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

1.1. Product identifier

Product form: Substance
Physical state: Solid
Substance name: t-BUTYLTRICHLOROSILANE
Product code: SIB1985.0
Formula: C₄H₉Cl₃Si
Synonyms: TRICHLORO-t-BUTYLSILANE; 1,1-DIMETHYLETHYLTRICHLOROSILANE
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@gelestde.com - www.gelestde.com

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]
- Flammable solids, Category 2: H228
- 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): GHS02, GHS05, GHS07

Signal word (CLP): Danger
**t-BUTYLTRICHLOROSILANE**
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### Hazard statements (CLP)
- H228 - Flammable solid.
- 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.
- P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P260 - Do not breathe dust.
- P584 - Wash hands thoroughly after handling.
- P271 - Use only outdoors or in a well-ventilated area.
- P310 - Immediately call a POISON CENTER or doctor/physician

**EUH-statements**
- EUH014 - Reacts violently with water.

### 2.3. Other hazards
No additional information available

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances
- **Substance type**: Mono-constituent
- **Name**: t-BUTYLTRICHLOROSILANE
- **CAS-No.**: 18171-74-9
- **EC-No.**: 242-059-7

<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>t-Butyltrichlorosilane</td>
<td>(CAS-No.) 18171-74-9 (EC-No.) 242-059-7</td>
<td>97 - 100</td>
<td>Flam. Sol. 2, H228 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**: Flammable solid. 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 contact with skin and eyes. Do not breathe dust.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Remove 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

Methods for cleaning up: 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 contact with skin and eyes. Do not breathe dust. Provide local exhaust or general room ventilation to minimize exposure to dust. 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: Ground/bond container and receiving equipment. Use explosion-proof electrical equipment.

Storage conditions: Keep container tightly closed.


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 dust and mist (teal 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>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Crystalline solid.</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>191.562 g/mol</td>
</tr>
<tr>
<td>Colour</td>
<td>White.</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>1.436</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butylacetate=1)</td>
<td>&gt; 1</td>
</tr>
<tr>
<td>Melting point</td>
<td>97 - 100 °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>142 - 143 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>40 °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>Flammable solid.</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>&gt; 1</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.1608</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>
</tbody>
</table>
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Germ cell mutagenicity : Not classified  
Carcinogenicity : Not classified  
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) : 2921  
UN-No. (IMDG) : 2921  
UN-No. (IATA) : 2921  
UN-No. (ADN) : 2921  
UN-No. (RID) : 2921

14.2. **UN proper shipping name**

Proper Shipping Name (ADR) : CORROSIVE SOLID, FLAMMABLE, N.O.S.  
Proper Shipping Name (IMDG) : CORROSIVE SOLID, FLAMMABLE, N.O.S.  
Proper Shipping Name (IATA) : Corrosive solid, flammable, n.o.s.  
Proper Shipping Name (ADN) : CORROSIVE SOLID, FLAMMABLE, N.O.S.  
Proper Shipping Name (RID) : CORROSIVE SOLID, FLAMMABLE, N.O.S.  
Transport document description (ADR) : UN 2921 CORROSIVE SOLID, FLAMMABLE, N.O.S. (t-BUTYLTRICHLOROSILANE), 8 (4.1), II, (E)  
Transport document description (IMDG) : UN 2921 CORROSIVE SOLID, FLAMMABLE, N.O.S. (t-BUTYLTRICHLOROSILANE), 8 (4.1), II  
Transport document description (IATA) : UN 2921 Corrosive solid, flammable, n.o.s. (t-BUTYLTRICHLOROSILANE), 8 (4.1), II  
Transport document description (ADN) : UN 2921 CORROSIVE SOLID, FLAMMABLE, N.O.S. (t-BUTYLTRICHLOROSILANE), 8 (4.1), II
## 14.3. Transport hazard class(es)

