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 TETRAIODIDE
Product code : GEG5800
Formula : GeI4
Synonyms : TETRAIODOGERMANE; GERMANIUM 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
Serious eye damage/eye irritation, Category 1

H314
H318

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects
No additional information available

2.2. Labelling according to Regulation (EC) No. 1272/2008 [CLP]
Hazard pictograms (CLP) :

Hazard statements (CLP) :
H314 - Causes severe skin burns and eye damage.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P260 - Do not breathe dust.
P264 - Wash hands thoroughly after handling.

Precautionary statements (CLP) :

GERMANIUM TETRAIODIDE
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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

EUH-statements: EUH014 - Reacts violently with water.

2.3. Other hazards
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Substance type</th>
<th>Mono-constituent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>GERMANIUM TETRAIODIDE</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>13450-95-8</td>
</tr>
<tr>
<td>EC-No.</td>
<td>236-613-7</td>
</tr>
</tbody>
</table>

Name                          | Product identifier                  | %   | Classification according to Regulation (EC No. 1272/2008 [CLP]) |
---                            | -----------------------------------|-----|-----------------------------------------------------------------|
Germanium tetraiodide         | (CAS-No.) 13450-95-8 (EC-No.) 236-613-7 | > 95 | Skin Corr. 1B, H314 Eye Dam. 1, H318 |

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 irritation to the respiratory tract. Overexposure may cause: Cough. Headache. Nausea.
Symptoms/effects after skin contact: Causes (severe) skin burns. Prolonged absorption of iodides may produce skin rashes, running nose, headache, mucous membrane irritation, anemia, loss of weight and depression.
Symptoms/effects after eye contact: Causes serious eye damage.
Symptoms/effects after ingestion: May be harmful if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed

Note to physician: Titanium tetraiodide reacts with water to form hydroiodic acid, consequently treatment for acid burns may be considered.

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 acid vapors may develop when material is exposed to elevated temperatures or open flame.

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

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: 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: 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: Crystalline solid.
Molecular mass: 580.21 g/mol
### Germanium Tetraiodide

**Safety Data Sheet**

**Colour:** Off-white. Brown.

**Odour:** Acrid. Hydrogen iodide.

**Odour threshold:** No data available

**Refractive index:** No additional information available

**pH:** No data available

**Relative evaporation rate (butylacetate=1):** No data available

**Melting point:** 146 °C

**Freezing point:** No data available

**Boiling point:** > 350 °C

**Flash point:** > 110 °C

**Auto-ignition temperature:** No data available

**Decomposition temperature:** No data available

**Flammability (solid, gas):** No data available

**Vapour pressure:** 0.17 mm Hg @ 373°C

**Relative vapour density at 20 °C:** > 1

**Relative density:** 4.416

**Solubility:** Reacts with 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

**Oxidising properties:** No data available

**Explosive limits:** No data available

**Explosive limits:** No data available

**Other information:** No additional information available

### SECTION 10: Stability and reactivity

**10.1. Reactivity**

No additional information available

**10.2. Chemical stability**

Stable in sealed inerted containers when stored out of direct UV exposure.

**10.3. Possibility of hazardous reactions**

Reacts with water and moisture in air liberating hydrogen iodide. Liberates iodine on combustion.

**10.4. Conditions to avoid**

No additional information available

**10.5. Incompatible materials**

Water:

**10.6. Hazardous decomposition products**

Acid vapors. Hydrogen iodide. Iodine (I).

