## 1 Identification

- **Product identifier**
  - **Product name:** Zinc Standard: 10,000 µg/mL Zn in 5% HNO3 [100ml bottle]
  - **Part number:** 5190-8234
  - **Application of the substance / the mixture** Reference material for laboratory use only
  - **Manufacturer/Supplier:**
    Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA 95051 USA
  - **Information department:** e-mail: pdl-msds_author@agilent.com
  - **Emergency telephone number:** CHEMTREC®: 1-800-424-9300

## 2 Hazard(s) identification

- **Classification of the substance or mixture**
  - GHS03 Flame over circle
    Ox. Liq. 3  
    H272 May intensify fire; oxidizer.
  - GHS05 Corrosion
    Skin Corr. 1A  
    H314 Causes severe skin burns and eye damage.
    Eye Dam. 1  
    H318 Causes serious eye damage.
    Aquatic Chronic 3  
    H412 Harmful to aquatic life with long lasting effects.
- **Label elements**
  - **GHS label elements**
    The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**
  - GHS03  
  - GHS05

- **Signal word** Danger
- **Hazard-determining components of labeling:**
  - Nitric acid
  - **Hazard statements**
    H272 May intensify fire; oxidizer.
    H314 Causes severe skin burns and eye damage.
    H412 Harmful to aquatic life with long lasting effects.
- **Precautionary statements**
  - P221 Take any precaution to avoid mixing with combustibles.
  - P280 Wear protective gloves / eye protection / face protection.
  - P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P310 Immediately call a poison center/doctor.
  - P405 Store locked up.

(Contd. on page 2)
Product name: Zinc Standard: 10000 µg/mL Zn in 5% HNO3 [100ml bottle]

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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

The substance possesses oxidizing properties.
- NFPA ratings (scale 0 - 4)
  - Health = 3
  - Fire = 3
  - 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: Aqueous solution.
- Dangerous components:
  - CAS: 7697-37-2 Nitric acid
    - Ox. Liq. 3, H272; Skin Corr. 1A, H314 < 10%
  - CAS: 7440-66-6 Zinc
    - Pyr. Sol. 1, H230; Water-react. 1, H260; Aquatic Acute 1, H400; Aquatic Chronic 1, H410 < 1.0%

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: Rinse mouth. Do not induce vomiting. 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.

(Contd. on page 3)
6 Accidental release measures

- **Special hazards arising from the substance or mixture**
  Formation of toxic gases is possible during heating or in case of fire.
- **Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
  Ensure good ventilation/exhaustion at the workplace.
  Store in cool, dry place in tightly closed receptacles.
  Prevent formation of aerosols.
- **Information about protection against explosions and fires:** Protect from heat.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
  Store in a cool location.
  Please refer to the manufacturers certificate for specific storage and transport temperature conditions.
  Store only in the original receptacle.
  Keep container in a well-ventilated place. Keep away from sources of ignition and heat.
- **Information about storage in one common storage facility:** Store away from foodstuffs.
- **Further information about storage conditions:**
  Keep receptacle tightly sealed.
  Protect from heat and direct sunlight.
- **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.
Product name: **Zinc Standard: 10000 µg/mL Zn in 5% HNO3 [100ml bottle]**

- **Control parameters**

- Components with limit values that require monitoring at the workplace:

  | Substance       | 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 |
  |-----------------|------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
  | Nitric acid     |                                    |                                             |                                             |                                             |                                             |

- 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:
  - Chemical-resistant, impervious gloves with an approved standards should be worn at all times.
  - The selection of the glove material is based on the penetration times, rates of diffusion and its degradation

  **Protective gloves**

  - Material of gloves
    - PVC gloves
    - Neoprene gloves
  - Penetration time of glove material
    - The protection time of the gloves can not be accurately estimated for mixtures consisting of several substances.
    - Refer to and observe manufacturers break through times of the protective gloves.

