1 Identification

· Product name
  · Trade name: Cesium (99.5%) (prescored ampoule)
  · Item number: 93-5550
  · CAS Number: 7440-46-2
  · EC number: 231-155-4

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier: Strem Chemicals, Inc.
    7 Mulliken Way
    NEWBURYPORT, MA 01950
    USA
    info@strem.com
  · Information department: Technical Department
  · Emergency telephone number:
    EMERGENCY: CHEMTREC: +1 (800) 424-9300
    During normal opening times: +1 (978) 499-1600

2 Hazard(s) identification

· Classification of the substance or mixture
  GHS02 Flame
  Water-react. 1 H260 In contact with water releases flammable gases which may ignite spontaneously.

  GHS05 Corrosion
  Skin Corr. 1B  H314 Causes severe skin burns and eye damage.
  Eye Dam. 1 H318 Causes serious eye damage.

· Label elements
  · GHS label elements
    The substance is classified and labeled according to the Globally Harmonized System (GHS).
  · Hazard pictograms
    GHS02  GHS05

· Signal word Danger

· Hazard-determining components of labeling:
  Cesium (99.9+%)(prescored ampoule)

· Hazard statements
  H260 In contact with water releases flammable gases which may ignite spontaneously.
  H314 Causes severe skin burns and eye damage.

· Precautionary statements
  P101 If medical advice is needed, have product container or label at hand.
Trade name: Cesium (99.5%) (prescored ampoule)

- **P102** Keep out of reach of children.
- **P103** Read label before use.
- **P231+P232** Handle under inert gas. Protect from moisture.
- **P303+P361+P353** IF ON SKIN (or hair): Remove/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.
- **P403+P233** Store in a well-ventilated place. Keep container tightly closed.
- **P422** Store contents under inert gas.
- **P501** Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
- **NFPA ratings (scale 0 - 4)**
  - Health = 3
  - Fire = 4
  - Reactivity = 2

The substance demonstrates unusual reactivity with water.

- **HMIS-ratings (scale 0 - 4)**
  - Health = 3
  - Fire = 4
  - Reactivity = 2

- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization:** Substances
- **CAS No. Description**
  - 7440-46-2 Cesium (99.9+%)(prescored ampoule)
- **Identification number(s)**
- **EC number:** 231-155-4

### 4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
  No further relevant information available.
5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents: CO2, sand, extinguishing powder. Do not use water.
- For safety reasons unsuitable extinguishing agents: Water
- Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters
  - Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.
- Environmental precautions: No special measures required.
- Methods and material for containment and cleaning up:
  Use neutralizing agent.
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.
  Do not flush with water or aqueous cleansing agents
- Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

7 Handling and storage

- Precautions for safe handling
  Thorough dedusting.
- Information about protection against explosions and fires
  Keep ignition sources away - Do not smoke.
- Conditions for safe storage, including any incompatibilities
  Storage:
  - Requirements to be met by storerooms and receptacles: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions:
    Keep receptacle tightly sealed.
    Store in cool, dry conditions in well sealed receptacles.
- Specific end use(s): No further relevant information available.

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters
- Components with limit values that require monitoring at the workplace: Not required.
- Additional information: The lists that were valid during the creation were used as basis.
- Exposure controls
- Personal protective equipment:
- General protective and hygienic measures:
  Keep away from foodstuffs, beverages and feed.
  Immediately remove all soiled and contaminated clothing.
  Wash hands before breaks and at the end of work.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.
· Breathing equipment: Not required.
· Protection of hands:

![Protective gloves]

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· Eye protection:

![Tightly sealed goggles]

