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

<table>
<thead>
<tr>
<th>1.1. Product identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product form</strong></td>
</tr>
<tr>
<td><strong>Physical state</strong></td>
</tr>
<tr>
<td><strong>Substance name</strong></td>
</tr>
<tr>
<td><strong>Product code</strong></td>
</tr>
<tr>
<td><strong>Formula</strong></td>
</tr>
<tr>
<td><strong>Synonyms</strong></td>
</tr>
<tr>
<td><strong>Chemical family</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.2. Relevant identified uses of the substance or mixture and uses advised against</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.2.1. Relevant identified uses</strong></td>
</tr>
<tr>
<td>Use of the substance/mixture</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.3. Details of the supplier of the safety data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GELEST, INC.</strong></td>
</tr>
<tr>
<td>11 East Steel Road</td>
</tr>
<tr>
<td>Morrisville, PA 19067</td>
</tr>
<tr>
<td><strong>USA</strong></td>
</tr>
<tr>
<td>T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST</td>
</tr>
<tr>
<td><a href="mailto:info@gelest.com">info@gelest.com</a> - <a href="http://www.gelest.com">www.gelest.com</a></td>
</tr>
</tbody>
</table>

| **GELEST INC.** |
| Fritz-Klatte-Strasse 8 |
| 65933 Frankfurt |
| **Germany** |
| T +49 (0) 69 3535106-500 - F +49 (0) 69 3535106-501 - (M-F): 8:00 AM - 4:00 PM |
| info@geleste.com - www.geleste.com |

<table>
<thead>
<tr>
<th><strong>1.4. Emergency telephone number</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency number</td>
</tr>
</tbody>
</table>

### SECTION 2: Hazards identification

<table>
<thead>
<tr>
<th>2.1. Classification of the substance or mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Classification according to Regulation (EC) No. 1272/2008 [CLP]</strong></td>
</tr>
<tr>
<td>Gases under pressure: Liquefied gas</td>
</tr>
<tr>
<td>Acute toxicity (inhalation/gas) Category 2</td>
</tr>
<tr>
<td>Skin corrosion/irritation, Category 1B</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation, Category 1</td>
</tr>
<tr>
<td>Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation</td>
</tr>
<tr>
<td>Full text of H statements: see section 16</td>
</tr>
</tbody>
</table>

**Adverse physicochemical, human health and environmental effects**

No additional information available

<table>
<thead>
<tr>
<th>2.2. Label elements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Labelling according to Regulation (EC) No. 1272/2008 [CLP]</strong></td>
</tr>
<tr>
<td>Hazard pictograms (CLP)</td>
</tr>
<tr>
<td>GHS05</td>
</tr>
</tbody>
</table>
TETRAFLUOROSILANE, 99.99+%  
Safety Data Sheet

### Signal word (CLP)

<table>
<thead>
<tr>
<th>Hazard statements (CLP)</th>
<th>Precautionary statements (CLP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>P280 - Wear protective gloves/protective clothing/eye protection/face protection.</td>
</tr>
<tr>
<td>H280 - Contains gas under pressure; may explode if heated.</td>
<td>P284 - In case of inadequate ventilation wear respiratory protection</td>
</tr>
<tr>
<td>H314 - Causes severe skin burns and eye damage.</td>
<td>P260 - Do not breathe gas.</td>
</tr>
<tr>
<td>H330 - Fatal if inhaled.</td>
<td>P264 - Wash hands thoroughly after handling.</td>
</tr>
<tr>
<td>H335 - May cause respiratory irritation.</td>
<td>P501 - Dispose of contents/container to licensed waste disposal facility.</td>
</tr>
</tbody>
</table>

### 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.

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

<table>
<thead>
<tr>
<th>Substance type</th>
<th>Name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono-constituent</td>
<td>TETRAFLUOROSILANE, 99.99+%</td>
<td>7783-61-1</td>
<td>232-015-5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Regulation (EC No. 1272/2008 [CLP])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrafluorosilane</td>
<td>(CAS-No.) 7783-61-1 (EC-No.) 232-015-5</td>
<td>99.9 - 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 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 person to fresh air and keep 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/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. 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.

