1 Identification

- Product identifier
  - Trade name: CADMIUM 1000 PPM A/S STANDARD
  - Article number N9300176
  - Application of the substance / the mixture Laboratory chemicals

- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier: PerkinElmer, Inc.
    710 Bridgeport Avenue
    Shelton, Connecticut 06484 USA
    CustomerCareUS@perkinelmer.com
    203-925-4600

- Emergency telephone number:
  CHEMTREC (within US)  800-424-9300
  CHEMTREC (from outside US) +1 703-527-3887 (call collect)
  CHEMTREC (within AU) +(61)-290372994

2 Hazard(s) identification

- Classification of the substance or mixture
  - Health hazard
    Carc. 1B  H350  May cause cancer.
    Repr. 2   H361  Suspected of damaging fertility or the unborn child.

- Label elements
  - GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
  - Hazard pictograms GHS07, GHS08
  - Signal word Danger

- Hazard-determining components of labeling:
  cadmium (non-pyrophoric)

- Hazard statements
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
  H350 May cause cancer.
  H361 Suspected of damaging fertility or the unborn child.

- Precautionary statements
  P201 Obtain special instructions before use.
  P202 Do not handle until all safety precautions have been read and understood.
  P264 Wash thoroughly after handling.
  P280 Wear protective gloves/protective clothing/eye protection/face protection.
Trade name: CADMIUM 1000 PPM A/S STANDARD

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

- Other hazards
  The product does not contain any organic halogen compounds (AOX), nitrates, heavy metal compounds or formaldehydes.

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

*3 Composition/information on ingredients

- Chemical characterization: Substances
  7732-18-5 Water

- Chemical characterization: Mixtures
  - Description: Mixture of the substances listed below with nonhazardous additions.

- Hazardous components:

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Description</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2</td>
<td>Nitric Acid</td>
<td>2.0%</td>
</tr>
<tr>
<td>7440-43-9</td>
<td>Cadmium (non-pyrophoric)</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
acc. to OSHA HCS

Trade name: CADMIUM 1000 PPM A/S STANDARD

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. If symptoms persist, consult a doctor.
  - After swallowing: If symptoms persist consult 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: 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 Not required.
- Environmental precautions:
  Inform respective authorities in case of seepage into water course or sewage system.
  Dilute with plenty of water.
- Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  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

  PAC-1:
  7697-37-2 Nitric Acid 0.16 ppm
  7440-43-9 cadmium (non-pyrophoric) 0.10 mg/m³

  PAC-2:
  7697-37-2 Nitric Acid 24 ppm
  7440-43-9 cadmium (non-pyrophoric) 0.76 mg/m³
Trade name: CADMIUM 1000 PPM A/S STANDARD

- PAC-3:
  - 7697-37-2 Nitric Acid 92 ppm
  - 7440-43-9 cadmium (non-pyrophoric) 4.7 mg/m³

7 Handling and storage

- Handling:
  - Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    Open and handle receptacle with care.
  - Information about protection against explosions and fires: Keep respiratory protective device 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
        - Long-term value: 5 mg/m³, 2 ppm
      - TLV Short-term value: 10 mg/m³, 4 ppm
        - Long-term value: 5.2 mg/m³, 2 ppm
    - 7440-43-9 cadmium (non-pyrophoric)
      - PEL Long-term value: 0.005 mg/m³
        - as Cd; see 29 CFR 1910.1027
      - REL See Pocket Guide App. A
      - TLV Long-term value: 0.01 0.002* mg/m³
        - as Cd; *respirable fraction; BEI
Safety Data Sheet
acc. to OSHA HCS

Printing date 09/19/2018
Review date 09/19/2018

Trade name: CADMIUM 1000 PPM A/S STANDARD

Ingredients with biological limit values:

<table>
<thead>
<tr>
<th>7440-43-9 cadmium (non-pyrophoric)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEI 5 µg/g creatinine</td>
</tr>
<tr>
<td>Medium: urine</td>
</tr>
<tr>
<td>Time: not critical</td>
</tr>
<tr>
<td>Parameter: Cadmium (background)</td>
</tr>
<tr>
<td>5 µg/L</td>
</tr>
<tr>
<td>Medium: blood</td>
</tr>
<tr>
<td>Time: not critical</td>
</tr>
<tr>
<td>Parameter: Cadmium (background)</td>
</tr>
</tbody>
</table>

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.
Store protective clothing separately.
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.
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 trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Tightly sealed goggles or safety glasses
**9 Physical and chemical properties**

- **Appearance:** Liquid
- **Color:** Transparent
- **Odor:** Odorless
- **Odor threshold:** Not determined.
- **pH-value:** Not determined.

