# SECTION 1: Identification

## 1. Identification

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
<td>(TRIDECAFLUORO-1,1,2,2-TETRAHYDROOCTYL)TRICHLOROSILANE</td>
</tr>
<tr>
<td>Product code</td>
<td>SIT8174.0</td>
</tr>
<tr>
<td>Product form</td>
<td>Substance</td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Formula</td>
<td>C8H4Cl3F13Si</td>
</tr>
<tr>
<td>Synonyms</td>
<td>(1H,1H,2H,2H-PERFLUOROOCTYL)TRICHLOROSILANE; TRICHLORO(3,3,4,4,5,5,6,6,7,7,8,8,8-TRIDECAFLUROOCTYL)SILANE</td>
</tr>
<tr>
<td>Chemical family</td>
<td>CHLOROSILANE</td>
</tr>
</tbody>
</table>

## 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

<table>
<thead>
<tr>
<th>GHS-US classification</th>
<th>Hazard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable liquids</td>
<td>H226</td>
<td>Flammable liquid and vapour</td>
</tr>
<tr>
<td>Category 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>H314</td>
<td>Causes severe skin burns and eye damage</td>
</tr>
<tr>
<td>Category 1B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>H318</td>
<td>Causes serious eye damage</td>
</tr>
</tbody>
</table>

Full text of H statements: see section 16

## 2.2. GHS Label elements, including precautionary statements

### GHS-US labeling

**Signal word (GHS-US)**: Danger

**Hazard statements (GHS-US)**:  
- H226 - Flammable liquid and vapour  
- H314 - Causes severe skin burns and eye damage

**Precautionary statements (GHS-US)**:  
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
- P310 - Immediately call a doctor  
- P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking, heat, open flames, sparks  
- P233 - Keep container tightly closed.  
- P240 - Ground/Bond container and receiving equipment  
- P241 - Use explosion-proof electrical equipment  
- P242 - Use only non-sparking tools.  
- P243 - Take precautionary measures against static discharge.  
- P260 - Do not breathe vapors.  
- P264 - Wash hands thoroughly after handling.  
- 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  
- P321 - Specific treatment (see first aid instructions on this label)
Hazard not otherwise classified (HNOC)

Other hazards not contributing to the classification: Hydrogen chloride may be formed by reaction with water and moisture in air. The US OSHA PEL (TWA) for hydrogen chloride is 5 ppm.

SECTION 3: Composition/Information on ingredients

3.1. Substances

Name: (TRIDECALUORO-1,1,2,2-TETRAHYDROOCTYL)TRICHLOROSILANE

CAS-No.: 78560-45-9

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Tridecafluoro-1,1,2,2-tetrahydrooctyl)trichlorosilane (CAS-No.) 78560-45-9</td>
<td></td>
<td>95 - 100</td>
<td>Flam. Liq. 3, H226, Skin Corr. 1B, H314, Eye Dam. 1, H318</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. Get medical advice/attention.

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

4.2. Most important symptoms and effects (acute and delayed)

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

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

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.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media


Unsuitable extinguishing media: Water.

5.2. Specific hazards arising from the chemical

Fire hazard: Flammable liquid and vapour. Irritating fumes of hydrogen chloride and organic acid vapors may develop when material is exposed to water or open flame.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions: Exercise caution when fighting any chemical fire. Use water spray to cool exposed surfaces.

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

General measures: Eliminate ignition sources. Use special care to avoid static electric charges.

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. Sweep or shovel spills into appropriate container for disposal. Use only non-sparking tools.

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
Additional hazards when processed: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Precautions for safe handling: Avoid all eye and skin contact and do not breathe vapor and mist. Ground/bond container and receiving equipment. Provide good ventilation in process area to prevent accumulation of vapors. Take precautionary measures against static discharge. Use only non-sparking tools.
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
Technical measures: Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.
Storage conditions: Keep container tightly closed. Keep in a cool place. Store locked up.
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
Physical state: Liquid
Appearance: Clear liquid.
Molecular mass: 481.55 g/mol
Color: Straw.
Odor: Acrid. Similar to hydrogen chloride.
Odor threshold: No data available
Refractive index: 1.3521
pH: No data available
Relative evaporation rate (butyl acetate=1): No data available
Melting point: No data available
Freezing point: -32 °C
Boiling point: 84 - 85 °C @ 17 mm Hg
Flash point: 54 °C
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): Flammable liquid and vapour
Vapor pressure: < 2 mm Hg @ 20°C
Relative vapor density at 20 °C: > 1
Relative density: 1.639
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 in sealed containers stored under a dry inert atmosphere.

