1 Identification

- Product identifier
- Product Name: Environmental Calibration Standard, Part Number 5183-4688
- Part Number: 5183-4688
- Relevant identified uses of the substance or mixture and uses advised against
  No further relevant information available.
- Application of the substance / the mixture
  Analytical Chemistry
  A 100mL Solution

- Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
  Agilent Technologies, Inc
  5301 Stevens Creek Blvd.
  Santa Clara, CA 95051 USA

- Information department: product safety department
- Emergency telephone number:
  Emergency Phone Number (24 hours)
  CHEMTREC (800-424-9300)
  Outside US: 703-527-3887

2 Hazard(s) identification

- Classification of the substance or mixture
  GHS05 Corrosion

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

- Classification according to Directive 67/548/EEC or Directive 1999/45/EC
  Corrosive

  Causes burns.

- Information concerning particular hazards for human and environment:
  The product has to be labeled due to the calculation procedure of international guidelines.

- Classification system:
  The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

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

- Signal word Danger

- Hazard-determining components of labeling:
  - nitric acid
  - Hazard statements
  Causes severe skin burns and eye damage.

- Precautionary statements
  Do not breathe dusts or mists.
  IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  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.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.
Product Name: Environmental Calibration Standard, Part Number 5183-4688

40.2.6

· 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>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>nitric acid 7697-37-2</td>
<td>5.0%</td>
</tr>
<tr>
<td>(+)-tartaric acid 87-69-4</td>
<td>&lt;0.9%</td>
</tr>
<tr>
<td>iron 7439-89-6</td>
<td>0.1%</td>
</tr>
<tr>
<td>magnesium 7439-95-4</td>
<td>0.1%</td>
</tr>
<tr>
<td>Potassium nitrate 7440-09-7</td>
<td>0.1%</td>
</tr>
<tr>
<td>Sodium carbonate 7440-23-5</td>
<td>0.1%</td>
</tr>
<tr>
<td>Calcium carbonate 7440-70-2</td>
<td>0.1%</td>
</tr>
<tr>
<td>aluminium 7429-90-5</td>
<td>0.001%</td>
</tr>
<tr>
<td>Lead Oxide 7439-92-1</td>
<td>0.001%</td>
</tr>
<tr>
<td>manganese 7439-96-5</td>
<td>0.001%</td>
</tr>
<tr>
<td>molybdenum 7439-98-7</td>
<td>0.001%</td>
</tr>
<tr>
<td>nickel 7440-02-9</td>
<td>0.001%</td>
</tr>
<tr>
<td>silver 7440-22-4</td>
<td>0.001%</td>
</tr>
<tr>
<td>Thallium nitrate 7440-28-0</td>
<td>0.001%</td>
</tr>
<tr>
<td>Thorium nitrate hydrate 7440-29-1</td>
<td>0.001%</td>
</tr>
<tr>
<td>antimony 7440-36-0</td>
<td>0.001%</td>
</tr>
<tr>
<td>arsenic 7440-38-2</td>
<td>0.001%</td>
</tr>
<tr>
<td>Barium carbonate 7440-39-3</td>
<td>0.001%</td>
</tr>
<tr>
<td>Beryllium Acetate 7440-41-7</td>
<td>0.001%</td>
</tr>
<tr>
<td>cadmium 7440-43-9</td>
<td>0.001%</td>
</tr>
<tr>
<td>Chromium nitrate nonahydrate 7440-47-3</td>
<td>0.001%</td>
</tr>
<tr>
<td>cobalt 7440-48-4</td>
<td>0.001%</td>
</tr>
<tr>
<td>copper 7440-50-8</td>
<td>0.001%</td>
</tr>
<tr>
<td>Uranium Nitrate Hexahydrate 7440-61-1</td>
<td>0.001%</td>
</tr>
<tr>
<td>Vanadium trioxovanadate 7440-62-2</td>
<td>0.001%</td>
</tr>
<tr>
<td>zinc powder 7440-66-6</td>
<td>0.001%</td>
</tr>
<tr>
<td>selenium 7782-49-2</td>
<td>0.001%</td>
</tr>
</tbody>
</table>

(Contd. on page 3)
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.
  - 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: Wear protective equipment. Keep unprotected persons away.
- Environmental precautions: Do not allow to enter sewers/surface or ground water.
- 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.

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: 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 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

<table>
<thead>
<tr>
<th>Limit Value</th>
<th>Long-term value</th>
<th>Short-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
<td>5 mg/m³, 2 ppm</td>
<td>10 mg/m³, 4 ppm</td>
</tr>
<tr>
<td>REL</td>
<td>5 mg/m³, 2 ppm</td>
<td>10 mg/m³, 4 ppm</td>
</tr>
<tr>
<td>TLV</td>
<td>5.2 mg/m³, 2 ppm</td>
<td>5.2 mg/m³, 2 ppm</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.
    - 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 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

- Information on basic physical and chemical properties

- General Information

- Appearance:
  - Form: Liquid
  - Color: Colorless
  - Odor: Odorless
  - Odour Threshold: Not applicable.