<table>
<thead>
<tr>
<th>Change in condition</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/Melting range:</td>
<td>0 °C (32 °F)</td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>100 °C (212 °F)</td>
</tr>
</tbody>
</table>

- **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 g/cm³ (8.345 lbs/gal)
  - Relative density: Not determined.
  - Vapor density: Not determined.
  - Evaporation rate: Not determined.

- **Solubility in / Miscibility with Water:** Fully miscible.

- **Partition coefficient (n-octanol/water):** Not determined.

- **Viscosity:**
  - Dynamic: Not determined.
  - Kinematic: Not determined.

- **Solvent content:**
  - Water: 97.9 %
  - VOC content: 0.00 %

- **Solids content:** 0.1 %
- **Other information**
  - No further relevant information available.

---

**10 Stability and reactivity**

- **Reactivity** No further relevant information available.
acc. to OSHA HCS

Trade name: CADMIUM 1000 PPM A/S STANDARD

- 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:
    - LD/LC50 values that are relevant for classification:
      - 7440-43-9 cadmium (non-pyrophoric)
      - Oral LD50 225 mg/kg (rat)
    - Primary irritant effect:
      - on the skin: Irritant to skin and mucous membranes.
      - on the eye: Irritating effect.
      - 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)
      - 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:
  Do not allow product to reach ground water, water course or sewage system, even in small quantities.
  Danger to drinking water if even extremely small quantities leak into the ground.
  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: Dispose of container and materials in accordance with local, regional and national regulations.

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

- Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- UN-Number
  - DOT, ADR, IMDG, IATA UN3264

- 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
    - Label 8
  - ADR
    - Class 8 (C1) Corrosive substances
    - Label 8
  - IMDG, IATA
    - Class 8 Corrosive substances
    - Label 8
#### Trade name: CADMIUM 1000 PPM A/S STANDARD

<table>
<thead>
<tr>
<th>· Packing group</th>
<th>· DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Environmental hazards:</td>
<td>III</td>
</tr>
<tr>
<td>· Marine pollutant:</td>
<td>No</td>
</tr>
<tr>
<td>· Special precautions for user</td>
<td>Warning: Corrosive substances</td>
</tr>
<tr>
<td>· Danger code (Kemler):</td>
<td>80</td>
</tr>
<tr>
<td>· EMS Number:</td>
<td>F-A,S-B</td>
</tr>
<tr>
<td>· Segregation groups</td>
<td>Acids</td>
</tr>
<tr>
<td>· Stowage Category</td>
<td>A</td>
</tr>
<tr>
<td>· Stowage Code</td>
<td>SW2 Clear of living quarters.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>· Transport/Additional information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>· DOT</td>
</tr>
</tbody>
</table>
| · Quantity limitations | On passenger aircraft/rail: 5 L  
On cargo aircraft only: 60 L |
| · ADR |
| · Exempted 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  
Code: E1  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 1000 ml |
| · Exempted quantities (EQ) | UN "Model Regulation":  
UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III |

### 15 Regulatory information

<table>
<thead>
<tr>
<th>· Safety, health and environmental regulations/legislation specific for the substance or mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>7732-18-5 Water</td>
</tr>
<tr>
<td>7697-37-2 Nitric Acid</td>
</tr>
<tr>
<td>7440-43-9 cadmium (non-pyrophoric)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Sara</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Section 355 (extremely hazardous substances):</td>
</tr>
<tr>
<td>7697-37-2 Nitric Acid</td>
</tr>
</tbody>
</table>
Trade name: CADMIUM 1000 PPM A/S STANDARD

- **Section 313 (Specific toxic chemical listings):**
  - 7697-37-2 Nitric Acid
  - 7440-43-9 cadmium (non-pyrophoric)

- **TSCA (Toxic Substances Control Act):**
  All ingredients are listed.
  - 7697-37-2 Nitric Acid
  - 7440-43-9 cadmium (non-pyrophoric)
  - 7732-18-5 Water

- **Proposition 65**
  - **Chemicals known to cause cancer:**
    - 7440-43-9 cadmium (non-pyrophoric)
  - **Chemicals known to cause reproductive toxicity for females:**
    None of the ingredients is listed.
  - **Chemicals known to cause reproductive toxicity for males:**
    - 7440-43-9 cadmium (non-pyrophoric)
  - **Chemicals known to cause developmental toxicity:**
    - 7440-43-9 cadmium (non-pyrophoric)

- **Cancerogenity categories**
  - **EPA (Environmental Protection Agency)**
    - 7440-43-9 cadmium (non-pyrophoric) B1
  - **TLV (Threshold Limit Value established by ACGIH)**
    - 7440-43-9 cadmium (non-pyrophoric) A2
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    - 7440-43-9 cadmium (non-pyrophoric)

