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

1.1. Product identifier
- Product form: Substance
- Physical state: Gas
- Substance name: ETHYLSILANE
- Product code: SIE4898.0
- Formula: C2H8Si
- Synonyms: 1-SILAPROPANE
- Chemical family: ORGANOHYDRIDOSILANE

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 gases, Category 1: H220
  - Gases under pressure: Liquefied gas: H280
- 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

- Signal word (CLP): Danger
  H280 - Contains gas under pressure; may explode if heated.
- Precautionary statements (CLP): P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
2.3. Other hazards

No additional information available

SECTION 3: Composition/Information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Substance type</th>
<th>Mono-constituent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>ETHYLSILANE</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>2814-79-1</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>Ethylsilane</td>
<td>(CAS-No.) 2814-79-1</td>
<td>97 - 100</td>
<td>Flam. Gas 1, H220</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Press. Gas (Liq.), H280</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

<table>
<thead>
<tr>
<th>First-aid measures general</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-aid measures after inhalation</td>
<td>Remove person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice.</td>
</tr>
<tr>
<td>First-aid measures after skin contact</td>
<td>Wash with plenty of water/…. Get medical advice/attention.</td>
</tr>
<tr>
<td>First-aid measures after eye contact</td>
<td>Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.</td>
</tr>
<tr>
<td>First-aid measures after ingestion</td>
<td>Never give anything by mouth to an unconscious person. Get medical advice/attention.</td>
</tr>
</tbody>
</table>

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation: May cause irritation to the respiratory tract.
Symptoms/effects after skin contact: May cause skin irritation.
Symptoms/effects after eye contact: May cause eye irritation.
Symptoms/effects after ingestion: No information available.

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: Extremely flammable gas. Irritating fumes and organic acid vapors may develop when material is exposed to water or open flame.
Explosion hazard: May form flammable/explosive vapour-air mixture.

5.3. Advice for firefighters

Firefighting instructions: Exercise caution when fighting any chemical fire. Eliminate all ignition sources if safe to do so. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Use only dry media to extinguish flames.
Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Firefighters must wear positive pressure self-contained breathing apparatus. Avoid contact with skin and eyes. Do not breathe gas.
SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Eliminate every possible source of ignition. 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”.
Emergency procedures: Evacuate area. Ventilate area.

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
Methods for cleaning up: The potential exists for spontaneous ignition and explosion. Allow vapors to disperse. Ventilate area.

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: Extremely flammable gas. Handle empty containers with care because residual vapours are flammable. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Precautions for safe handling: Avoid contact with skin and eyes. Do not breathe gas. Ground/bond container and receiving equipment. Handle only in sealed purged systems.
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
Technical measures: Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.
Storage conditions: Keep container tightly closed. Protect from sunlight. Store in sealed cylinders in isolated area.
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

| ETHYLSILANE (2814-79-1) | | |
|-------------------------|-----------------------------|
| Australia               | TWA (mg/m³)                 | 0.63 mg/m³ |
| Australia               | TWA (ppm)                   | 0.2 ppm    |

Ethylsilane (2814-79-1)

| Italy - Portugal - USA ACGIH | ACGIH TWA (ppm) | 5 ppm for silane |

8.2. Exposure controls

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

Personal protective equipment:
Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Avoid all unnecessary exposure.

Hand protection:
Neoprene or nitrile rubber gloves

Eye protection:
Chemical goggles. 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

**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.</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>60.17 g/mol</td>
</tr>
<tr>
<td>Colour</td>
<td>No data available</td>
</tr>
<tr>
<td>Odour</td>
<td>No data available</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>-180 °C</td>
</tr>
<tr>
<td>Boiling point</td>
<td>-14 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>&lt; -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>Extremely flammable gas</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>1.6</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.6396</td>
</tr>
<tr>
<td>% Volatiles</td>
<td>100 %</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**

Gas group: Press. Gas (Liq.)

