1 Identification

· Product identifier
  · Trade name: Cesium 10,000 μg/mL in 1% HNO3
  · Article number: 10M11-1

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier: High-Purity Standards
    PO Box 41727 Charleston, SC 29423 United States
    Telephone: +1-843-767-7900
    Fax: +1-843-767-7906
    highpuritystandards.com
    Email: info@highpuritystandards.com
  · Information department: Product safety department
  · Emergency telephone number: INFOTRAC
    Emergency telephone numbers 1-800-535-5053
    Other emergency telephone numbers 1-352-323-3500

2 Hazard(s) identification

· Classification of the substance or mixture
  · GHS05 Corrosion
    Eye Dam. 1 H318 Causes serious eye damage.
  · GHS07
    Skin Irrit. 2 H315 Causes skin irritation.

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

· Signal word Danger

· Hazard-determining components of labeling:
  caesium hydroxide
  nitric acid

· Hazard statements
  H315 Causes skin irritation.
  H318 Causes serious eye damage.

· Precautionary statements
  Wash thoroughly after handling.
  Wear protective gloves / eye protection / face protection.

(Contd. on page 2)
If on skin: Wash with plenty of water.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a poison center/doctor.
Specific treatment (see on this label).
Take off contaminated clothing and wash it before reuse.
If skin irritation occurs: Get medical advice/attention.

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

- HMIS-ratings (scale 0 - 4)
  
  HEALTH 3  
  FIRE 0  
  REACTIVITY 0

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

3 Composition/information on ingredients
- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.

- Dangerous components:
  
<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
<td>1.0%</td>
</tr>
<tr>
<td>21351-79-1 caesium hydroxide</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

- Chemical identification of the substance/preparation
  
<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>7732-18-5 water, distilled, conductivity or of similar purity</td>
<td>98.0%</td>
</tr>
</tbody>
</table>

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: If symptoms persist consult doctor.
- Information for doctor:
  - Most important symptoms and effects, both acute and delayed: No further relevant information available.
5 Fire-fighting measures

· Extinguishing media
  · Suitable extinguishing agents: Use fire fighting measures that suit the environment.
  · 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:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Use neutralizing agent.
  Dispose contaminated material as waste according to item 13.
· 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.
· Protective Action Criteria for Chemicals

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>0.16 ppm</td>
</tr>
<tr>
<td>21351-79-1</td>
<td>caesium hydroxide</td>
<td>6 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>24 ppm</td>
</tr>
<tr>
<td>21351-79-1</td>
<td>caesium hydroxide</td>
<td>19 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>nitric acid</td>
<td>92 ppm</td>
</tr>
<tr>
<td>21351-79-1</td>
<td>caesium hydroxide</td>
<td>110 mg/m³</td>
</tr>
</tbody>
</table>

7 Handling and storage

· Handling:
  · Precautions for safe handling: No special precautions are necessary if used correctly.
  · Information about protection against explosions and fires: No special measures required.
· 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.

(Contd. on page 4)
Trade name: Cesium 10,000 μg/mL in 1% HNO₃

- **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:**

    | Substance                      | PEL Long-term value | REL Short-term value | TLV Short-term value |
    |--------------------------------|--------------------|----------------------|----------------------|
    | 7697-37-2 Nitric acid          | 5 mg/m³, 2 ppm     | 10 mg/m³, 4 ppm      | 10 mg/m³, 4 ppm      |
    | 21351-79-1 Caesium hydroxide   | 2 mg/m³            | 2 mg/m³              | 2 mg/m³              |

- **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 skin.
    - 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. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

  - **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.
Trade name: Cesium 10,000 μg/mL in 1% HNO3

9 Physical and chemical properties

| · Information on basic physical and chemical properties |
| · General Information |
| · Appearance: |
| Form: Liquid |
| Color: colorless |
| · Odor: Characteristic |
| · Odor threshold: Not determined. |
| · pH-value: Not determined. |
| · Change in condition |
| Melting point/Melting range: Undetermined. |
| Boiling point/Boiling range: 100 °C (212 °F) |
| · Flash point: Not applicable. |
| · Flammability (solid, gaseous): Not applicable. |
| · Decomposition temperature: Not determined. |
| · Auto igniting: Product is not selfigniting. |
| · Danger of explosion: Product does not present an explosion hazard. |
| · Explosion limits: |
| Lower: Not determined. |
| Upper: Not determined. |
| · Vapor pressure at 20 °C (68 °F): 23 hPa (17.3 mm Hg) |
| · Density at 20 °C (68 °F): 1.03178 g/cm³ (8.6102 lbs/gal) |
| · Bulk density: 1,032 kg/m³ |
| · Relative density: Not determined. |
| · Vapor density: Not determined. |
| · Evaporation rate: Not determined. |
| · Solubility in / Miscibility with |
| Water: Not miscible or difficult to mix. |
| · Partition coefficient (n-octanol/water): Not determined. |
| · Viscosity: |
| Dynamic: Not determined. |
| Kinematic: Not determined. |
Trade name: Cesium 10,000 μg/mL in 1% HNO3

Solvent content:
- Water: 98.0 %
- VOC content: 0.00 %
  0.0 g/l / 0.00 lb/gal

Solids content: 1.0 %

Other information: No further relevant information available.

