. **UN proper shipping name**
Proper Shipping Name (DOT): Silicon tetrafluoride
Class (DOT): 2.3 - Class 2.3 - Poisonous gas 49 CFR 173.115
Hazard labels (DOT): 2.3 - Poison gas
8 - Corrosive

DOT Packaging Exceptions (49 CFR 173.xxx): None
**TETRAFLUOROSILANE**

**Safety Data Sheet**

| DOT Packaging Non Bulk (49 CFR 173.xxx) | : 302 |
| DOT Packaging Bulk (49 CFR 173.xxx)   | : None |

**14.3. Additional information**

| Emergency Response Guide (ERG) Number | : 125 |
| Other information                     | : No supplementary information available. |

**Transport by sea**

| DOT Vessel Stowage Location | : D - The material must be stowed “on deck only” on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded |
| DOT Vessel Stowage Other      | : 40 - Stow “clear of living quarters” |

**Air transport**

| DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) | : Forbidden |
| DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)     | : Forbidden |

**SECTION 15: Regulatory information**

**15.1. US Federal regulations**

**Tetrafluorosilane (7783-61-1)**

- Listed on the United States TSCA (Toxic Substances Control Act) inventory

**15.2. International regulations**

**Tetrafluorosilane (7783-61-1)**

- 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)
- Listed on the Canadian IDL (Ingredient Disclosure List)
- Listed on INSQ (Mexican national Inventory of Chemical Substances)

**15.3. US State regulations**

<table>
<thead>
<tr>
<th>TETRAFLUOROSILANE (7783-61-1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - California - Proposition 65 - Carcinogens List</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Developmental Toxicity</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tetrafluorosilane (7783-61-1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - California - Proposition 65 - Carcinogens List</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Developmental Toxicity</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-significant risk level (NSRL)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Tetrafluorosilane (7783-61-1)**

- U.S. - New Jersey - Right to Know Hazardous Substance List
TETRAFLUOROSILANE
Safety Data Sheet

SECTION 16: Other information

Abbreviations and acronyms:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND</td>
<td>Not Determined, No Data</td>
</tr>
<tr>
<td>NA</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>LD</td>
<td>Lethal Dose</td>
</tr>
<tr>
<td>LC</td>
<td>Lethal Concentration</td>
</tr>
<tr>
<td>ATE</td>
<td>Acute Toxicity Estimates</td>
</tr>
<tr>
<td>H</td>
<td>hour</td>
</tr>
<tr>
<td>°</td>
<td>°C unless otherwise stated</td>
</tr>
<tr>
<td>mm</td>
<td>millimeters Hg, torr</td>
</tr>
<tr>
<td>PEL</td>
<td>permissible exposure level</td>
</tr>
<tr>
<td>TWA</td>
<td>time weighted average</td>
</tr>
<tr>
<td>TLV</td>
<td>threshold limit value</td>
</tr>
<tr>
<td>TG</td>
<td>Test Guideline</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
</tr>
<tr>
<td>HMIS</td>
<td>Hazardous Material Information System</td>
</tr>
<tr>
<td>CAS No.</td>
<td>Chemical Abstract Service Registration Number</td>
</tr>
<tr>
<td>EC No.</td>
<td>European Commission Registration Number</td>
</tr>
<tr>
<td>EC Index No.</td>
<td>European Commission Index Number</td>
</tr>
<tr>
<td>OECD</td>
<td>The Organisation for Economic Co-operation and Development</td>
</tr>
</tbody>
</table>

Full text of H-phrases:

<table>
<thead>
<tr>
<th>H-number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H280</td>
<td>Contains gas under pressure; may explode if heated</td>
</tr>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage</td>
</tr>
<tr>
<td>H330</td>
<td>Fatal if inhaled</td>
</tr>
<tr>
<td>H331</td>
<td>Toxic if inhaled</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
</tbody>
</table>

HMIS III Rating

Health: 4 Severe Hazard - Life-threatening, major or permanent damage may result from single or repeated overexposures

Flammability: 0 Minimal Hazard

Physical: 2 Moderate Hazard

Prepared by safety and environmental affairs.

Date of issue: 05/06/2016
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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