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 protective. 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

<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>Colour</td>
<td>No data available</td>
</tr>
<tr>
<td>Odour</td>
<td>Pungent suffocating odor.</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Refractive index</td>
<td>No additional information available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butylacetate=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>Vapour pressure</td>
<td>515 mm Hg @ -100°C</td>
</tr>
<tr>
<td>Critical pressure</td>
<td>37.3 atm</td>
</tr>
<tr>
<td>Relative vapour 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>Oxidising properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information

**Gas group:** Press. Gas (Liq.)

**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: Fatal if inhaled.

<table>
<thead>
<tr>
<th>Compound</th>
<th>Toxicity Level</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>TETRAFLUOROSILANE, 99.99+% (7783-61-1)</td>
<td>ATE CLP (gases)</td>
<td>100 ppmv/4h</td>
</tr>
<tr>
<td>Tetrafluorosilane (7783-61-1)</td>
<td>LC50 inhalation rat (ppm)</td>
<td>2272 ppmv/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></td>
<td>ATE CLP (gases)</td>
<td>2272 ppmv/4h</td>
</tr>
<tr>
<td></td>
<td>ATE CLP (vapours)</td>
<td>0.5 mg/l/4h</td>
</tr>
<tr>
<td></td>
<td>ATE CLP (dust,mist)</td>
<td>0.05 mg/l/4h</td>
</tr>
</tbody>
</table>

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
Acute aquatic toxicity: Not classified
Chronic aquatic toxicity: Not classified

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. Results of PBT and vPvB assessment
No additional information available

12.6. Other adverse effects
Other adverse effects : This substance may be hazardous to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment 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
In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number
UN-No. (ADR) : 1859
UN-No. (IMDG) : 1859
UN-No. (IATA) : 1859
UN-No. (ADN) : 1859
UN-No. (RID) : 1859

14.2. UN proper shipping name

Proper Shipping Name (ADR) : SILICON TETRAFLUORIDE
Proper Shipping Name (IMDG) : SILICON TETRAFLUORIDE
Proper Shipping Name (IATA) : Silicon tetrafluoride
Proper Shipping Name (ADN) : SILICON TETRAFLUORIDE
Proper Shipping Name (RID) : SILICON TETRAFLUORIDE

Transport document description (ADR) : UN 1859 SILICON TETRAFLUORIDE, 2.3 (8), (C/D)
Transport document description (IMDG) : UN 1859 SILICON TETRAFLUORIDE, 2.3 (8)
Transport document description (IATA) : UN 1859 Silicon tetrafluoride, 2.3
Transport document description (ADN) : UN 1859 SILICON TETRAFLUORIDE, 2.3 (8)
Transport document description (RID) : UN 1859 SILICON TETRAFLUORIDE, 2.3 (8)

14.3. Transport hazard class(es)

ADR
Transport hazard class(es) (ADR) : 2.3 (8)
Danger labels (ADR) : 2.3, 8

IMDG
Transport hazard class(es) (IMDG) : 2.3 (8)
Danger labels (IMDG) : 2.3, 8

IATA
Transport hazard class(es) (IATA) : 2.3 (8)

ADN
Transport hazard class(es) (ADN) : 2.3 (8)
TETRAFLUOROSILANE, 99.99+%  
Safety Data Sheet

Danger labels (ADN) : 2.3, 8

RID
Transport hazard class(es) (RID) : 2.3 (8)
Danger labels (RID) : 2.3, 8

14.4. Packing group
Packing group (ADR) : Not applicable
Packing group (IMDG) : Not applicable
Packing group (IATA) : Not applicable
Packing group (ADN) : Not applicable
Packing group (RID) : Not applicable

