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

1.1. Product identifier

Product form : Substance
Physical state : Liquid
Substance name : NONAFLUOROHEXYLTRICHLOROSILANE
Product code : SIN6597.6
Formula : C6H4Cl3F9Si
Synonyms : 1-(TRICHLOROSILYL)NONAFLUOROFLUOROHEXANE
Chemical family : ORGANOCHLOROSILANE

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/mixture : Chemical intermediate

1.2.2. Uses advised against

No additional information available

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

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@gelestd.de - www.gelestd.de

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

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Skin corrosion/irritation, Category 1B : H314
Serious eye damage/eye irritation, Category 1 : H318
Specific target organ toxicity — Single exposure, Category 3 : H335
Respiratory tract irritation

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) : GHS05 GHS07

Signal word (CLP) : Danger
Hazard statements (CLP) : H314 - Causes severe skin burns and eye damage.
H335 - May cause respiratory irritation.
Precautionary statements (CLP):
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P260 - Do not breathe vapours.
P264 - Wash hands thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P403+p233 - Store in a well-ventilated place. Keep container tightly closed.
P310 - Immediately call a POISON CENTER or doctor/physician.

EUH-statements:
EUH014 - Reacts violently with water.

2.3. Other hazards:
Other hazards not contributing to the classification:
NOTE: Material may form a siloxane polymer on the skin, eyes or in the lungs.

SECTION 3: Composition/information on ingredients:
3.1. Substances:
- Substance type: Mono-constituent
- Name: NONAFLUOROHEXYLTRICHLOROSILANE
- CAS-No.: 78560-47-1

<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>Nonafluorohexyltrichlorosilane</td>
<td>(CAS-No.) 78560-47-1</td>
<td>97 - 100</td>
<td>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. Get medical advice/attention.
- First-aid measures after skin contact:
  Wash with plenty of 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, both acute and delayed:
Symptoms/effects:
- Causes severe skin burns and eye damage.
Symptoms/effects after inhalation:
- May cause respiratory irritation.
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. Indication of any immediate medical attention and special treatment needed:
No additional information available

SECTION 5: Firefighting measures:
5.1. Extinguishing media:
Suitable extinguishing media:
- Alcohol-resistant foam. Carbon dioxide. Dry chemical. Use of high expansion foam (100:1) is recommended to cover flames.

Unsuitable extinguishing media:
- Water.

5.2. Special hazards arising from the substance or mixture:
Fire hazard:
- Combustible liquid. Irritating fumes of hydrogen chloride and organic acid vapors may develop when material is exposed to water or open flame.

5.3. Advice for firefighters:
Firefighting instructions:
- Use only dry media to extinguish flames. Water spray or fog should only be used to knock down hydrogen chloride vapors in areas downwind from the fire. Exercise caution when fighting any chemical fire.
### 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 vapour and mist.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

<table>
<thead>
<tr>
<th>General measures</th>
<th>Remove ignition sources. Use special care to avoid static electric charges.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For non-emergency personnel</strong></td>
<td>Wear protective equipment as described in Section 8.</td>
</tr>
<tr>
<td><strong>Emergency procedures</strong></td>
<td>Evacuate unnecessary personnel.</td>
</tr>
<tr>
<td><strong>For emergency responders</strong></td>
<td>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”.</td>
</tr>
</tbody>
</table>

#### 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
Method 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
Precautions for safe handling: Avoid all eye and skin contact and do not breathe vapour and mist. Provide good ventilation in process area to prevent formation of vapour. Containers must be properly grounded before beginning transfer. Use only outdoors or in a well-ventilated area. 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: Ground/bond container and receiving equipment.

Storage conditions: Keep container tightly closed.

