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

1.1. Product identifier

Product form: Substance
Physical state: Solid
Substance name: CESIUM TRICHLOROGERMANATE, 95%
Product code: GEC2150
Formula: Cl₃CsGe
Synonyms: CESIUM GERMANIUM TRICHLORIDE
Chemical family: GERMANIUM CHLORIDE

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@gelestdc.com - www.gelestdc.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 1C: H314
- Serious eye damage/eye irritation, Category 1: H318
- Specific target organ toxicity — Single exposure, Category 3: H335
- Respiratory tract irritation

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
  - GHS07

- Signal word (CLP): Danger
- Hazard statements (CLP):
  - H314 - Causes severe skin burns and eye damage.
  - H335 - May cause respiratory irritation.
PRECAUTIONARY STATEMENTS (CLP):
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P260 - Do not breathe dust.
P264 - Wash hands thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P501 - Dispose of contents/container to licensed waste disposal facility.
P310 - Immediately call a POISON CENTER or doctor/physician.

EUH-STATEMENTS:
EUH014 - Reacts violently with water.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS
3.1. SUBSTANCES

<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>Cesium trichlorogermanate</td>
<td>(CAS-No.) 72128-24-6</td>
<td>90 - 100</td>
<td>Skin Corr. 1C, H314, Eye Dam. 1, H318, STOT SE 3, H335</td>
</tr>
<tr>
<td>Other Germanium Compounds</td>
<td></td>
<td>0 - 10</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

Full text of H-statements: see section 16

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 after inhalation: May cause respiratory irritation. Inhalation of large amounts is expected to cause necrosis of tracheal epithelium, bronchitis and interstitial pneumonia.

Symptoms/effects after skin contact: Causes (severe) skin burns.

Symptoms/effects after eye contact: Causes serious eye damage.

Symptoms/effects after ingestion: May be harmful if swallowed.

SECTION 5: FIREFIGHTING MEASURES
5.1. EXTINGUISHING MEDIA

Suitable extinguishing media: Not flammable.

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: Exercise caution when fighting any chemical fire. (Note, since cesium trichlorogermanate 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 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.

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 dust formation. Avoid contact with skin and eyes. Avoid contact with water. Do not breathe dust. 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.
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 combination organic vapor/acid gas (yellow cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Solid
Appearance: Solid.
CESIUM TRICHLOROGERMANATE, 95%
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Molecular mass: 311.86 g/mol
Colour: Off-white to yellow.
Odour: No data available
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: No data available
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
Vapour pressure: No data available
Relative vapour density at 20 °C: No data available
Relative density: 3.45
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

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 in sealed containers.

10.3. Possibility of hazardous reactions
Reacts with water and moisture in air decomposing to germanium II chloride and cesium chloride.

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
Oxidizing agent. Water.

10.6. Hazardous decomposition products
Acid vapors.

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: May cause respiratory irritation.
STOT-repeated exposure: Not classified
Aspiration hazard: Not classified
**Symptoms/effects after inhalation**: May cause respiratory irritation. Inhalation of large amounts is expected to cause necrosis of tracheal epithelium, bronchitis and interstitial pneumonia.

**Symptoms/effects after skin contact**: Causes (severe) skin burns.

**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
- **Sewage disposal recommendations**: Do not dispose of waste into sewer.
- **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. (CESIUM TRICHLOROGermanate), 8, III, (E)
- **Transport document description (IMDG)**: UN 1759 CORROSIVE SOLID, N.O.S. (CESIUM TRICHLOROGermanate), 8, III
- **Transport document description (IATA)**: UN 1759 Corrosive solid, n.o.s. (CESIUM TRICHLOROGermanate), 8, III
- **Transport document description (ADN)**: UN 1759 CORROSIVE SOLID, N.O.S. (CESIUM TRICHLOROGermanate), 8, III
- **Transport document description (RID)**: UN 1759 CORROSIVE SOLID, N.O.S. (CESIUM TRICHLOROGermanate), 8, III

#### 14.3. 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
CESIUM TRICHLOROGERMANATE, 95%
Safety Data Sheet

<table>
<thead>
<tr>
<th>Limited quantities (ADR)</th>
<th>5kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excepted quantities (ADR)</td>
<td>E1</td>
</tr>
<tr>
<td>Packing instructions (ADR)</td>
<td>P002, IBC08, LP02, R001</td>
</tr>
<tr>
<td>Mixed packing provisions (ADR)</td>
<td>MP10</td>
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<tr>
<td>Portable tank and bulk container instructions (ADR)</td>
<td>T1</td>
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<tr>
<td>Portable tank and bulk container special provisions (ADR)</td>
<td>TP33</td>
</tr>
<tr>
<td>Tank code (ADR)</td>
<td>SGAV, L4BN</td>
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<td>Vehicle for tank carriage</td>
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<td>Transport category (ADR)</td>
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<tr>
<td>Special provisions for carriage - Bulk (ADR)</td>
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<td>Orange plates</td>
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<tr>
<td>Orange plates</td>
<td>80</td>
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<td>Tunnel restriction code (ADR)</td>
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<tr>
<td>EAC code</td>
<td>2X</td>
</tr>
</tbody>
</table>

**- Transport by sea**

| Special provisions (IMDG) | 223, 274 |
| Limited quantities (IMDG) | 5 kg |
| Excepted quantities (IMDG) | E1 |
| Packing instructions (IMDG) | P002, LP02 |
| IBC packing instructions (IMDG) | IBC08 |
| IBC special provisions (IMDG) | B3 |
| Tank instructions (IMDG) | T1 |
| 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) | E1 |
| PCA Limited quantities (IATA) | Y845 |
| PCA limited quantity max net quantity (IATA) | 5kg |
| PCA packing instructions (IATA) | 860 |
| PCA max net quantity (IATA) | 25kg |
| CAO packing instructions (IATA) | 864 |
| CAO max net quantity (IATA) | 100kg |
| Special provisions (IATA) | A3 |
| ERG code (IATA) | 8L |

**- Inland waterway transport**

| Classification code (ADN) | C10 |
| Special provisions (ADN) | 274 |
| Limited quantities (ADN) | 5 kg |
| Excepted quantities (ADN) | E1 |
| 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) | 5kg |
| Excepted quantities (RID) | E1 |
| Packing instructions (RID) | P002, IBC08, LP02, R001 |
| Special packing provisions (RID) | B3 |
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): SGAV, L4BN
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 XVII restrictions
CESIUM TRICHLOROGERMANATE, 95% is not on the REACH Candidate List
CESIUM TRICHLOROGERMANATE, 95% is not on the REACH Annex XIV List
CESIUM TRICHLOROGERMANATE, 95% 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-lijst van kankerverwekkende stoffen: The substance is not listed
SZW-lijst van mutagene stoffen: The substance is not listed
NIET-limiteervallen lijst van voor de voortplanting giftige stoffen – Borstvoeding: The substance is not listed
NIET-limiteervallen lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid: The substance is not listed
NIET-limiteervallen 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. 1C: Skin corrosion/Irritation, Category 1C
STOT SE 3: Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H314: Causes severe skin burns and eye damage.
H318: Causes serious eye damage.
CESIUM TRICHLOROGERMANATE, 95%
Safety Data Sheet

<table>
<thead>
<tr>
<th>H335</th>
<th>May cause respiratory irritation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUH014</td>
<td>Reacts violently with water.</td>
</tr>
</tbody>
</table>

SDS EU (REACH Annex II) - Custom

The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.

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