14.5. Environmental hazards
Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user
- Overland transport
Classification code (ADR) : 2TC
Limited quantities (ADR) : 0
Excepted quantities (ADR) : E0
Packing instructions (ADR) : P200
Mixed packing provisions (ADR) : MP9
Portable tank and bulk container instructions (ADR) : (M)
Tank code (ADR) : PxBH(M)
Tank special provisions (ADR) : TA4, TT9
Vehicle for tank carriage : AT
Transport category (ADR) : 1
Special provisions for carriage - Loading, unloading and handling (ADR) : CV9, CV10, CV36
Special provisions for carriage - Operation (ADR) : S14
Hazard identification number (Kemler No.) : 268
Orange plates : 268
Tunnel restriction code (ADR) : C/D
EAC code : 2PE
APP code : B

- Transport by sea
Limited quantities (IMDG) : 0
Excepted quantities (IMDG) : E0
Packing instructions (IMDG) : P200
EmS-No. (Fire) : F-C
TETRAFLUOROSILANE, 99.99+%  
Safety Data Sheet

EmS-No. (Spillage): S-U  
Stowage category (IMDG): D  
Stowage and handling (IMDG): SW2  

- Air transport

PCA Limited quantities (IATA): Forbidden  
PCA limited quantity max net quantity (IATA): Forbidden  
PCA packing instructions (IATA): Forbidden  
PCA max net quantity (IATA): Forbidden  
CAO packing instructions (IATA): Forbidden  
CAO max net quantity (IATA): Forbidden  
Special provisions (IATA): A2  
ERG code (IATA): 2CP

- Inland waterway transport

Classification code (ADN): 2TC  
Limited quantities (ADN): 0  
Excepted quantities (ADN): E0  
Equipment required (ADN): PP, EP, TOX, A  
Ventilation (ADN): VE02  
Number of blue cones/lights (ADN): 2

- Rail transport

Classification code (RID): 2TC  
Limited quantities (RID): 0  
Excepted quantities (RID): E0  
Packing instructions (RID): P200  
Mixed packing provisions (RID): MP9  
Portable tank and bulk container instructions (RID): (M)  
Tank codes for RID tanks (RID): PxBH(M)  
Special provisions for RID tanks (RID): TU38, TE22, TE25, TA4, TT9, TM6  
Transport category (RID): 1  
Special provisions for carriage - Loading, unloading and handling (RID): CW9, CW10, CW36  
Hazard identification number (RID): 268

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No REACH Annex XVII restrictions  
TETRAFLUOROSILANE, 99.99+% is not on the REACH Candidate List  
TETRAFLUOROSILANE, 99.99+% is not on the REACH Annex XIV List  

% Volatiles: 100 %

15.1.2. National regulations

Germany

12th Ordinance Implementing the Federal Immisison Control Act - 12.BImSchV: Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)
15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Abbreviations and acronyms:

<table>
<thead>
<tr>
<th>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</th>
</tr>
</thead>
</table>

Other information: Prepared by safety and environmental affairs.

Full text of H- and EUH-statements:

| Acute Tox. 2 (Inhalation) | Acute toxicity (inhal.), Category 2 |
| Acute Tox. 2 (Inhalation:gas) | Acute toxicity (inhalation:gas) Category 2 |
| Acute Tox. 3 (Inhalation:gas) | Acute toxicity (inhalation:gas) Category 3 |
| Eye Dam. 1 | Serious eye damage/eye irritation, Category 1 |
| Press. Gas (Liq.) | Gases under pressure : Liquefied gas |
| Skin Corr. 1B | Skin corrosion/irritation, Category 1B |
| STOT SE 3 | Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation |
| H280 | Contains gas under pressure; may explode if heated. |
| H314 | Causes severe skin burns and eye damage. |
| H318 | Causes serious eye damage. |
| H330 | Fatal if inhaled. |
| H331 | Toxic if inhaled. |
| H335 | May cause respiratory irritation. |

SDS EU (REACH Annex II) - Custom

The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.

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