# Section 1: Identification

## 1.1 Identification

- **Product name**: SILANE, 7.0 - 7.5% in argon
- **Product code**: SIS6950.1
- **Product form**: Mixture
- **Physical state**: Gas
- **Formula**: $\text{H}_4\text{Si}$
- **Synonyms**: SILICANE, MONOSILANE, SILICON TETRAHYDRIDE
- **Chemical family**: HYDRIDOSILANE

## 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**
Tel: 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)

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# Section 2: Hazard(s) Identification

## 2.1 Classification of the substance or mixture

**GHS-US classification**
- **Flammable gases Category 1**: H220 - Extremely flammable gas
- **Gases under pressure Compressed gas**: H280 - Contains gas under pressure; may explode if heated

**Full text of H statements**: see section 16

## 2.2 GHS Label elements, including precautionary statements

**GHS US labeling**

### Hazard pictograms (GHS US)

- **Signal word (GHS US)**: Danger
- **Hazard statements (GHS US)**:
  - H220 - Extremely flammable gas
  - H280 - Contains gas under pressure; may explode if heated
- **Precautionary statements (GHS US)**:
  - P210 - Keep away from heat, open flames, sparks. - No smoking.
  - P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
  - P381 - Eliminate all ignition sources if safe to do so.
  - P403 - Store in a well-ventilated place.
  - P410+P403 - Protect from sunlight. Store in a well-ventilated place.

## 2.3 Hazards not otherwise classified (HNOC)

**No additional information available**

## 2.4 Unknown acute toxicity (GHS US)

**Not applicable**

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# Section 3: Composition/Information on ingredients

## 3.1 Substances

**Not applicable**

## 3.2 Mixtures

**Not applicable**
SILANE, 7.0 - 7.5% in argon
Safety Data Sheet

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argon</td>
<td>(CAS No.) 7440-37-1</td>
<td>92.5 - 93</td>
<td>Press. Gas (Comp.), H280</td>
</tr>
<tr>
<td>Silane</td>
<td>(CAS No.) 7803-62-5</td>
<td>7 - 7.5</td>
<td>Pyr. Gas, H250 Flam. Gas 1, H220 Press. Gas (Liq.), H280 Acute Tox. 4 (Inhalation:gas), H332</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

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. If you feel unwell, seek medical advice.
First-aid measures after skin contact: Wash with plenty of soap and water. Get medical advice/attention.
First-aid measures after eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get 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 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. At levels below the flammability limit, silane is expected to affect the eyes by absorption and deposition of silicon dioxide, causing severe irritation and possible corneal 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
Suitable extinguishing media: If unable to stop the flow of gas, silane should be allowed to burn until consumed. Secondary fires may be extinguished with alcohol resistant foam, carbon dioxide, dry chemical. Use of high expansion foam (100:1) is recommended to cover flames.

5.2. Specific hazards arising from the chemical
Fire hazard: Extremely flammable gas. Irritating fumes and organic acid vapors may develop when material is exposed to water or open flame.
Explosion hazard: Silane spontaneously ignites on contact with air.

5.3. Special protective equipment and precautions for fire-fighters
Firefighting instructions: Exercise caution when fighting any chemical fire. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Silane should be allowed to burn until consumed. Excessive pressure may develop in gas cylinders exposed to fire-heated silane may explode on contact with air. Cool cylinders and surroundings with water from a suitable distance.
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: Ventilate area. Use special care to avoid static electric charges. Eliminate every possible source of ignition.
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
No additional information available
SILANE, 7.0 - 7.5% in argon
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6.3. Methods and material for containment and cleaning up
Methods for cleaning up: Stop flow of gas if possible. The potential exists for spontaneous ignition and explosion. Allow vapors to disperse.

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: Flammable gas. Catches fire spontaneously if exposed to air.
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.
Storage conditions: Store in sealed cylinders in isolated area. Protect from sunlight. Store in a well-ventilated place.
Storage area: Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Silane (7803-62-5)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH ACGIH TWA (ppm)</td>
<td>5 ppm</td>
</tr>
<tr>
<td>NIOSH NIOSH REL (TWA) (mg/m³)</td>
<td>7 mg/m³</td>
</tr>
<tr>
<td>NIOSH NIOSH REL (TWA) (ppm)</td>
<td>5 ppm</td>
</tr>
</tbody>
</table>