10 Stability and reactivity

- Reactivity: No further relevant information available.
- Chemical stability:
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions: No dangerous reactions known.
- 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: Irritant to skin and mucous membranes.
  - on the eye: Strong irritant with the danger of severe eye injury.
- Sensitization: No sensitizing effects known.
- Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
  Irritant
- Carcinogenic categories:
- IARC (International Agency for Research on Cancer): None of the ingredients is listed.
- NTP (National Toxicology Program): None of the ingredients is listed.
- OSHA-Ca (Occupational Safety & Health Administration): None of the ingredients is listed.

12 Ecological information

- Toxicity:
- Aquatic toxicity: No further relevant information available.
- Persistence and degradability: No further relevant information available.
- Behavior in environmental systems:
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
· Additional ecological information:
· General notes:
  Not hazardous for water.
  Must not reach bodies of water or drainage ditch undiluted or unneutralized.
· Results of PBT and vPvB assessment
  · PBT: Not applicable.
  · vPvB: Not applicable.
· Other adverse effects No further relevant information available.

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, ADR, IMDG, IATA UN3264
· UN proper shipping name
  · DOT Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Caesium hydroxide)
  · ADR 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, CAESIUM HYDROXIDE)
  · IMDG, IATA CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, CAESIUM HYDROXIDE)
· Transport hazard class(es)
  · DOT
    · Class 8 Corrosive substances
    · Label 8
  · ADR, IMDG, IATA
    · Class 8 Corrosive substances
    · Label 8
Trade name: Cesium 10,000 μg/mL in 1% HNO3

- Packing group
  - DOT, ADR, IMDG, IATA: III

- Environmental hazards:
  - Not applicable.

- Special precautions for user
  - Warning: Corrosive substances
  - Danger code (Kemler): 80
  - EMS Number: F-A.S-B
  - Segregation groups: Acids
  - Stowage Category: A
  - Stowage Code: SW2 Clear of living quarters.

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
  - Not applicable.

- Transport/Additional information:
  - DOT
    - Quantity limitations: On passenger aircraft/rail: 5 L
      On cargo aircraft only: 60 L
  - ADR
    - Excepted quantities (EQ): Code: E1
      Maximum net quantity per inner packaging: 30 ml
      Maximum net quantity per outer packaging: 1000 ml
  - IMDG
    - Limited quantities (LQ): 5L
    - Excepted quantities (EQ): Code: E1
      Maximum net quantity per inner packaging: 30 ml
      Maximum net quantity per outer packaging: 1000 ml
  - UN "Model Regulation":
    - UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
      (NITRIC ACID, CAESIUM HYDROXIDE), 8, III

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Sara
  - Section 355 (extremely hazardous substances):
    - 7697-37-2 nitric acid
  - Section 313 (Specific toxic chemical listings):
    - 7697-37-2 nitric acid
  - TSCA (Toxic Substances Control Act):
    - All components have the value ACTIVE.
  - Hazardous Air Pollutants
    - None of the ingredients is listed.
  - Proposition 65
    - Chemicals known to cause cancer:
      - None of the ingredients is listed.
Safety Data Sheet
acc. to OSHA HCS

Trade name: Cesium 10,000 μg/mL in 1% HNO3

(Contd. of page 8)

· Chemicals known to cause reproductive toxicity for females:
  None of the ingredients is listed.

· Chemicals known to cause reproductive toxicity for males:
  None of the ingredients is listed.

· Chemicals known to cause developmental toxicity:
  None of the ingredients is listed.

· Carcinogenic categories
  · EPA (Environmental Protection Agency)
    None of the ingredients is listed.
  · TLV (Threshold Limit Value established by ACGIH)
    None of the ingredients is listed.
  · NIOSH-Ca (National Institute for Occupational Safety and Health)
    None of the ingredients is listed.

· GHS label elements
  The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms
  GHS05

· Signal word
  Danger

· Hazard-determining components of labeling:
  caesium hydroxide
  nitric acid

· Hazard statements
  H315 Causes skin irritation.
  H318 Causes serious eye damage.

· Precautionary statements
  Wash thoroughly after handling.
  Wear protective gloves / eye protection / face protection.
  If on skin: Wash with plenty of water.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
  Continue rinsing.
  Immediately call a poison center/doctor.
  Specific treatment (see on this label).
  Take off contaminated clothing and wash it before reuse.

· 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: Environment protection department.
Trade name: Cesium 10,000 μg/mL in 1% HNO3

· Contact:
  High-Purity Standards
  Tel:  843-767-7900
  Fax:  843-767-7906

· Date of preparation / last revision 09/27/2019 / -

· 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
  ELINCS: European List of Notified Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  NFPA: National Fire Protection Association (USA)
  HMIS: Hazardous Materials Identification System (USA)
  VOC: Volatile Organic Compounds (USA, EU)
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  NIOSH: National Institute for Occupational Safety
  OSHA: Occupational Safety & Health
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  Skin Irrit. 2: Skin corrosion/irritation – Category 2
  Eye Dam. 1: Serious eye damage/eye irritation – Category 1