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

1.1. Product identifier

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Product form</th>
<th>Physical state</th>
<th>Substance name</th>
<th>Product code</th>
<th>Formula</th>
<th>Synonyms</th>
<th>Chemical family</th>
</tr>
</thead>
<tbody>
<tr>
<td>SILICON, 99% powder</td>
<td>Substance</td>
<td>Solid</td>
<td>SILICON, 99% powder</td>
<td>SIS6955.0</td>
<td>Si</td>
<td>ELEMENTAL SILICON</td>
<td>METAL</td>
</tr>
</tbody>
</table>

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

- Use of the substance/mixture: Chemical intermediate
- For research and industrial use only

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

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 (GHS-US)
  - Flam. Sol. 2 H228

- Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

- Hazard pictograms (GHS-US):
  - GHS02

- Signal word (GHS-US): Warning
- Hazard statements (GHS-US): H228 - Flammable solid
- Precautionary statements (GHS-US):
  - P280 - Wear protective gloves/protective clothing/eye protection/face protection
  - P210 - Keep away from heat, open flames, sparks. - No smoking
  - P240 - Ground/bond container and receiving equipment
  - P241 - Use explosion-proof electrical equipment
  - P370+P378 - In case of fire: Use metal-extinguishing powder to extinguish

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

<table>
<thead>
<tr>
<th>Substance type</th>
<th>Name</th>
<th>CAS No</th>
<th>EC no</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono-constituent</td>
<td>SILICON, 99% powder</td>
<td>7440-21-3</td>
<td>231-130-8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>(CAS No) 7440-21-3</td>
<td>&gt; 98</td>
<td>Flam. Sol. 2, H228</td>
</tr>
</tbody>
</table>
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.

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 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/injuries after inhalation: May be irritating to the respiratory system. Overexposure may cause: Coughing. Headache. Nausea. Inhalation of large amounts is expected to cause necrosis of tracheal epithelium, bronchitis and interstitial pneumonia.

Symptoms/injuries after skin contact: May cause skin irritation.

Symptoms/injuries after eye contact: May cause eye irritation.

Symptoms/injuries 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: Use Met-X or other appropriate metal-extinguishing powder.

Unsuitable extinguishing media: Do not apply water to burning material.

5.2. Special hazards arising from the substance or mixture

Fire hazard: Flammable solid. Irritating fumes vapors may develop when material is mixed with other materials and exposed to elevated temperatures or open flame.

Explosion hazard: May form flammable or explosive dust-air mixtures.

5.3. Advice for firefighters

Firefighting instructions: 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

Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment: Equip cleanup crew with proper 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: 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 contact with skin and eyes. Do not breathe dust. Provide local exhaust or general room ventilation to minimize exposure to dust. 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.

Incompatible materials: 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

<table>
<thead>
<tr>
<th>Silica (7440-21-3)</th>
<th>NIOSH REL (TWA) (mg/m³)</th>
<th>USA NIOSH</th>
<th>NIOSH REL (TWA) (mg/m³)</th>
<th>10 mg/m³ (total dust)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>USA NIOSH</td>
<td>5 mg/m³ (respirable dust)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL (TWA) (mg/m³)</td>
<td>5 mg/m³ (respirable fraction)</td>
<td></td>
</tr>
</tbody>
</table>

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. NIOSH-certified dust and mist (teal cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state: Solid
- Appearance: Powder
- Molecular mass: 28.086 g/mol
- Color: Gray
- Odor: No data available
- Odor threshold: No data available
- Refractive index: No data available
- pK: No data available
- Relative evaporation rate (butyl acetate=1): No data available
- Melting point: 1420 °C
- Freezing point: No data available
- Boiling point: 2680 °C
- Flash point: > 110 °C
- Auto-ignition temperature: No data available
- Decomposition temperature: No data available
- Flammability (solid, gas): Flammable solid
- Vapor pressure: 1 mm Hg @ 1724 °C
- Relative vapor density at 20 °C: No data available
- Relative density: 2.33
- VOC content: 100 %
- Solubility: Insoluble in 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
SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Violent reaction when heated with oxidizers such as potassium nitrate or potassium chlorate. When heated to elevated temperature, reacts steam to form hydrogen.

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
Oxidizing agent.

10.6. Hazardous decomposition products
Silicon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Not classified</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>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

Symptoms/injuries after inhalation: May be irritating to the respiratory system. Overexposure may cause: Coughing. Headache. Nausea. Inhalation of large amounts is expected to cause necrosis of tracheal epithelium, bronchitis and interstitial pneumonia.

Symptoms/injuries after skin contact: May cause skin irritation.

Symptoms/injuries after eye contact: May cause eye irritation.

Symptoms/injuries 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 ozone layer: No additional information available

Effect on the global warming: No known ecological damage caused by this product.
### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

- **Waste 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) | 1346 |
| DOT NA no. | UN1346 |

#### 14.2. UN proper shipping name

| Proper Shipping Name (DOT) | Silicon powder, amorphous |
| Department of Transportation (DOT) Hazard Classes | 4.1 - Class 4.1 - Flammable Solid 49 CFR 173.124 |
| Hazard labels (DOT) | 4.1 - Flammable solid |

| Packing group (DOT) | III - Minor Danger |
| DOT Packaging Exceptions (49 CFR 173.xxx) | None |
| DOT Packaging Non Bulk (49 CFR 173.xxx) | 213 |
| DOT Packaging Bulk (49 CFR 173.xxx) | 240 |

#### 14.3. Additional information

- **Other information**: No supplementary information available.

#### Transport by sea

| DOT Vessel Stowage Location | A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel. |
| DOT Vessel Stowage Other | 74 - Stow "separated from" oxidizers |

#### Air transport

| DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) | 25 kg |
| DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) | 100 kg |

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

- **Silicon (7440-21-3)**: Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### 15.2. International regulations

- **Silicon (7440-21-3)**: Listed on the AICS (Australian Inventory of Chemical Substances)
- Listed on the Canadian DSL (Domestic Substances List)
- Listed on IECS (Inventory of Existing Chemical Substances Produced or Imported in China)
- Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
- 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 INSQ (Mexican national Inventory of Chemical Substances)
- Listed on Turkish inventory of chemical

#### 15.3. US State regulations

<table>
<thead>
<tr>
<th><strong>SILICON, 99% powder(7440-21-3)</strong></th>
<th><strong>U.S. - California - Proposition 65 - Carcinogens List</strong></th>
<th><strong>No</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S. - California - Proposition 65 - Developmental Toxicity</strong></td>
<td><strong>No</strong></td>
<td></td>
</tr>
<tr>
<td><strong>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</strong></td>
<td><strong>No</strong></td>
<td></td>
</tr>
</tbody>
</table>

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06/26/2015
EN (English US)
SDS ID: SIS6955.0
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.

Full text of H-phrases:

<table>
<thead>
<tr>
<th>Flammable solids Category 2</th>
<th>Flammable solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flam. Sol. 2</td>
<td>H228</td>
</tr>
</tbody>
</table>

HMIS III Rating

Health: 1 Slight Hazard - Irritation or minor reversible injury possible
Flammability: 3 Serious Hazard
Physical: 0 Minimal Hazard

Prepared by safety and environmental affairs.

Date of issue: 06/26/2015 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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