### SECTION 1: Identification

**1.1. Identification**
- **Product name**: TETRAFLUOROSILANE
- **Product code**: SIT7120.0
- **Product form**: Substance
- **Physical state**: Gas
- **Formula**: HF₄Si
- **Synonyms**: SILICON TETRAFLUORIDE; SILICON FLUORIDE
- **Chemical family**: SILICON COMPOUND

**1.2. Recommended use and restrictions on use**
- **Recommended use**: Chemical intermediate

**1.3. Supplier**
**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: Hazard(s) Identification

**2.1. Classification of the substance or mixture**
- **GHS-US classification**
  - Gases under pressure: Liquefied gas
  - Acute toxicity (inhalation: gas) Category 2
  - Skin corrosion/irritation Category 1B
  - Serious eye damage/eye irritation Category 1
  - Specific target organ toxicity (single exposure) Category 3
- **Full text of H statements**: see section 16

**2.2. GHS Label elements, including precautionary statements**
- **Signal word (GHS US)**: Danger
- **Hazard statements (GHS US)**: H280 - Contains gas under pressure; may explode if heated; H330 - Fatal if inhaled; H314 - Causes severe skin burns and eye damage; H318 - Causes serious eye damage; 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 in case of inadequate ventilation wear respiratory protection; P310 - Immediately call a doctor; P260 - Do not breathe gas; P264 - Wash hands thoroughly after handling; P271 - 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; P403+P233 - Store in a well-ventilated place. Keep container tightly closed; P405 - Store locked up.
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2.3. Hazards not otherwise classified (HNOC)
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)
Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

<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>Press. Gas (Liq.), H280, Acute Tox. 2 (Inhalation), H330, Acute Tox. 3 (Inhalation:gas), H331, Skin Corr. 1B, H314, Eye Dam. 1, H318, STOT SE 3, H335</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

3.2. Mixtures

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 (acute and delayed)

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

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

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

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

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

Symptoms/effects 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. Immediate medical attention and special treatment, if necessary

NOT TO PHYSICIAN: This product reacts with water and human tissues to form hydrofluoric acid. Massage a paste of 20% magnesium oxide in glycerol on to the burned areas. Inject 2-5 ccof 10% calcium gluconate beneath and around the burned areas. Gastric lavage, if swallowed, using 5% calcium chloride followed by saline catharsis.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

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

Unsuitable extinguishing media: Water.

5.2. Specific hazards arising from the chemical

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.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions: Exercise caution when fighting any chemical fire.
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| 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.
- **Incompatible materials**: Moisture. Water.

**7.3. Storage area**

- Store in a well-ventilated place. Store away from heat.

#### SECTION 8: Exposure controls/personal protection

**8.1. Control parameters**

No additional information available

**8.2. Appropriate engineering controls**

- **Appropriate engineering controls**: Provide local exhaust or general room ventilation.

**8.3. Individual protection measures/Personal protective equipment**

**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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Gas</td>
</tr>
<tr>
<td>Appearance</td>
<td>Colorless gas. Fumes in moist air.</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>104.08 g/mol</td>
</tr>
<tr>
<td>Color</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor</td>
<td>Pungent suffocating odor.</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Refractive index</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>-90 °C</td>
</tr>
<tr>
<td>Boiling point</td>
<td>95.7 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>not flammable</td>
</tr>
<tr>
<td>Critical temperature</td>
<td>-14.15 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>not combustible</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>515 mm Hg @ -100°C</td>
</tr>
<tr>
<td>Critical pressure</td>
<td>37.3 atm</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>3.63</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.66</td>
</tr>
<tr>
<td>% Volatiles</td>
<td>100 %</td>
</tr>
<tr>
<td>Solubility</td>
<td>Reacts vigorously with water.</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas group</td>
<td>Press. Gas (Liq.)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

ATE US (gases) 100 ppmV/4h
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<table>
<thead>
<tr>
<th>Tetrafluorosilane (7783-61-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 inhalation rat (ppm)</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 severe skin burns and eye damage.
Serious eye damage/irritation: Causes serious eye damage.
Respiratory or skin sensilization: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
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: On contact with water and human tissue this compound liberates hydrogen fluoride (hydrofluoric acid).
Symptoms/effects after inhalation: Fatal if inhaled. May cause respiratory irritation. Danger of serious damage to health by prolonged exposure through inhalation.
Symptoms/effects after skin contact: Causes (severe) skin burns.
Symptoms/effects after eye contact: Causes serious eye damage.
Symptoms/effects after ingestion: May be harmful if swallowed.
Symptoms/effects 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.
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 the ozone layer: No additional information available
Effect on global warming: No known effects from this product.
GWPmix comment: No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal methods
Sewage disposal recommendations: Do not dispose of waste into sewer.
Product/Packaging 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
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14.2. UN proper shipping name
Transport document description: UN1859 Silicon tetrafluoride, 2.3 (8)
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 Non Bulk (49 CFR 173.xxx): 302
DOT Packaging Bulk (49 CFR 173.xxx): None
DOT Packaging Exceptions (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
CANADA
Tetrafluorosilane (7783-61-1)
Listed on the Canadian DSL (Domestic Substances List)
WHMIS Classification:
- Class A - Compressed Gas
- Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects
- Class E - Corrosive Material

EU-Regulations
Tetrafluorosilane (7783-61-1)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations
Tetrafluorosilane (7783-61-1)
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 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
California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm.

**Tetrafluorosilane (7783-61-1)**
U.S. - New Jersey - Right to Know Hazardous Substance List

**SECTION 16: Other information**

Full text of H-phrases:

<table>
<thead>
<tr>
<th>H280</th>
<th>Contains gas under pressure; may explode if heated</th>
</tr>
</thead>
<tbody>
<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>

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; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor. |

Hazard Rating:

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

Flammability: 0 Minimal Hazard - Materials that will not burn

Physical: 2 Moderate Hazard - Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

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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Print date: 04/11/2019