Incompatible materials: Acids, alcohols, 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 or face shield. (Viton recommended). 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>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear liquid</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>361.53 g/mol</td>
</tr>
<tr>
<td>Colour</td>
<td>Straw</td>
</tr>
<tr>
<td>Odour</td>
<td>Acrid. Similar to hydrogen chloride.</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Refractive index</td>
<td>1.3587</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>&lt; 0 °C</td>
</tr>
<tr>
<td>Boiling point</td>
<td>70 - 72 °C @ 15 mm Hg</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 65 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Combustible liquid</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>&lt; 25 mm Hg @ 25°C</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>&gt; 1</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.542</td>
</tr>
<tr>
<td>% Volatiles</td>
<td>25 %</td>
</tr>
<tr>
<td>Solubility</td>
<td>Reacts 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

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

Acids. alcohols. Oxidizing agent.

10.6. Hazardous decomposition products


SECTION 11: Toxicological information

11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Effect</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>Respiratory or skin sensitisation</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>
</tbody>
</table>
NONAFLUOROHEXYLTRICHLOROSILANE
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Reproductive toxicity: Not classified
STOT-single exposure: May cause respiratory irritation.
STOT-repeated exposure: Not classified
Aspiration hazard: Not classified
Symptoms/effects after inhalation: May cause respiratory irritation.
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
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
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) : 2987
UN-No. (IMDG) : 2987
UN-No. (IATA) : 2987
UN-No. (ADN) : 2987
UN-No. (RID) : 2987

14.2. UN proper shipping name
Proper Shipping Name (ADR) : CHLOROSILANES, CORROSIVE, N.O.S.
Proper Shipping Name (IMDG) : CHLOROSILANES, CORROSIVE, N.O.S.
Proper Shipping Name (IATA) : Chlorosilanes, corrosive, n.o.s.
Proper Shipping Name (ADN) : CHLOROSILANES, CORROSIVE, N.O.S.
Proper Shipping Name (RID) : CHLOROSILANES, CORROSIVE, N.O.S.
Transport document description (ADR) : UN 2987 CHLOROSILANES, CORROSIVE, N.O.S. (NONAFLUOROHEXYLTRICHLOROSILANE), 8, II (E)
Transport document description (IMDG) : UN 2987 CHLOROSILANES, CORROSIVE, N.O.S. (NONAFLUOROHEXYLTRICHLOROSILANE), 8, II
Transport document description (IATA) : UN 2987 Chlorosilanes, corrosive, n.o.s. (NONAFLUOROHEXYLTRICHLOROSILANE), 8, II
Transport document description (ADN) : UN 2987 CHLOROSILANES, CORROSIVE, N.O.S. (NONAFLUOROHEXYLTRICHLOROSILANE), 8, II
Transport document description (RID) : UN 2987 CHLOROSILANES, CORROSIVE, N.O.S. (NONAFLUOROHEXYLTRICHLOROSILANE), 8, II
### 14.3. Transport hazard class(es)

**ADR**
- Transport hazard class(es) (ADR): 8
- Danger labels (ADR): 8

**IMDG**
- Transport hazard class(es) (IMDG): 8
- Danger labels (IMDG): 8

**IATA**
- Transport hazard class(es) (IATA): 8
- Hazard labels (IATA): 8

**ADN**
- Transport hazard class(es) (ADN): 8
- Danger labels (ADN): 8

**RID**
- Transport hazard class(es) (RID): 8
- Danger labels (RID): 8

### 14.4. Packing group

- Packing group (ADR): II
- Packing group (IMDG): II
- Packing group (IATA): II
- Packing group (ADN): II
- Packing group (RID): II

### 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) : C3
  Special provisions (ADR) : 548
  Limited quantities (ADR) : 0
  Excepted quantities (ADR) : E0
  Packing instructions (ADR) : P010
  Special packing provisions (ADR) : RR7
  Mixed packing provisions (ADR) : MP15
  Portable tank and bulk container instructions (ADR) : T14
  Portable tank and bulk container special provisions (ADR) : TP2, TP7, TP27
  Tank code (ADR) : L4BN
  Vehicle for tank carriage : AT
  Transport category (ADR) : 2
  Hazard identification number (Kemler No.) : X80
  Orange plates : X80
  Tunnel restriction code (ADR) : E
  EAC code : 4W

