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

1.1. Product identifier
- Product form: Substance
- Physical state: Solid
- Substance name: TIN(II) OXIDE
- Product code: SNT7968
- Formula: OSn
- Synonyms: STANNOUS OXIDE; TIN MONOXIDE
- Chemical family: INORGANIC TIN

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): Not classified

2.2. Label elements
- GHS-US labeling: No labeling applicable

2.3. Other hazards
- No additional information available
- Unknown acute toxicity (GHS US)
- No data available

SECTION 3: Composition/information on ingredients

3.1. Substance
- Substance type: Mono-constituent
- Name: TIN(II) OXIDE
- CAS No: 21651-19-4
- EC no: 244-499-5

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin oxide</td>
<td>(CAS No) 21651-19-4</td>
<td>&gt; 95</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

3.2. Mixture
- 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 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.
TIN(II) OXIDE
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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 cause irritation to the respiratory tract.
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: Not flammable.
Unsuitable extinguishing media: None known.

5.2. Special hazards arising from the substance or mixture
Fire hazard: Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

5.3. Advice for firefighters
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
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 product 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.

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. Avoid dust formation. Provide local exhaust or general room ventilation to minimize exposure to dust.
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
Storage conditions: Keep container tightly closed. Contact or storage with sulfur dioxide.
Incompatible materials: Sulfur dioxide.
Storage area: Store in a well-ventilated place.

7.3. Specific end use(s)
No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Material</th>
<th>USA ACGIH</th>
<th>ACGIH TWA (mg/m³)</th>
<th>2 mg/m³ as tin</th>
<th>USA NIOSH</th>
<th>NIOSH REL (TWA) (mg/m³)</th>
<th>2 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin oxide (21651-19-4)</td>
<td>USA ACGIH</td>
<td>ACGIH TWA (mg/m³)</td>
<td>2 mg/m³ as tin</td>
<td>USA NIOSH</td>
<td>NIOSH REL (TWA) (mg/m³)</td>
<td>2 mg/m³</td>
</tr>
</tbody>
</table>
**TIN(II) OXIDE**

Safety Data Sheet

**SECTION 8: 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. 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 (orange 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>Powder</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>134.69 g/mol</td>
</tr>
<tr>
<td>Color</td>
<td>Blue-gray</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Refractive index</td>
<td>No data available</td>
</tr>
<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>1080 °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not flammable</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>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>&lt; 0.1 mm Hg @ 25°C</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>6.25</td>
</tr>
<tr>
<td>VOC content</td>
<td>&lt; 1 %</td>
</tr>
<tr>
<td>Solubility</td>
<td>Water: 1 g/l @ 20°C</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>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.

**10.3. Possibility of hazardous reactions**

No additional information available

**10.4. Conditions to avoid**

No additional information available

**10.5. Incompatible materials**

Sulfur dioxide.

**10.6. Hazardous decomposition products**

Tin oxide particulates.
SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity: Not classified

Tin oxide (21651-19-4)

<table>
<thead>
<tr>
<th>LD50 oral rat</th>
<th>&gt; 10000 mg/kg</th>
</tr>
</thead>
</table>

Skin corrosion/irritation: Not classified
Serious eye damage/irritation: Not classified
Respiratory or skin sensitization: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
Specific target organ toxicity (single exposure): Not classified
Specific target organ toxicity (repeated exposure): Not classified
Aspiration hazard: Not classified
Symptoms/injuries after inhalation: May cause irritation to the respiratory tract.
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
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 of solid materials or residues at a licensed site. Dispose in a safe manner in accordance with local/national regulations.
Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number
Not regulated for transport.

14.2. UN proper shipping name
Not applicable

14.3. Additional information
Other information: No supplementary information available.

Transport by sea
No additional information available

Air transport
No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

Tin oxide (21651-19-4)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
15.2. International regulations

**Tin oxide (21651-19-4)**

- Listed on the AICS (Australian Inventory of Chemical Substances)
- Listed on the Canadian DSL (Domestic Substances List)
- Listed on IECSC (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 Japanese ENC (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 INSQ (Mexican national Inventory of Chemical Substances)

15.3. US State regulations

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>U.S. - California - Proposition 65 - Carcinogens List</td>
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<td>U.S. - California - Proposition 65 - Developmental Toxicity</td>
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<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</td>
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**Tin oxide (21651-19-4)**

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<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</th>
<th>No significance risk level (NSRL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No significance risk level (NSRL)</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Abbreviations and acronyms: 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.

HMIS III Rating

- Health: 2 Moderate Hazard - Temporary or minor injury may occur
- Flammability: 0 Minimal Hazard
- Physical: 0 Minimal Hazard

Prepared by safety and environmental affairs.

Date of issue: 07/31/2015 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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