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:
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. 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></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Gas</td>
</tr>
<tr>
<td>Appearance</td>
<td>Flammable mixture gas.</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>32.12 g/mol</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless.</td>
</tr>
<tr>
<td>Odor</td>
<td>Disagreeable.</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Refractive index</td>
<td>No data available</td>
</tr>
</tbody>
</table>
SILANE, 7.0 - 7.5% in argon
Safety Data Sheet

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=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>-185 °C</td>
</tr>
<tr>
<td>Boiling point</td>
<td>-112 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>&lt; -40 °C</td>
</tr>
<tr>
<td>Critical temperature</td>
<td>-3.5 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>&lt; 20 °C</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>Vapor pressure</td>
<td>530 kPa @ -118°C</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>1.342 g/l</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>Oxidizing properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>1.37 - 98 vol % (lower; upper)</td>
</tr>
</tbody>
</table>

9.2. Other information
Gas group: Compressed gas

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 with oxygen in air, igniting spontaneously. Mixtures with mercury explode when shaken in the presence of air. Platinum, platinum and iron salts and other Lewis acids can result in generation of flammable hydrogen gas.

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

10.5. Incompatible materials

10.6. Hazardous decomposition products
Silicon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Not classified

<table>
<thead>
<tr>
<th>Test</th>
<th>Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silane (7803-62-5)</td>
<td></td>
</tr>
<tr>
<td>LC50 inhalation rat (ppm)</td>
<td>9600 ppm/4h</td>
</tr>
<tr>
<td>ATE US (gases)</td>
<td>9600 ppmV/4h</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</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>

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
Specific target organ toxicity – single exposure: Not classified

Print date: 04/10/2019   EN (English US)   SDS ID: SIS6950.1
Specific target organ toxicity – 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. At levels below the flammability limit, silane is expected to affect the eyes by absorption and deposition of silicon dioxide, causing severe irritation and possible corneal damage.
Symptoms/effects after ingestion: May be harmful if swallowed.

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
Effect on global warming: No known effects from this product.
GWPmix comment: No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal 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
UN-No.(DOT): 1954
DOT NA no.: UN1954

14.2. UN proper shipping name
Transport document description: UN1954 Compressed gas, flammable, n.o.s. (SILANE, 7.0 - 7.5% in argon), 2.1
Proper Shipping Name (DOT): Compressed gas, flammable, n.o.s. (SILANE, 7.0 - 7.5% in argon)
Class (DOT): 2.1 - Class 2.1 - Flammable gas 49 CFR 173.115
Hazard labels (DOT): 2.1 - Flammable gas

DOT Packaging Non Bulk (49 CFR 173.xxx): 302;305
DOT Packaging Bulk (49 CFR 173.xxx): 314;315
DOT Packaging Exceptions (49 CFR 173.xxx): 306
DOT Symbols: G - Identifies PSN requiring a technical name

14.3. Additional information
Emergency Response Guide (ERG) Number: 115
Other information: No supplementary information available.
SILANE, 7.0 - 7.5% in argon
Safety Data Sheet

Transport by sea
DOT Vessel Stowage Location: D - The material must be stowed “on deck only” on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.

DOT Vessel Stowage Other: 40 - Stow “clear of living quarters”

Air transport
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27): Forbidden
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75): 150 kg

SECTION 15: Regulatory information

15.1. US Federal regulations
Silane (7803-62-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Argon (7440-37-1)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations
CANADA
Silane (7803-62-5)
Listed on the Canadian DSL (Domestic Substances List)
WHMIS Classification: Class A - Compressed Gas
Class B Division 6 - Reactive Flammable Material
Argon (7440-37-1)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations
Silane (7803-62-5)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Argon (7440-37-1)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations
Silane (7803-62-5)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Canadian IDL (Ingredient Disclosure List)
Listed on INSEQ (Mexican National Inventory of Chemical Substances)
Argon (7440-37-1)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on INSEQ (Mexican National Inventory of Chemical Substances)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Korean ECL (Existing Chemicals List)

15.3. US State regulations
California Proposition 65: This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm
Silane (7803-62-5)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
### SECTION 16: Other information

**Full text of H-phrases:**

<table>
<thead>
<tr>
<th>H220</th>
<th>Extremely flammable gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>H250</td>
<td>Catches fire spontaneously if exposed to air</td>
</tr>
<tr>
<td>H280</td>
<td>Contains gas under pressure; may explode if heated</td>
</tr>
<tr>
<td>H332</td>
<td>Harmful if inhaled</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**

- 4 Severe Hazard - Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)

**Physical**

- 3 Serious Hazard - Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion

Prepared by safety and environmental affairs.

**Date of issue:** 07/13/2017  
**Version:** 1.0

**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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