**9 Physical and chemical properties**

<table>
<thead>
<tr>
<th>· Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>· General Information</td>
</tr>
<tr>
<td>· Appearance:</td>
</tr>
<tr>
<td>· Form: Solid</td>
</tr>
<tr>
<td>· Color: Gold colored</td>
</tr>
<tr>
<td>· Odor: Odorless</td>
</tr>
<tr>
<td>· Odour threshold: Not determined.</td>
</tr>
<tr>
<td>· pH-value: Not applicable.</td>
</tr>
<tr>
<td>· Change in condition</td>
</tr>
<tr>
<td>· Melting point/Melting range: 28.64 °C (84 °F)</td>
</tr>
<tr>
<td>· Boiling point/Boiling range: 690 °C (1274 °F)</td>
</tr>
<tr>
<td>· Flash point: Not applicable.</td>
</tr>
<tr>
<td>· Flammability (solid, gaseous): Contact with water liberates extremely flammable gases.</td>
</tr>
<tr>
<td>· Ignition temperature:</td>
</tr>
<tr>
<td>· Decomposition temperature: Not determined.</td>
</tr>
<tr>
<td>· Auto igniting: Spontaneously flammable in air.</td>
</tr>
<tr>
<td>· Danger of explosion: Not determined.</td>
</tr>
<tr>
<td>· Explosion limits:</td>
</tr>
<tr>
<td>· Lower: Not determined.</td>
</tr>
<tr>
<td>· Upper: Not determined.</td>
</tr>
</tbody>
</table>
### 10 Stability and reactivity

- **Reactivity**
  - **Chemical stability**
  - **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
  - **Possibility of hazardous reactions** Contact with water releases flammable gases.
  - **Conditions to avoid** No further relevant information available.
  - **Incompatible materials** No further relevant information available.
  - **Hazardous decomposition products** No dangerous decomposition products known.

### 11 Toxicological information

- **Information on toxicological effects**
  - **Acute toxicity:**
  - **Primary irritant effect:**
    - **on the skin:** Strong caustic effect on skin and mucous membranes.
    - **on the eye:** Strong caustic effect. Strong irritant with the danger of severe eye injury.
  - **Sensitization:** No sensitizing effects known.
  - **Additional toxicological information:** Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

- **Carcinogenic categories**
  - **IARC (International Agency for Research on Cancer)**
    - Substance is not listed.
  - **NTP (National Toxicology Program)**
    - Substance is not listed.
12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
  - General notes: Must not reach bodies of water or drainage ditch undiluted or unneutralized.

13 Disposal considerations

- Waste treatment methods
  - Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- Uncleaned packagings
  - Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, IMDG, IATA: UN1407

- UN proper shipping name
  - DOT: Cesium
  - IMDG, IATA: CAESIUM

- Transport hazard class(es)
  - DOT
    - Class: 4.3 Substances which, in contact with water, emit flammable gases
    - Label: 4.3
Trade name: Cesium (99.5%) (prescored ampoule)

| · Label | 4.3 |
| · Packing group | DOT, IMDG, IATA |
| · DOT, IMDG, IATA | 1 |
| · Environmental hazards: | Marine pollutant: |
| · Special precautions for user | No |
| · Danger code (Kemler): | Not applicable. |
| · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| · Transport/Additional information: | DOT |
| · DOT | Quantity limitations |
| · Quantity limitations | On passenger aircraft/rail: Forbidden |
| | On cargo aircraft only: 15 kg |
| · UN "Model Regulation": | UN1407, Cesium, 4.3, I |

15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture
  · Sara
    · Section 355 (extremely hazardous substances):
      Substance is not listed.
    · Section 313 (Specific toxic chemical listings):
      Substance is not listed.
    · TSCA (Toxic Substances Control Act):
      Substance is listed.
    · Proposition 65
      · Chemicals known to cause cancer:
        Substance is not listed.
      · Chemicals known to cause reproductive toxicity for females:
        Substance is not listed.
      · Chemicals known to cause reproductive toxicity for males:
        Substance is not listed.
      · Chemicals known to cause developmental toxicity:
        Substance is not listed.
  · Carcinogenic categories
    · EPA (Environmental Protection Agency)
      Substance is not listed.
    · TLV (Threshold Limit Value established by ACGIH)
      Substance is not listed.
    · NIOSH-Ca (National Institute for Occupational Safety and Health)
      Substance is not listed.
    · GHS label elements
      The substance is classified and labeled according to the Globally Harmonized System (GHS).
Safety Data Sheet
according to OSHA HCS

Printing date 09/28/2015 Reviewed on 12/11/2014

Trade name: Cesium (99.5%) (prescored ampoule)

- Hazard pictograms

GHS02  GHS05

- Signal word Danger

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P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P422 Store contents under inert gas.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Department issuing SDS: Technical Department.
- Contact: Technical Director
- Date of preparation / last revision 09/28/2015 / -

- Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
Water-react. 1: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 1
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1

USA