1 Identification

- Product identifier
  - Trade name: Cadmium 100 μg/mL in 2% HNO₃
  - Article number: 100 8-1
- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier: High-Purity Standards
    P.O. Box 41727
    Charleston, SC 29423
    Telephone: (843) 767-7900
    FAX: (843) 767-7906
- 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
    Met. Corr. 1   H290 May be corrosive to metals.
    Skin Corr. 1A  H314 Causes severe skin burns and eye damage.
    Eye Dam. 1    H318 Causes serious eye damage.
- 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:
  - nitric acid
- Hazard statements
  - H290 May be corrosive to metals.
  - H314 Causes severe skin burns and eye damage.
- Precautionary statements
  - Keep only in original container.
  - Do not breathe dusts or mists.
  - Wash thoroughly after handling.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - If swallowed: Rinse mouth. Do NOT induce vomiting.
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Trade name: Cadmium 100 μg/mL in 2% HNO3

(Contd. of page 1)

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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).
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.
Dispose of contents/container in accordance with local/regional/national/international regulations.

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

· HMIS-ratings (scale 0 - 4)
  
  HEALTH
  Health = 3
  FIRE
  Fire = 0
  REACTIVITY
  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>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 nitric acid</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

· Chemical identification of the substance/preparation

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-43-9 cadmium (non-pyrophoric)</td>
<td>0.001%</td>
</tr>
<tr>
<td>7732-18-5 water, distilled, conductivity or of similar purity</td>
<td>97.999%</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: Drink copious amounts of water and provide fresh air. Immediately call a doctor.
· Information for doctor:
  · Most important symptoms and effects, both acute and delayed No further relevant information available.

(Contd. on page 3)
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
    During heating or in case of fire poisonous gases are produced.
· Advice for firefighters
· Protective equipment: Mouth respiratory protective device.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures
  Mount respiratory protective device.
  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.
  Ensure adequate ventilation.
· 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>7440-43-9</td>
<td>cadmium (non-pyrophoric)</td>
<td>0.10 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>7440-43-9</td>
<td>cadmium (non-pyrophoric)</td>
<td>0.76 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>7440-43-9</td>
<td>cadmium (non-pyrophoric)</td>
<td>4.7 mg/m³</td>
</tr>
</tbody>
</table>

7 Handling and storage

· Handling:
· Precautions for safe handling
  Ensure good ventilation/exhaustion at the workplace.
  Prevent formation of aerosols.
· Information about protection against explosions and fires: Keep respiratory protective device available.
Trade name: Cadmium 100 μg/mL in 2% HNO3

- 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.
    - 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:
  - 7697-37-2 nitric acid  
    - PEL: Long-term value: 5 mg/m³, 2 ppm
    - REL: Short-term value: 10 mg/m³, 4 ppm
    - TLV: Long-term value: 5 mg/m³, 2 ppm

- 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:
    - In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
  - 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 can not 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.
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: Liquid</td>
</tr>
<tr>
<td>Color: Colorless</td>
</tr>
<tr>
<td>· Odor: Characteristic</td>
</tr>
<tr>
<td>· Odor threshold: Not determined.</td>
</tr>
<tr>
<td>· pH-value: Not determined.</td>
</tr>
<tr>
<td>· Change in condition</td>
</tr>
<tr>
<td>Melting point/Melting range: Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range: 100 °C (212 °F)</td>
</tr>
<tr>
<td>· Flash point: Not applicable.</td>
</tr>
<tr>
<td>· Flammability (solid, gaseous): Not applicable.</td>
</tr>
<tr>
<td>· Decomposition temperature: Not determined.</td>
</tr>
<tr>
<td>· Auto igniting: Product is not selfigniting.</td>
</tr>
<tr>
<td>· Danger of explosion: Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>· Explosion limits:</td>
</tr>
<tr>
<td>Lower: Not determined.</td>
</tr>
<tr>
<td>Upper: Not determined.</td>
</tr>
<tr>
<td>· Vapor pressure at 20 °C (68 °F): 23 hPa (17.3 mm Hg)</td>
</tr>
<tr>
<td>· Density at 20 °C (68 °F): 1.01014 g/cm³ (8.42962 lbs/gal)</td>
</tr>
<tr>
<td>· Bulk density: 1,010 kg/m³</td>
</tr>
<tr>
<td>· Relative density Not determined.</td>
</tr>
<tr>
<td>· Vapor density Not determined.</td>
</tr>
<tr>
<td>· Evaporation rate Not determined.</td>
</tr>
<tr>
<td>· Solubility in / Miscibility with Water: Not miscible or difficult to mix.</td>
</tr>
<tr>
<td>· Partition coefficient (n-octanol/water): Not determined.</td>
</tr>
<tr>
<td>· Viscosity:</td>
</tr>
<tr>
<td>Dynamic: Not determined.</td>
</tr>
<tr>
<td>Kinematic: Not determined.</td>
</tr>
</tbody>
</table>
Trade name: Cadmium 100 μg/mL in 2% HNO3