### SECTION 11: Toxicological information

**11.1. Information on toxicological effects**

**Acute toxicity:** Not classified

**Skin corrosion/irritation:** Causes severe skin burns and eye damage.

**Serious eye damage/irritation:** Causes serious eye damage.

**Respiratory or skin sensitisation:** Not classified

**Germ cell mutagenicity:** Not classified

**Carcinogenicity:** Not classified

**Reproductive toxicity:** Not classified

**STOT-single exposure:** Not classified

**STOT-repeated exposure:** Not classified

**Aspiration hazard:** Not classified

**Potential adverse human health effects and symptoms:** Inhalation of large amounts is expected to cause necrosis of tracheal epithelium, bronchitis and interstitial pneumonia.
GERMANIUM TETRAIODIDE
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Symptoms/effects after inhalation: May cause irritation to the respiratory tract. Overexposure may cause: Cough. Headache. Nausea.
Symptoms/effects after skin contact: Causes (severe) skin burns. Prolonged absorption of iodides may produce skin rashes, running nose, headache, mucous membrane irritation, anemia, loss of weight and depression.
Symptoms/effects after eye contact: Causes serious eye damage.
Symptoms/effects after ingestion: May be harmful if swallowed.
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 TETRAIODIDE), 8, III, (E)
Transport document description (IMDG): UN 1759 CORROSIVE SOLID, N.O.S. (GERMANIUM TETRAIODIDE), 8, III
Transport document description (IATA): UN 1759 Corrosive solid, n.o.s. (GERMANIUM TETRAIODIDE), 8, III
Transport document description (ADN): UN 1759 CORROSIVE SOLID, N.O.S. (GERMANIUM TETRAIODIDE), 8, III
Transport document description (RID): UN 1759 CORROSIVE SOLID, N.O.S. (GERMANIUM TETRAIODIDE), 8, III
14.3. Transport hazard class(es)
ADR
Transport hazard class(es) (ADR): 8
Danger labels (ADR): 8
IMDG
Transport hazard class(es) (IMDG) : 8
Danger labels (IMDG) : 8

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

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

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

14.4. Packing group
Packing group (ADR) : III
Packing group (IMDG) : III
Packing group (IATA) : III
Packing group (ADN) : III
Packing group (RID) : III

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
  Classification code (ADR) : C10
  Special provisions (ADR) : 274
**GERMANIUM TETRAIODIDE**

**Safety Data Sheet**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>Limited quantities (ADR)</td>
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<tr>
<td>Excepted quantities (ADR)</td>
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<td>Packing instructions (ADR)</td>
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<td>Mixed packing provisions (ADR)</td>
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<td>Special provisions for carriage - Bulk (ADR)</td>
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<td>EAC code</td>
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**- Transport by sea**

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<td>Special provisions (IMDG)</td>
<td>223, 274</td>
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<td>Limited quantities (IMDG)</td>
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<td>Excepted quantities (IMDG)</td>
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<td>Packing instructions (IMDG)</td>
<td>P002, LP02</td>
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<td>IBC packing instructions (IMDG)</td>
<td>IBC08</td>
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<td>IBC special provisions (IMDG)</td>
<td>B3</td>
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<tr>
<td>Tank special provisions (IMDG)</td>
<td>TP33</td>
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<td>EmS-No. (Fire)</td>
<td>F-A</td>
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<tr>
<td>EmS-No. (Spillage)</td>
<td>S-B</td>
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<tr>
<td>Stowage category (IMDG)</td>
<td>A</td>
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<tr>
<td>Properties and observations (IMDG)</td>
<td>Causes burns to skin, eyes and mucous membranes.</td>
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**- Air transport**

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**- Inland waterway transport**

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<td>Excepted quantities (ADN)</td>
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**- Rail transport**

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<tr>
<td>Excepted quantities (RID)</td>
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</tr>
<tr>
<td>Packing instructions (RID)</td>
<td>P002, IBC08, LP02, R001</td>
</tr>
<tr>
<td>Special packing provisions (RID)</td>
<td>B3</td>
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</tbody>
</table>
GERMANIUM TETRAIODIDE
Safety Data Sheet

Mixed packing provisions (RID) : MP10
Portable tank and bulk container instructions (RID) : T1
Portable tank and bulk container special provisions (RID) : TP33
Tank codes for RID tanks (RID) : SGA, LBN
Transport category (RID) : 3
Special provisions for carriage – Bulk (RID) : VC1, VC2, AP7
Colis express (express parcels) (RID) : CE11
Hazard identification number (RID) : 80

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 VII restrictions
GERMANIUM TETRAIODIDE is not on the REACH Candidate List
GERMANIUM TETRAIODIDE is not on the REACH Annex XIV List
GERMANIUM TETRAIODIDE 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
12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BlmSchV (Hazardous Incident Ordinance)

Netherlands
SZW-list van kankerverwekkende stoffen : The substance is not listed
SZW-list van mutagene stoffen : The substance is not listed
NIET-limitele lijst van voor de voortplanting gifige stoffen – Borstvoeding : The substance is not listed
NIET-limitele lijst van voor de voortplanting gifige stoffen – Vruchtbaarheid : The substance is not listed
NIET-limitele lijst van voor de voortplanting gifige 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, ND: 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.
EUH014 : Reacts violently with water.
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