- pH-value: <1

- Change in condition

  - Melting point/Melting range: 0 °C (32°F)
  - Boiling point/Boiling range: 100 °C (212°F)

- Flash point: Not applicable.
40.2.6 · Flammability (solid, gaseous): Not applicable.
· Ignition temperature:
  Decomposition temperature: Not applicable.
· Auto igniting: Product is not selfigniting.
· Danger of explosion: Product does not present an explosion hazard.
· Explosion limits:
  Lower: Not applicable.
  Upper: Not applicable.
· Vapor pressure at 20 °C (68 °F): 23 hPa (17 mm Hg)
· Density 1.0 g/mL @ 20 °C
· Relative density Not applicable.
· Vapour density Not applicable.
· Evaporation rate Not applicable.
· Solubility in / Miscibility with Water: Miscible
· Partition coefficient (n-octanol/water): Not applicable.
· Viscosity:
  Dynamic: Not applicable.
  Kinematic: Not applicable.
· Solvent content:
  Organic solvents: 0.0 %
  Water: 93.6 %
· Solids content: 1.4 %
· Other information No further relevant information available.

10 Stability and reactivity
· Reactivity
· 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: Caustic effect on skin and mucus membranes.
  · on the eye: Strong caustic effect.
  · Sensitization: No sensitizing effects known.
· Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Corrosive
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)
  7439-92-1 Lead from Lead Oxide 2B
  7440-02-0 nickel 1
(Contd. on page 6)
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:
      Water hazard class 2 (Self-assessment): hazardous for water
      Do not allow product to reach ground water, water course or sewage system.
      Must not reach bodies of water or drainage ditch undiluted or unneutralized.
      Danger to drinking water if even 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: 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 solution)
  - ADR: 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution)
  - IMDG, IATA: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION)
40.2.6

- **Transport hazard class(es)**
  - **DOT**
    - **Class**
      - **Label**
        - 8 Corrosive substances
    - **ADR, IMDG, IATA**
      - **Class**
        - **Label**
          - 8 Corrosive substances
  - **Packing group**
    - **DOT, ADR, IMDG, IATA**
      - **Label**
        - III
  - **Environmental hazards:**
    - **Marine pollutant:**
      - No
  - **Special precautions for user**
    - **Danger code (Kemler):**
      - Warning: Corrosive substances
    - **EMS Number:**
      - F-A-S-B
    - **Segregation groups**
      - Acids

- **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
  - Not applicable.

- **Transport/Additional information:**
  - **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)**
      - **Excepted quantities (EQ)**
        - 1 L
          - Code: E2
            - Maximum net quantity per inner packaging: 30 ml
            - Maximum net quantity per outer packaging: 500 ml
  - **UN "Model Regulation":**
    - UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid solution), 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
      - 7429-90-5 aluminium
      - 7439-92-1 Lead from Lead Oxide
      - 7439-96-5 manganese
      - 7440-02-0 nickel

(Contd. on page 8)
### Chemicals known to cause cancer:
- 7439-92-1 Lead from Lead Oxide
- 7440-02-0 nickel
- 7440-38-2 arsenic
- 7440-41-7 Beryllium from Beryllium Acetate
- 7440-43-9 cadmium (non-pyrophoric)
- 7440-48-4 cobalt

#### TSCA (Toxic Substances Control Act):
All ingredients are listed.

#### Proposition 65

- **Chemicals known to cause cancer:**
  - 7439-92-1 Lead from Lead Oxide
  - 7440-02-0 nickel
  - 7440-38-2 arsenic
  - 7440-41-7 Beryllium from Beryllium Acetate
  - 7440-43-9 cadmium (non-pyrophoric)
  - 7440-48-4 cobalt

- **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)

#### Carcinogenic categories

- **EPA (Environmental Protection Agency)**
  - 7439-92-1 Lead from Lead Oxide: B2
  - 7439-96-5 manganese: D
  - 7440-22-4 silver: D
  - 7440-38-2 arsenic: A
  - 7440-39-3 Barium from Barium carbonate: D, CBD(inh), NL(oral)
  - 7440-41-7 Beryllium from Beryllium Acetate: B1, K/L(inh), CBD(oral)
  - 7440-43-9 cadmium (non-pyrophoric): B1
  - 7440-50-8 copper: D
  - 7440-66-6 zinc powder -zinc dust (stabilized): D, I, II
  - 7782-49-2 selenium: D

- **TLV (Threshold Limit Value established by ACGIH)**
  - 7429-90-5 aluminium: A4
  - 7439-92-1 Lead from Lead Oxide: A3
  - 7439-98-7 molybdenum: A3
  - 7440-02-0 nickel: A5
  - 7440-38-2 arsenic: A1
  - 7440-39-3 Barium from Barium carbonate: A4
  - 7440-43-9 cadmium (non-pyrophoric): A2
  - 7440-48-4 cobalt: A3
  - 7440-61-1 Uranium from Uranyl Nitrate Hexahydrate: A1
### 40.2.6 NIOSH-Ca (National Institute for Occupational Safety and Health)
- 7440-02-0 nickel
- 7440-38-2 arsenic
- 7440-41-9 cadmium (non-pyrophoric)
- 7440-61-1 Uranium from Uranyl Nitrate Hexahydrate

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

### Hazard pictograms
- GHS05

### Hazard determinating components of labeling:
- nitric acid

### Hazard statements
- Causes severe skin burns and eye damage.

### Precautionary statements
- Do not breathe dusts or mists.
- IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. 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.
- Store locked up.
- Dispose of contents/container in accordance with local/regional/national/international regulations.

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

### Other information

#### Disclaimer
The information contained in this document is based on Agilent’s state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

#### Department issuing SDS
- Product safety department

#### Contact
- Agilent Technologies, Inc.
  800-227-9770

#### Date of preparation / last revision
- 05/13/2015 /

#### 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
- 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)
- Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
- Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1