### ADR
Transport hazard class(es) (ADR) : 8 (4.1)
Danger labels (ADR) : 8, 4.1

### IMDG
Transport hazard class(es) (IMDG) : 8 (4.1)
Danger labels (IMDG) : 8, 4.1

### IATA
Transport hazard class(es) (IATA) : 8 (4.1)
Hazard labels (IATA) : 8, 4.1

### ADN
Transport hazard class(es) (ADN) : 8 (4.1)
Danger labels (ADN) : 8, 4.1

### RID
Transport hazard class(es) (RID) : 8 (4.1)
Danger labels (RID) : 8, 4.1

## 14.4. Packing group

<table>
<thead>
<tr>
<th>Packing group (ADR)</th>
<th>:</th>
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</thead>
<tbody>
<tr>
<td>Packing group (IMDG)</td>
<td>:</td>
<td>II</td>
</tr>
<tr>
<td>Packing group (IATA)</td>
<td>:</td>
<td>II</td>
</tr>
<tr>
<td>Packing group (ADN)</td>
<td>:</td>
<td>II</td>
</tr>
<tr>
<td>Packing group (RID)</td>
<td>:</td>
<td>II</td>
</tr>
</tbody>
</table>

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

14.6. Special precautions for user

- Overland transport
  Classification code (ADR) : CF2
  Special provisions (ADR) : 274
  Limited quantities (ADR) : 1kg
  Excepted quantities (ADR) : E2
  Packing instructions (ADR) : P002, IBC08
  Mixed packing provisions (ADR) : MP10
  Portable tank and bulk container instructions (ADR) : T3
  Portable tank and bulk container special provisions (ADR) : TP33
  Tank code (ADR) : SGAN, L4BN
  Vehicle for tank carriage : AT
  Transport category (ADR) : 2
  Special provisions for carriage - Packages (ADR) : V11
  Hazard identification number (Kemler No.) : 84
  Orange plates :

  Tunnel restriction code (ADR) : E
  EAC code : 2X

- Transport by sea
  Special provisions (IMDG) : 274
  Limited quantities (IMDG) : 1 kg
  Excepted quantities (IMDG) : E2
  Packing instructions (IMDG) : P002
  IBC packing instructions (IMDG) : IBC08
  IBC special provisions (IMDG) : B2, B4
  Tank instructions (IMDG) : T3
  Tank special provisions (IMDG) : TP33
  EmS-No. (Fire) : F-A
  EmS-No. (Spillage) : S-G
  Stowage category (IMDG) : B
  Stowage and handling (IMDG) : SW1, H2
  Properties and observations (IMDG) : Causes burns to skin, eyes and mucous membranes.

- Air transport
  PCA Excepted quantities (IATA) : E2
  PCA Limited quantities (IATA) : Y844
  PCA limited quantity max net quantity (IATA) : 5kg
  PCA packing instructions (IATA) : 859
  PCA max net quantity (IATA) : 15kg
  CAO packing instructions (IATA) : 863
  CAO max net quantity (IATA) : 50kg
  ERG code (IATA) : 8S

- Inland waterway transport
  Classification code (ADN) : CF2
  Special provisions (ADN) : 274
  Limited quantities (ADN) : 1 kg
  Excepted quantities (ADN) : E2
  Equipment required (ADN) : PP, EP
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Number of blue cones/lights (ADN) : 1

- Rail transport
Classification code (RID) : CF2
Special provisions (RID) : 274
Limited quantities (RID) : 1kg
Excepted quantities (RID) : E2
Packing instructions (RID) : P002, IBC08
Special packing provisions (RID) : B4
Mixed packing provisions (RID) : MP10
Portable tank and bulk container instructions (RID) : T3
Portable tank and bulk container special provisions (RID) : TP33
Tank codes for RID tanks (RID) : SGAN, L4BN
Transport category (RID) : 2
Special provisions for carriage – Packages (RID) : W11
Colis express (express parcels) (RID) : CE10
Hazard identification number (RID) : 84

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
t-BUTYLTRICHLOROSILANE is not on the REACH Candidate List
t-BUTYLTRICHLOROSILANE is not on the REACH Annex XIV List
t-BUTYLTRICHLOROSILANE 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.

15.1.2. National regulations

Germany

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

Denmark
Class for fire hazard : Class II-1
Store unit : 5 liter
Classification remarks : R10 <H228;H314;H335>: 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
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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; OEC: 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.

Full text of H- and EUH-statements:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Dam. 1</td>
<td>Serious eye damage/eye irritation, Category 1</td>
</tr>
<tr>
<td>Flam. Sol. 2</td>
<td>Flammable solids, Category 2</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>H228</td>
<td>Flammable solid.</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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