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

1.1. Product identifier

Product form : Substance
Physical state : Solid
Substance name : GERMANIUM DIODIDE
Product code : GEG5200
Formula : I2Ge
Synonyms : DIODOGERMANE; GERMANIUM II IODIDE
Chemical family : GERMANIUM IODIDE

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]
Skin corrosion/irritation, Category 1B : H314
Serious eye damage/eye irritation, Category 1 : H318
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) : GHS05

Signal word (CLP) : Danger
Hazard statements (CLP) : H314 - Causes severe skin burns and eye damage.
Precautionary statements (CLP) : P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P260 - Do not breathe dust.
P264 - Wash hands thoroughly after handling.
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P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 - Immediately call a POISON CENTER or doctor/physician

2.3. Other hazards
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances
Substance type : Multi-constituent
Name : GERMANIUM DIIODIDE
CAS-No. : 13573-08-5
EC-No. : 236-998-1

<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>Germanium iodide (GeI2)</td>
<td>(CAS-No.) 13573-08-5 (EC-No.) 236-998-1</td>
<td>&gt; 95</td>
<td>Skin Corr. 1B, H314 Eye Dam. 1, H318</td>
</tr>
<tr>
<td>Other Germanium Iodides</td>
<td></td>
<td>&lt; 5</td>
<td>Skin Corr. 1B, H314 Eye Dam. 1, H318</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
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 person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice.
First-aid measures after skin contact: Wash with plenty of water/…. Get immediate 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 immediate 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/effects: Causes severe skin burns and eye damage.
Symptoms/effects after inhalation: May cause respiratory irritation.
Symptoms/effects after skin contact: Causes (severe) skin burns.
Symptoms/effects after eye contact: Causes serious eye damage.
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: None.
Unsuitable extinguishing media: Water.

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
Firefighting instructions: Note, since germanium diiodide is not flammable, precautions refer to mixtures with flammable materials.
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 vapour and mist.
## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 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.

### 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.

**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. Avoid contact with water.

**Incompatible materials**: Moisture. Water:

**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

No additional information available

### 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 or face shield. 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**: Solid.

**Molecular mass**: 326.4 g/mol

**Colour**: Orange.

**Odour**: Acrid.
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<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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>460 °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>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>545 °C</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Non flammable.</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>0.1 mm Hg @ 284°C</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>5.73</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>
<tr>
<td>9.2. Other information</td>
<td>No additional information available</td>
</tr>
<tr>
<td>10.1. Reactivity</td>
<td>No additional information available</td>
</tr>
<tr>
<td>10.2. Chemical stability</td>
<td>Stable.</td>
</tr>
<tr>
<td>10.3. Possibility of hazardous reactions</td>
<td>Reacts with warm water and moisture in air liberating hydrogen iodide.</td>
</tr>
<tr>
<td>10.4. Conditions to avoid</td>
<td>No additional information available</td>
</tr>
<tr>
<td>10.5. Incompatible materials</td>
<td>Moisture. Water :</td>
</tr>
<tr>
<td>11.1. Information on toxicological effects</td>
<td>Not classified</td>
</tr>
<tr>
<td>Acute toxicity</td>
<td>Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Respiratory or skin sensitisation</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>STOT-single exposure</td>
<td>Not classified</td>
</tr>
<tr>
<td>STOT-repeated exposure</td>
<td>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
<tr>
<td>Potential adverse human health effects and symptoms</td>
<td>Inhalation of large amounts is expected to cause necrosis of tracheal epithelium, bronchitis and interstitial pneumonia.</td>
</tr>
<tr>
<td>Symptoms/effects after inhalation</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>Symptoms/effects after skin contact</td>
<td>Causes (severe) skin burns.</td>
</tr>
</tbody>
</table>

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Symptoms/effects after eye contact : Causes serious eye damage.
Symptoms/effects after ingestion : No information available.
Reason for classification : Expert judgment

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
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
In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number
UN-No. (ADR) : 1759
UN-No. (IMDG) : 1759
UN-No. (IATA) : 1759
UN-No. (ADN) : 1759
UN-No. (RID) : 1759

14.2. UN proper shipping name
Proper Shipping Name (ADR) : CORROSIVE SOLID, N.O.S.
Proper Shipping Name (IMDG) : CORROSIVE SOLID, N.O.S.
Proper Shipping Name (IATA) : Corrosive solid, n.o.s.
Proper Shipping Name (ADN) : CORROSIVE SOLID, N.O.S.
Proper Shipping Name (RID) : CORROSIVE SOLID, N.O.S.
Transport document description (ADR) : UN 1759 CORROSIVE SOLID, N.O.S. (GERMANIUM DIIODIDE), 8, II, (E)
Transport document description (IMDG) : UN 1759 CORROSIVE SOLID, N.O.S. (GERMANIUM DIIODIDE), 8, II
Transport document description (IATA) : UN 1759 Corrosive solid, n.o.s. (GERMANIUM DIIODIDE), 8, II
Transport document description (ADN) : UN 1759 CORROSIVE SOLID, N.O.S. (GERMANIUM DIIODIDE), 8, II
Transport document description (RID) : UN 1759 CORROSIVE SOLID, N.O.S. (GERMANIUM DIIODIDE), 8, II