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

- **Solids content:** 0.0 %

- **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:** 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:**
  - The product shows the following dangers according to internally approved calculation methods for preparations:
    - Corrosive
    - Irritant
    - 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)**
    - 7440-43-9 cadmium (non-pyrophoric)
    - 1
  - **NTP (National Toxicology Program)**
    - 7440-43-9 cadmium (non-pyrophoric)
    - K
  - **OSHA-Ca (Occupational Safety & Health Administration)**
    - 7440-43-9 cadmium (non-pyrophoric)
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:
    - Generally 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 UN3264
- DOT, ADR, IMDG, IATA
- UN proper shipping name
  - DOT Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)
  - ADR 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)
  - IMDG, IATA CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
- Transport hazard class(es)
  - DOT
  - Class 8 Corrosive substances
47.1.4

- **Label:** 8

- **ADR, IMDG, IATA**

- **Class:** 8 Corrosive substances
- **Label:** 8

- **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), 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

(Contd. on page 9)
Trade name: Cadmium 100 μg/mL in 2% HNO₃

<table>
<thead>
<tr>
<th>Section 313 (Specific toxic chemical listings):</th>
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<td>7440-43-9 cadmium (non-pyrophoric)</td>
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<table>
<thead>
<tr>
<th>TSCA (Toxic Substances Control Act):</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ingredients are listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proposition 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals known to cause cancer:</td>
</tr>
<tr>
<td>7440-43-9 cadmium (non-pyrophoric)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemicals known to cause reproductive toxicity for males:</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>Carcinogenic categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA (Environmental Protection Agency) (Substances not listed)</td>
</tr>
<tr>
<td>7697-37-2 nitric acid</td>
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<td>7732-18-5 water, distilled, conductivity or of similar purity</td>
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<tr>
<th>TLV (Threshold Limit Value established by ACGIH)</th>
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<tr>
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<thead>
<tr>
<th>NIOSH-Ca (National Institute for Occupational Safety and Health)</th>
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<th>GHS label elements</th>
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<tr>
<th>Hazard pictograms</th>
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<td>GHS05</td>
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<table>
<thead>
<tr>
<th>Signal word</th>
<th>Danger</th>
</tr>
</thead>
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<table>
<thead>
<tr>
<th>Hazard-determining components of labeling:</th>
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<td>nitric acid</td>
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<th>Hazard statements</th>
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<td>H290 May be corrosive to metals.</td>
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<th>Precautionary statements</th>
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<td>Wash thoroughly after handling.</td>
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<tr>
<td>Wear protective gloves/protective clothing/eye protection/face protection.</td>
</tr>
<tr>
<td>If swallowed: Rinse mouth. Do NOT induce vomiting.</td>
</tr>
<tr>
<td>If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.</td>
</tr>
</tbody>
</table>

(Contd. on page 10)
Trade name: Cadmium 100 μg/mL in 2% HNO3

(Contd. of page 9)

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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).
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.
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: Environment protection department.
· Contact:
  High-Purity Standards
  Tel: 843-767-7900
  Fax: 843-767-7906
· Date of preparation / last revision 12/12/2018 / -
· 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
  Met. Corr. 1: Corrosive to metals – Category 1
  Skin Corr. 1A: Skin corrosion/irritation – Category 1A
  Eye Dam. 1: Serious eye damage/eye irritation – Category 1