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

### 1.1. Product identifier

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance name</td>
<td>GERMANIUM(II) SULFIDE</td>
</tr>
<tr>
<td>Product code</td>
<td>GEG5430</td>
</tr>
<tr>
<td>Formula</td>
<td>GeS</td>
</tr>
<tr>
<td>Synonyms</td>
<td>GERMANIUM SULFIDE; GERMANIUM SULPHIDE</td>
</tr>
<tr>
<td>Chemical family</td>
<td>METAL SULFIDE</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

**GHS-US classification**

STOT SE 3  H335

Full text of H statements: see section 16

### 2.2. Label elements

**GHS-US labeling**

Hazard pictograms (GHS-US):

![Hazard Pictogram](image)

Signal word (GHS-US): Warning

Hazard statements (GHS-US): H335 - May cause respiratory irritation

Precautionary statements (GHS-US):

P261 - Avoid breathing dust

P271 - Use only outdoors or in a well-ventilated area

P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing

P312 - Call a doctor if you feel unwell

P403+P233 - Store in a well-ventilated place. Keep container tightly closed

P405 - Store locked up

P501 - Dispose of contents/container to licensed waste disposal facility

### 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>Mono-constituent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>GERMANIUM(II) SULFIDE</td>
</tr>
<tr>
<td>CAS No</td>
<td>12025-32-0</td>
</tr>
<tr>
<td>EC no</td>
<td>234-704-6</td>
</tr>
</tbody>
</table>
GERMANIUM(II) SULFIDE
Safety Data Sheet

Name | Product identifier | % | GHS-US classification
--- | --- | --- | ---
Germanium (II) sulfide | (CAS No) 12025-32-0 | 98 - 100 | STOT SE 3, H335

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. Get 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 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 respiratory irritation.

Symptoms/injuries after skin contact: May cause dermatitis by skin contact.

Symptoms/injuries after eye contact: May cause irritation or conjunctivitis by dissolving to form germanic acid, a weak acid.

Symptoms/injuries after ingestion: No information available.

Chronic symptoms: Chronic Toxicity: No specific information has been reported for this compound. Inhalation-Animal studies of germanium compounds indicate morphological changes of the respiratory tract such as thickening of the alveolar partitions and hyperplasia of the lymphatic vessels around the bronchi and blood vessels. Ingestion- Rats fed 100ppm for 14 weeks showed stimulated growth. Those fed 1000ppm showed depressed growth and suffered 50% mortality. Kidney damage has been reported in humans and animals. For selenium compounds, pallor, nervousness, depression and death have been reported for chronic exposure.

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 vapors may develop when material is mixed with other materials and 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

For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up: Sweep or shovel spills into appropriate container for disposal.
GERMANIUM(II) SULFIDE
Safety Data Sheet

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. Use only outdoors or in a well-ventilated area.
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
Storage conditions : Keep container tightly closed. Store locked up.
Incompatible materials : Compatible with most materials. Dissolves in strong acid or base.
Storage area : Store in a well-vented 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>Germanium (II) sulfide (12025-32-0)</th>
<th>USA OSHA</th>
<th>OSHA PEL (TWA) (ppm)</th>
<th>10 ppm H2S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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. 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
Physical state : Solid
Appearance : Powder.
Molecular mass : 104.65 g/mol
Color : Off-white.
Odor : No data available
Odor threshold : No data available
Refractive index : No data available
pH : No data available
Relative evaporation rate (butyl acetate=1) : No data available
Melting point : 615 °C
Freezing point : No data available
Boiling point : No data available
Flash point : No data available
Auto-ignition temperature : No data available
Decomposition temperature : No data available
Flammability (solid, gas) : Not flammable
Vapor pressure : No data available
Relative vapor density at 20 °C : No data available
Relative density : > 3
VOC content : 0 %
Solubility : Insoluble in water. Reacts slowly with water.
Log Pow : No data available
Log Kow : No data available
Viscosity, kinematic : No data available
Viscosity, dynamic : No data available
GERMANIUM(II) SULFIDE
Safety Data Sheet

Explosive properties: No data available
Oxidizing properties: No data available
Explosion limits: No data available

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. At temperatures >400°C in air oxidizes to germanium dioxide, sulfur and oxides of sulfur.

10.3. Possibility of hazardous reactions
No additional information available

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
Compatible with most materials. Dissolves in strong acid or base.

10.6. Hazardous decomposition products
Germanium oxides. Sulfides.

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 sensitization: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
Specific target organ toxicity (single exposure): May cause respiratory irritation.
Specific target organ toxicity (repeated exposure): Not classified
Aspiration hazard: Not classified
Symptoms/injuries after inhalation: May cause respiratory irritation.
Symptoms/injuries after skin contact: May cause dermatitis by skin contact.
Symptoms/injuries after eye contact: May cause irritation or conjunctivitis by dissolving to form germanic acid, a weak acid.
Symptoms/injuries after ingestion: No information available.
Chronic symptoms: Chronic Toxicity: No specific information has been reported for this compound. Inhalation-Animal studies of germanium compounds indicate morphological changes of the respiratory tract such as thickening of the alveolar partitions and hyperplasia of the lymphatic vessels around the bronchi and blood vessels. Ingestion- Rats fed 100ppm for 14 weeks showed stimulated growth. Those fed 1000ppm showed depressed growth and suffered 50% mortality. Kidney damage has been reported in humans and animals. For selenium compounds, pallor, nervousness, depression and death have been reported for chronic exposure.

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.
**GERMANIUM(II) SULFIDE**
Safety Data Sheet

Effect on ozone layer: No additional information available
Effect on the global warming: No known effects from this product.

**SECTION 13: Disposal considerations**

<table>
<thead>
<tr>
<th>Waste treatment methods</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewage disposal recommendations</td>
<td>Do not dispose of waste into sewer.</td>
</tr>
<tr>
<td>Waste disposal recommendations</td>
<td>Dispose in a safe manner in accordance with local/national regulations. Large quantities may be recycled by return to the Gelest, the manufacturer.</td>
</tr>
<tr>
<td>Ecology - waste materials</td>
<td>Avoid release to the environment.</td>
</tr>
</tbody>
</table>

**SECTION 14: Transport information**

<table>
<thead>
<tr>
<th>UN number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not regulated for transport.</td>
<td></td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**SECCTION 15: Regulatory information**

<table>
<thead>
<tr>
<th>US Federal regulations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Germanium (II) sulfide (12025-32-0)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>International regulations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Germanium (II) sulfide (12025-32-0)</td>
<td>Listed on the Canadian NDSL (Non-Domestic Substances List)</td>
</tr>
<tr>
<td></td>
<td>Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)</td>
</tr>
<tr>
<td></td>
<td>Listed on the Korean ECL (Existing Chemicals List)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>US State regulations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GERMANIUM(II) SULFIDE(12025-32-0)</td>
<td></td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Carcinogens List</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Developmental Toxicity</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-significant risk level (NSRL)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**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:

| H335 | May cause respiratory irritation |

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: 05/23/2016  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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