- **National regulations:**
  - **Additional classification according to Decree on Hazardous Materials:**
    Carcinogenic hazardous material group III (dangerous).
  - **Information about limitation of use:**
    Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.
  - **Water hazard class:** Water hazard class 3 (Self-assessment): extremely hazardous for water.
  - **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

---

**16 Other information**

Disclaimer
The information provided in this Material Safety Data Sheet is based on our present knowledge, and believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be considered a warranty or quality specification. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described, we cannot guarantee that...
Trade name: CADMIUM 1000 PPM A/S STANDARD

<table>
<thead>
<tr>
<th>47.1.11</th>
<th>these are the only hazards which exist. PerkinElmer shall not be held liable for any damage resulting from handling or from contact with the product.</th>
</tr>
</thead>
<tbody>
<tr>
<td>· <strong>Department issuing SDS:</strong> Environmental, Health and Safety</td>
<td></td>
</tr>
<tr>
<td>· <strong>Contact:</strong></td>
<td></td>
</tr>
<tr>
<td>Within the USA:</td>
<td>1-(800)-762-4000</td>
</tr>
<tr>
<td>Outside the USA:</td>
<td>1-(203)-712-8488</td>
</tr>
<tr>
<td>· <strong>Abbreviations and acronyms:</strong></td>
<td></td>
</tr>
<tr>
<td>RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)</td>
<td></td>
</tr>
<tr>
<td>ICAO: International Civil Aviation Organisation</td>
<td></td>
</tr>
<tr>
<td>ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)</td>
<td></td>
</tr>
<tr>
<td>IMDG: International Maritime Code for Dangerous Goods</td>
<td></td>
</tr>
<tr>
<td>DOT: US Department of Transportation</td>
<td></td>
</tr>
<tr>
<td>IATA: International Air Transport Association</td>
<td></td>
</tr>
<tr>
<td>ACGIH: American Conference of Governmental Industrial Hygienists</td>
<td></td>
</tr>
<tr>
<td>EINECS: European Inventory of Existing Commercial Chemical Substances</td>
<td></td>
</tr>
<tr>
<td>ELINCS: European List of Notified Chemical Substances</td>
<td></td>
</tr>
<tr>
<td>CAS: Chemical Abstracts Service (division of the American Chemical Society)</td>
<td></td>
</tr>
<tr>
<td>NFPA: National Fire Protection Association (USA)</td>
<td></td>
</tr>
<tr>
<td>HMIS: Hazardous Materials Identification System (USA)</td>
<td></td>
</tr>
<tr>
<td>VOC: Volatile Organic Compounds (USA, EU)</td>
<td></td>
</tr>
<tr>
<td>LC50: Lethal concentration, 50 percent</td>
<td></td>
</tr>
<tr>
<td>LDS0: Lethal dose, 50 percent</td>
<td></td>
</tr>
<tr>
<td>PBT: Persistent, Bioaccumulative and Toxic</td>
<td></td>
</tr>
<tr>
<td>vPvB: very Persistent and very Bioaccumulative</td>
<td></td>
</tr>
<tr>
<td>NIOSH: National Institute for Occupational Safety</td>
<td></td>
</tr>
<tr>
<td>OSHA: Occupational Safety &amp; Health</td>
<td></td>
</tr>
<tr>
<td>TLV: Threshold Limit Value</td>
<td></td>
</tr>
<tr>
<td>PEL: Permissible Exposure Limit</td>
<td></td>
</tr>
<tr>
<td>REL: Recommended Exposure Limit</td>
<td></td>
</tr>
<tr>
<td>BEI: Biological Exposure Limit</td>
<td></td>
</tr>
<tr>
<td>Ox. Liq. 2: Oxidizing liquids – Category 2</td>
<td></td>
</tr>
<tr>
<td>Acute Tox. 2: Acute toxicity – Category 2</td>
<td></td>
</tr>
<tr>
<td>Skin Corr. 1A: Skin corrosion/irritation – Category 1A</td>
<td></td>
</tr>
<tr>
<td>Skin Irrit. 2: Skin corrosion/irritation – Category 2</td>
<td></td>
</tr>
<tr>
<td>Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A</td>
<td></td>
</tr>
<tr>
<td>Muta. 2: Germ cell mutagenicity – Category 2</td>
<td></td>
</tr>
<tr>
<td>Care. 1B: Carcinogenicity – Category 1B</td>
<td></td>
</tr>
<tr>
<td>Repr. 2: Reproductive toxicity – Category 2</td>
<td></td>
</tr>
<tr>
<td>STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1</td>
<td></td>
</tr>
</tbody>
</table>

* Data compared to the previous version altered.