- Transport by sea
  Limited quantities (IMDG) : 0
  Excepted quantities (IMDG) : E0
  Packing instructions (IMDG) : P010
  Tank instructions (IMDG) : T14
  Tank special provisions (IMDG) : TP2, TP7, TP13, TP27
  EmS-No. (Fire) : F-A
  EmS-No. (Spillage) : S-B
  Stowage category (IMDG) : C
  Stowage and handling (IMDG) : SW2
  Properties and observations (IMDG) : Colourless liquids with a pungent odour. Immiscible with water. React violently with water or steam, evolving hydrogen chloride, an irritating and corrosive gas apparent as white fumes. When involved in a fire, evolve toxic gases. In the presence of moisture, highly corrosive to most metals. Cause burns to skin, eyes and mucous membranes.

- Air transport
  PCA Excepted quantities (IATA) : E0
  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) : 876
  CAO max net quantity (IATA) : 30L
  Special provisions (IATA) : A1
  ERG code (IATA) : 8L

- Inland waterway transport
  Classification code (ADN) : C3
  Special provisions (ADN) : 548
  Limited quantities (ADN) : 0
  Excepted quantities (ADN) : E0
  Equipment required (ADN) : PP, EP
  Number of blue cones/lights (ADN) : 0

- Rail transport
  Classification code (RID) : C3
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Special provisions (RID): 548
Limited quantities (RID): 0
Excepted quantities (RID): E0
Packing instructions (RID): P010
Mixed packing provisions (RID): MP15
Portable tank and bulk container instructions (RID): T14
Portable tank and bulk container special provisions (RID): TP2, TP7, TP27
Tank codes for RID tanks (RID): L4BN
Transport category (RID): 2
Colis express (express parcels) (RID): CE6
Hazard identification number (RID): X80

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
NONAFLUOROHEXYLTRICHLOROSILANE is not on the REACH Candidate List
NONAFLUOROHEXYLTRICHLOROSILANE is not on the REACH Annex XIV List
NONAFLUOROHEXYLTRICHLOROSILANE is not subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.

% Volatiles: 25%

15.1.2. National regulations

Germany
12th Ordinance Implementing the Federal Immission Control Act - 12 BlmSchV: Is not subject of the 12. BlmSchV (Hazardous Incident Ordinance)

Netherlands
SZW-lijst van kankerverwekkende stoffen: The substance is not listed
SZW-lijst van mutagene stoffen: The substance is not listed
NIET-elimatieve lijst van voor de voorplanting giftige stoffen – Borstvoeding: The substance is not listed
NIET-elimatieve lijst van voor de voorplanting giftige stoffen – Vruchtbaarheid: The substance is not listed
NIET-elimatieve lijst van voor de voorplanting giftige stoffen – Ontwikkeling: The substance is not listed

Denmark
Classification remarks: Emergency management guidelines for the storage of flammable liquids must be followed
Danish National Regulations: Young people below the age of 18 years are not allowed to use the product

15.2. Chemical safety assessment

No additional information available

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

Other information: Prepared by safety and environmental affairs.

Print date: 10/04/2019 EN (English) SDS ID: SIN6597.6
NONAFLUOROHEXYLTRICHLOROSILANE
Safety Data Sheet

Full text of H- and EUH-statements:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Dam. 1</td>
<td>Serious eye damage/eye irritation, Category 1</td>
</tr>
<tr>
<td>Skin Corr. 1B</td>
<td>Skin corrosion/irritation, Category 1B</td>
</tr>
<tr>
<td>STOT SE 3</td>
<td>Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation</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>H335</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>EUH014</td>
<td>Reacts violently with water.</td>
</tr>
</tbody>
</table>

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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