**SECTION 10: Stability and reactivity**

10.1. **Reactivity**

No additional information available

10.2. **Chemical stability**

Stable in sealed cylinders stored under a dry inert atmosphere.

10.3. **Possibility of hazardous reactions**

Reacts slowly in pure state with oxygen in air, may ignite spontaneously at temperatures above 100°C. Mixtures with mercury explode when shaken in the presence of air. Platinum, platinum and iron salts and other Lewis acids can cause generation of flammable hydrogen gas in the presence of moisture.

10.4. **Conditions to avoid**

Heat. Sparks. Open flame.

10.5. **Incompatible materials**

Acids. alcohol. Oxidizing agent.

10.6. **Hazardous decomposition products**

Organic acid vapors. Silicon dioxide.

**SECTION 11: Toxicological information**

11.1. **Information on toxicological effects**

Acute toxicity: Not classified
Skin corrosion/irritation: Not classified
Serious eye damage/irritation: Not classified
Respiratory or skin sensitisation: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: None of the components in this product at concentrations > 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.
Reproductive toxicity: Not classified
STOT-single exposure: Not classified
STOT-repeated exposure: Not classified
Aspiration hazard: Not classified
Symptoms/effects after inhalation: May cause irritation to the respiratory tract.
Symptoms/effects after skin contact: May cause skin irritation.
Symptoms/effects after eye contact: May cause eye irritation.
Symptoms/effects after ingestion: No information available.

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: Incinerate. Dispose in a safe manner in accordance with local/national regulations.
Additional information: Handle empty containers with care because residual vapours are flammable.
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) : 3161
UN-No. (IMDG) : 3161
UN-No. (IATA) : 3161
UN-No. (ADN) : 3161
UN-No. (RID) : 3161

14.2. UN proper shipping name
Proper Shipping Name (ADR) : LIQUEFIED GAS, FLAMMABLE, N.O.S.
Proper Shipping Name (IMDG) : LIQUEFIED GAS, FLAMMABLE, N.O.S.
Proper Shipping Name (IATA) : Liquefied gas, flammable, n.o.s.
Proper Shipping Name (ADN) : LIQUEFIED GAS, FLAMMABLE, N.O.S.
Proper Shipping Name (RID) : LIQUEFIED GAS, FLAMMABLE, N.O.S.
Transport document description (ADR) : UN 3161 LIQUEFIED GAS, FLAMMABLE, N.O.S. (ETHYLSILANE), 2.1, (B/D)
<table>
<thead>
<tr>
<th>Transport document description (IMDG)</th>
<th>UN 3161 LIQUEFIED GAS, FLAMMABLE, N.O.S. (ETHYLSILANE), 2.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport document description (IATA)</td>
<td>UN 3161 Liquefied gas, flammable, n.o.s. (ETHYLSILANE), 2.1</td>
</tr>
<tr>
<td>Transport document description (ADN)</td>
<td>UN 3161 LIQUEFIED GAS, FLAMMABLE, N.O.S. (ETHYLSILANE), 2.1</td>
</tr>
<tr>
<td>Transport document description (RID)</td>
<td>UN 3161 LIQUEFIED GAS, FLAMMABLE, N.O.S. (ETHYLSILANE), 2.1</td>
</tr>
</tbody>
</table>

### 14.3. Transport hazard class(es)

#### ADR
- **Transport hazard class(es) (ADR)**: 2.1
- **Danger labels (ADR)**: 2.1

#### IMDG
- **Transport hazard class(es) (IMDG)**: 2.1
- **Danger labels (IMDG)**: 2.1

#### IATA
- **Transport hazard class(es) (IATA)**: 2.1
- **Hazard labels (IATA)**: 2.1

#### ADN
- **Transport hazard class(es) (ADN)**: 2.1
- **Danger labels (ADN)**: 2.1

#### RID
- **Transport hazard class(es) (RID)**: 2.1
- **Danger labels (RID)**: 2.1

### 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
# ETHYLSILANE
## Safety Data Sheet

### 14.5. Environmental hazards

<table>
<thead>
<tr>
<th>Dangerous for the environment</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine pollutant</td>
<td>No</td>
</tr>
<tr>
<td>Other information</td>
<td>No supplementary information available</td>
</tr>
</tbody>
</table>