14.3. Transport hazard class(es)
ADR
Transport hazard class(es) (ADR) : 8
Danger labels (ADR) : 8
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**IMDG**

- **Transport hazard class(es) (IMDG)**: 8
- **Danger labels (IMDG)**: 8

![IMDG 8]

**IATA**

- **Transport hazard class(es) (IATA)**: 8
- **Hazard labels (IATA)**: 8

![IATA 8]

**ADN**

- **Transport hazard class(es) (ADN)**: 8
- **Danger labels (ADN)**: 8

![ADN 8]

**RID**

- **Transport hazard class(es) (RID)**: 8
- **Danger labels (RID)**: 8

![RID 8]

### 14.4. Packing group

<table>
<thead>
<tr>
<th>Packing group (ADR)</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing group (IMDG)</td>
<td>II</td>
</tr>
<tr>
<td>Packing group (IATA)</td>
<td>II</td>
</tr>
<tr>
<td>Packing group (ADN)</td>
<td>II</td>
</tr>
<tr>
<td>Packing group (RID)</td>
<td>II</td>
</tr>
</tbody>
</table>

### 14.5. Environmental hazards

- **Dangerous for the environment**: No
- **Marine pollutant**: No
- **Other information**: No supplementary information available

### 14.6. Special precautions for user

#### - Overland transport

<table>
<thead>
<tr>
<th>Classification code (ADR)</th>
<th>C10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special provisions (ADR)</td>
<td>274</td>
</tr>
<tr>
<td>Limited quantities (ADR)</td>
<td>1kg</td>
</tr>
<tr>
<td>Excepted quantities (ADR)</td>
<td>E2</td>
</tr>
<tr>
<td>Packing instructions (ADR)</td>
<td>P002, IBC08</td>
</tr>
<tr>
<td>Special packing provisions (ADR)</td>
<td>B3</td>
</tr>
<tr>
<td>Mixed packing provisions (ADR)</td>
<td>MP10</td>
</tr>
</tbody>
</table>
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**Portable tank and bulk container instructions (ADR)**: T3
**Portable tank and bulk container special provisions (ADR)**: TP33
**Tank code (ADR)**: SGAN, L4BN
**Vehicle for tank carriage**: AT
**Transport category (ADR)**: 2
**Special provisions for carriage - Packages (ADR)**: V11
**Hazard identification number (Kemler No.)**: 80
**Orange plates**: 80

**Tunnel restriction code (ADR)**: E
**EAC code**: 2X

- **Transport by sea**
  **Special provisions (IMDG)**: 274
  **Limited quantities (IMDG)**: 1 kg
  **Excepted quantities (IMDG)**: E2
  **Packing instructions (IMDG)**: P002
  **IBC packing instructions (IMDG)**: IBC08
  **IBC special provisions (IMDG)**: B2, B4
  **Tank instructions (IMDG)**: T3
  **Tank special provisions (IMDG)**: TP33
  **EmS-No. (Fire)**: F-A
  **EmS-No. (Spillage)**: S-B
  **Stowage category (IMDG)**: A
  **Properties and observations (IMDG)**: Causes burns to skin, eyes and mucous membranes.

- **Air transport**
  **PCA Excepted quantities (IATA)**: E2
  **PCA Limited quantities (IATA)**: Y844
  **PCA limited quantity max net quantity (IATA)**: 5kg
  **PCA packing instructions (IATA)**: 859
  **PCA max net quantity (IATA)**: 15kg
  **CAO packing instructions (IATA)**: 863
  **CAO max net quantity (IATA)**: 50kg
  **Special provisions (IATA)**: A3
  **ERG code (IATA)**: 8L

- **Inland waterway transport**
  **Classification code (ADN)**: C10
  **Special provisions (ADN)**: 274
  **Limited quantities (ADN)**: 1 kg
  **Excepted quantities (ADN)**: E2
  **Equipment required (ADN)**: PP, EP
  **Number of blue cones/lights (ADN)**: 0

- **Rail transport**
  **Classification code (RID)**: C10
  **Special provisions (RID)**: 274
  **Limited quantities (RID)**: 1kg
  **Excepted quantities (RID)**: E2
  **Packing instructions (RID)**: P002, IBC08
  **Special packing provisions (RID)**: B4
  **Mixed packing provisions (RID)**: MP10
  **Portable tank and bulk container instructions (RID)**: T3

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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
GERMANIUM DIIODIDE is not on the REACH Candidate List
GERMANIUM DIIODIDE is not on the REACH Annex XIV List
GERMANIUM DIIODIDE 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

Netherlands
SZW-lijst van kankerverwekkende stoffen: The substance is not listed
SZW-lijst van mutagene stoffen: The substance is not listed
NIET-limietlieve lijst van voor de voortplanting giftige stoffen – Borstvoeding: The substance is not listed
NIET-limietlieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid: The substance is not listed
NIET-limietlieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling: The substance is not listed

Denmark
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:

Eye Dam. 1: Serious eye damage/eye irritation, Category 1
Skin Corr. 1B: Skin corrosion/irritation, Category 1B
H314: Causes severe skin burns and eye damage.
H318: Causes serious eye damage.
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