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

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

10.5. Incompatible materials

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity: Not classified
Skin corrosion/irritation: Causes severe skin burns and eye damage.
Serious eye damage/irritation: Causes serious eye damage.
Respiratory or skin sensitization: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
Specific target organ toxicity – single exposure: Not classified
Specific target organ toxicity – repeated exposure: Not classified
Aspiration hazard: Not classified
### (TRIDECAFLUORO-1,1,2,2-TETRAHYDROOCTYL)TRICHLOROSILANE

Safety Data Sheet

| Symptoms/effects after inhalation | May cause irritation to the respiratory tract. |
| 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. |
| 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 |

#### SECTION 13: Disposal considerations

13.1. **Disposal methods**

| Sewage disposal recommendations | Do not dispose of waste into sewer. |
| Product/Packaging disposal recommendations | May be incinerated. 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) | 2986 |
| DOT NA no. | UN2986 |

14.2. **UN proper shipping name**

| Transport document description | UN2986 Chlorosilanes, corrosive, flammable, n.o.s. ([TRIDECAFLUORO-1,1,2,2-TETRAHYDROOCTYL]TRICHLOROSILANE), 8 (3), II |
| Proper Shipping Name (DOT) | Chlorosilanes, corrosive, flammable, n.o.s. ([TRIDECAFLUORO-1,1,2,2-TETRAHYDROOCTYL]TRICHLOROSILANE) |
| Class (DOT) | 8 - Class 8 - Corrosive material 49 CFR 173.136 |
| Packing group (DOT) | II - Medium Danger |
| Hazard labels (DOT) | 8 - Corrosive 3 - Flammable liquid |

| DOT Packaging Non Bulk (49 CFR 173.xxx) | 206 |
| DOT Packaging Bulk (49 CFR 173.xxx) | 243 |
| DOT Packaging Exceptions (49 CFR 173.xxx) | None |

14.3. **Additional information**

| Emergency Response Guide (ERG) Number | 155 |
| Other information | No supplementary information available. |

#### Transport by sea

| DOT Vessel Stowage Location | C - The material must be stowed “on deck only” on a cargo vessel and on a passenger vessel. |
| DOT Vessel Stowage Other | 40 - Stow “clear of living quarters” |
(TRIDECAFLUORO-1,1,2,2-TETRAHYDROOCTYL)TRICHLOROSILANE
Safety Data Sheet

SECTION 15: Regulatory information

15.1. US Federal regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA Exemption/Exclusion</th>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(TRIDECAFLUORO-1,1,2,2-TETRAHYDROOCTYL)TRICHLOROSILANE (78560-45-9)</td>
<td></td>
<td>This material is supplied for research and development purposes subject to the R&amp;D exemption under TSCA, 40 CFR 720.36, and must meet the requirements of the exemption, including supervision by a &quot;technically qualified individual&quot; as defined by 40 CFR 720.3(ee). The use of this material for &quot;commercial purposes&quot; as defined by 40 CFR 720.3(r) is not permitted in the United States.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA Exemption/Exclusion</th>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Tridecafluoro-1,1,2,2-tetrahydrooctyl)trichlorosilane (78560-45-9)</td>
<td>Not listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
<td></td>
</tr>
</tbody>
</table>

15.2. International regulations

CANADA
No additional information available

EU-Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA Exemption/Exclusion</th>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Tridecafluoro-1,1,2,2-tetrahydrooctyl)trichlorosilane (78560-45-9)</td>
<td>Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)</td>
<td></td>
</tr>
</tbody>
</table>

National regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA Exemption/Exclusion</th>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Tridecafluoro-1,1,2,2-tetrahydrooctyl)trichlorosilane (78560-45-9)</td>
<td>Listed on the AICS (Australian Inventory of Chemical Substances)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Listed on the Japanese ENCS (Existing &amp; New Chemical Substances) inventory</td>
<td></td>
</tr>
</tbody>
</table>

15.3. US State regulations
No additional information available

SECTION 16: Other information

<table>
<thead>
<tr>
<th>H226</th>
<th>Flammable liquid and vapour</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>
</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
3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability
2 Moderate Hazard - Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 F but below 200 F. (Classes II & IIIA)

Physical
1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.
Safety Data Sheet

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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