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

2 Hazard(s) identification

- Classification of the substance or mixture
  - Health hazard
    Carc. 1B  H350  May cause cancer.
    Skin Irrit. 2  H315  Causes skin irritation.
    Eye Irrit. 2  H319  Causes serious eye irritation.

- 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.
- Precautionary statements
  - P280 Wear protective gloves/protective clothing/eye protection/face protection.
  - P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P308+P313 If exposed or concerned: Get medical advice/attention.
  - P321 Specific treatment (see on this label).
  - P332+P313 If skin irritation occurs: Get medical advice/attention.
  - P337+P313 If eye irritation persists: Get medical advice/attention.
  - P405 Store locked up.
  - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 2)
Trade name: CADMIUM 1000 PPM A/S STANDARD

Classified system:
- NFPA ratings (scale 0 - 4)
  - Health = 1
  - Fire = 0
  - Reactivity = 0
- HMIS-ratings (scale 0 - 4)
  - Health = *1
  - 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
- CAS No. Description
  - 7732-18-5 Water

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

<table>
<thead>
<tr>
<th>Hazardous components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 Nitric Acid</td>
<td>2.0%</td>
</tr>
<tr>
<td>Ox. Liq. 3, H272</td>
<td></td>
</tr>
<tr>
<td>Skin Corr. 1A, H314</td>
<td></td>
</tr>
<tr>
<td>7440-43-9 Cadmium (non-pyrophoric)</td>
<td>0.1%</td>
</tr>
<tr>
<td>Acute Tox. 2, H330</td>
<td></td>
</tr>
<tr>
<td>Muta. 2, H341; Carc. 1B, H350; Repr. 2, H361; STOT RE 1, H372</td>
<td></td>
</tr>
<tr>
<td>Aquatic Acute 1, H400; Aquatic Chronic 1, H410</td>
<td></td>
</tr>
</tbody>
</table>

Additional Components
- 7732-18-5 Water 97.9%

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.
Trade name: CADMIUM 1000 PPM A/S STANDARD

· 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, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· 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.

* 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.
· 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:

<table>
<thead>
<tr>
<th>Substance</th>
<th>PEL</th>
<th>REL</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 Nitric Acid</td>
<td>Long-term value: 5 mg/m³, 2 ppm</td>
<td>Short-term value: 10 mg/m³, 4 ppm</td>
<td>Long-term value: 5 mg/m³, 2 ppm</td>
</tr>
<tr>
<td>7440-43-9 Cadmium (non-pyrophoric)</td>
<td>Long-term value: 0.005 mg/m³ as Cd; see 29 CFR 1910.1027</td>
<td>See Pocket Guide App. A</td>
<td>Long-term value: 0.01 0.002* mg/m³ as Cd; *respirable fraction; BEI</td>
</tr>
</tbody>
</table>

INGREDIENTS WITH BIOLOGICAL LIMIT VALUES:

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

- Information on basic physical and chemical properties
  - General Information
  - Appearance:
    - Form: Liquid
    - Color: Transparent
  - Odor: Odorless
  - Odour threshold: Not determined.
  - pH-value: Not determined.
- Change in condition
  - Melting point/Melting range: 0 °C (32 °F)
  - Boiling point/Boiling range: 100 °C (212 °F)
- Flash point: Not applicable.
- Flammability (solid, gaseous): Not applicable.
- Ignition temperature:
  - 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 mm Hg)
- Density at 20 °C (68 °F): 1 g/cm³ (8.345 lbs/gal)
  - Relative density: Not determined.
- Vapour 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.
Trade name: CADMIUM 1000 PPM A/S STANDARD

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:
    - 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) I
  - 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.
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, ADR: 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
**Trade name: CADMIUM 1000 PPM A/S STANDARD**

<table>
<thead>
<tr>
<th>· Label</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Packing group</td>
<td>DOT, ADR, IMDG, IATA</td>
</tr>
<tr>
<td>· DOT, ADR, IMDG, IATA</td>
<td>III</td>
</tr>
<tr>
<td>· Environmental hazards:</td>
<td>No</td>
</tr>
<tr>
<td>· Marine pollutant:</td>
<td></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>· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>· Transport/Additional information:</td>
<td></td>
</tr>
<tr>
<td>· DOT</td>
<td></td>
</tr>
</tbody>
</table>
| · 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  
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 |

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**15 Regulatory information**

<table>
<thead>
<tr>
<th>· Safety, health and environmental regulations/legislation specific for the substance or mixture</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7732-18-5 Water</td>
<td>97.9%</td>
</tr>
<tr>
<td>7697-37-2 Nitric Acid</td>
<td>2.0%</td>
</tr>
<tr>
<td>7440-43-9 cadmium (non-pyrophoric)</td>
<td>0.1%</td>
</tr>
<tr>
<td>· Sara</td>
<td></td>
</tr>
<tr>
<td>· Section 355 (extremely hazardous substances):</td>
<td></td>
</tr>
<tr>
<td>7697-37-2 Nitric Acid</td>
<td></td>
</tr>
<tr>
<td>· Section 313 (Specific toxic chemical listings):</td>
<td></td>
</tr>
<tr>
<td>7697-37-2 Nitric Acid</td>
<td></td>
</tr>
<tr>
<td>7440-43-9 cadmium (non-pyrophoric)</td>
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</tbody>
</table>

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Material Safety Data Sheet
ISO 11014:2009 and GHS 2007

Trade name: CADMIUM 1000 PPM A/S STANDARD

· **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)

· **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.

· **Precautionary statements**
  P280 Wear protective gloves/protective clothing/eye protection/face protection.
  P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P308+P313 If exposed or concerned: Get medical advice/attention.
  P321 Specific treatment (see on this label).
  P332+P313 If skin irritation occurs: Get medical advice/attention.
  P337+P313 If eye irritation persists: Get medical advice/attention.
  P405 Store locked up.
  P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **National regulations:**
  · **Additional classification according to Decree on Hazardous Materials:**
    Carcinogenic hazardous material group III (dangerous).

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Trade name: CADMIUM 1000 PPM A/S STANDARD

(Contd. of page 9)

- 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.
  Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation. 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 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.

- Contact:
  With in the USA: 1-(800)-762-4000
  Out side the USA: 1-(203)-712-8488
- Abbreviations and acronyms:
  RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
  ICAO: International Civil Aviation Organisation
  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)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  Ox. Liq. 3: Oxidising Liquids, Hazard Category 3
  Acute Tox. 2: Acute toxicity, Hazard Category 2
  Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A
  Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
  Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
  Mut. 2: Germ cell mutagenicity, Hazard Category 2
  Carc. 1B: Carcinogenicity, Hazard Category 1B
  Repr. 2: Reproductive toxicity, Hazard Category 2
  STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1
  Aquatic Acute 1: Hazardous to the aquatic environment - Acute Hazard, Category 1
  Aquatic Chronic 1: Hazardous to the aquatic environment - Chronic Hazard, Category 1

* Data compared to the previous version altered.