### 14.6. Special precautions for user

#### - Overland transport

| Classification code (ADR) | : 2F |
| Special provisions (ADR)  | : 274, 662 |
| 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), T50 |

| Tank code (ADR)          | : PxBN(M) |
| Tank special provisions (ADR)| : TA4, TT9 |
| Vehicle for tank carriage| : FL |
| Transport category (ADR) | : 2 |
| Special provisions for carriage - Loading, unloading and handling (ADR)| : CV9, CV10, CV36 |
| Special provisions for carriage - Operation (ADR)| : S2, S20 |
| Hazard identification number (Kemler No.) | : 23 |

<table>
<thead>
<tr>
<th>Orange plates</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td>3161</td>
<td></td>
</tr>
</tbody>
</table>

| Tunnel restriction code (ADR) | : B/D |
| EAC code                     | : 2YE |

#### - Transport by sea

| Special provisions (IMDG)   | : 274 |
| Limited quantities (IMDG)   | : 0 |
| Excepted quantities (IMDG)  | : E0 |
| Packing instructions (IMDG) | : P200 |
| Tank instructions (IMDG)    | : T50 |
| EmS-No. (Fire)              | : F-D |
| EmS-No. (Spillage)          | : S-U |
| Stowage category (IMDG)     | : D |
| Stowage and handling (IMDG) | : SW2 |

#### - Air transport

| PCA Exceptioned 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)       | : 200 |
| CAO max net quantity (IATA)       | : 150kg |
| Special provisions (IATA)         | : A1 |
| ERG code (IATA)                   | : 10L |

#### - Inland waterway transport

| Classification code (ADN) | : 2F |
| Special provisions (ADN)  | : 274 |
| Limited quantities (ADN)  | : 0 |
| Excepted quantities (ADN) | : E0 |
| Equipment required (ADN)  | : PP, EX, A |
# ETHYLSILANE
Safety Data Sheet

## Ventilation (ADN)
- Number of blue cones/lights (ADN)
  - VE01
  - 1

## Rail transport
- Special provisions (RID)
  - 274, 662
- Limited quantities (RID)
  - 0
- Excepted quantities (RID)
  - E0
- Packing instructions (RID)
  - P200
- Mixed packing provisions (RID)
  - MP9
- Portable tank and bulk container instructions (RID)
  - T50(M)
- Tank codes for RID tanks (RID)
  - PxBN(M)
- Special provisions for RID tanks (RID)
  - TU38, TE22, TA4, TT9, TM6
- Transport category (RID)
  - 2
- Special provisions for carriage - Loading, unloading and handling (RID)
  - CW9, CW10, CW36
- Colis express (express parcels) (RID)
  - CE3
- Hazard identification number (RID)
  - 23

### 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
ETHYLSILANE is not on the REACH Candidate List
ETHYLSILANE is not on the REACH Annex XIV List
ETHYLSILANE 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**
- 12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV
  - Is not subject of the 12. BImSchV (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-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 I-1
- Store unit
  - 1 liter
- Classification remarks
  - F+ <Flam. Gas 1; Press. Gas (Liq.); 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.

Full text of H- and EUH-statements:

<table>
<thead>
<tr>
<th>Flam. Gas 1</th>
<th>Flammable gases, Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press. Gas (Liq.)</td>
<td>Gases under pressure : Liquefied gas</td>
</tr>
<tr>
<td>H220</td>
<td>Extremely flammable gas.</td>
</tr>
<tr>
<td>H280</td>
<td>Contains gas under pressure; may explode if heated.</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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