- Eye protection:

  **Tightly sealed goggles**

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**9 Physical and chemical properties**

- Information on basic physical and chemical properties

  - General Information
    - Appearance:
      - Form: Liquid
      - Color: Colorless
      - Odor: Odorless
      - Odour threshold: Not determined.
### Product name: Zinc Standard: 10000 µg/mL Zn in 5% HNO3 [100ml bottle]

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH-value at 20 °C (68 °F)</td>
<td>&lt; 2</td>
</tr>
<tr>
<td>Change in condition Melting point/Melting range</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>83 °C (181 °F)</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flammability (solid, gaseous)</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Auto igniting</td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>Explosion limits</td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Upper</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Vapor pressure at 20 °C (68 °F)</td>
<td>23 hPa (17 mm Hg)</td>
</tr>
<tr>
<td>Density at 20 °C (68 °F)</td>
<td>1.09158 g/cm³ (9.109 lbs/gal)</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Solubility in / Miscibility with Water</td>
<td>Fully miscible.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
</tr>
<tr>
<td>Dynamic</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Kinematic</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

### 10 Stability and reactivity

- Reactivity Stable under normal conditions.
- Chemical stability Stable under normal conditions.
- Thermal decomposition / conditions to be avoided: Formation of toxic gases is possible during heating or in case of fire.
- Possibility of hazardous reactions No dangerous reactions known.
- Conditions to avoid Heat.
- Incompatible materials: Strong oxidizing agents.
- Hazardous decomposition products: Formation of toxic gases is possible during heating or in case of fire.

### 11 Toxicological information

- Information on toxicological effects
- Acute toxicity:
  - LD/LC50 values that are relevant for classification:
    - 7697-37-2 Nitric acid
      - Oral LD50: 430 mg/kg (Human)
      - Inhalative LC50/4 h: 130 mg/l (rat)
Product name: Zinc Standard: 10000 µg/mL Zn in 5% HNO3 [100ml bottle]

- Primary irritant effect:
  - on the skin: 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)
    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:
    7697-37-2 Nitric acid
    LC50/48 180 mg/l (crustacean)
    - 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.
    - Ecotoxicological effects:
      - Remark: Harmful to fish
    - 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.
        Harmful to aquatic organisms
      - 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.
Product name: **Zinc Standard: 10000 µg/mL Zn in 5% HNO3 [100ml bottle]**

(Contd. of page 6)

- Uncleaned packagings:
  - Recommendation: Dispose in accordance with national regulations.
  - Recommended cleansing agent: Water, if necessary with cleansing agents.

### 14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, ADR, IMDG, IATA</th>
<th>DOT</th>
<th>ADR</th>
<th>IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN2031</td>
<td>Nitric acid solution</td>
<td></td>
<td>2031 Nitric acid solution</td>
<td>NITRIC ACID solution</td>
</tr>
</tbody>
</table>

- Transport hazard class(es)
  - DOT
    - Class 8 Corrosive substances
    - Label 8
  - ADR, IMDG, IATA
    - Class 8 Corrosive substances
    - Label 8

- Packing group
  - DOT, ADR, IMDG, IATA
    - II

- Environmental hazards:
  - Marine pollutant: No

- Special precautions for user
  - Warning: Corrosive substances
  - Danger code (Kemler): 80
  - EMS Number: F-A.S-Q
  - Segregation groups: Acids

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

- UN "Model Regulation":
  - UN2031, Nitric acid solution, 8, II

### 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

(Contd. on page 8)
Product name: Zinc Standard: 10000 µg/mL Zn in 5% HNO₃ [100ml bottle]

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

- **Proposition 65**
  - **Chemicals known to cause cancer:**
    None of the ingredients is listed.
  - **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.

- **EPA (Environmental Protection Agency)**
  7440-66-6 Zinc D, I, H

- **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**
    - GHS03
    - GHS05

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  Nitric acid

- **Hazard statements**
  H272 May intensify fire; oxidizer.
  H314 Causes severe skin burns and eye damage.
  H412 Harmful to aquatic life with long lasting effects.

- **Precautionary statements**
  P221 Take any precaution to avoid mixing with combustibles.
  P280 Wear protective gloves / eye protection / face protection.
  P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P310 Immediately call a poison center/doctor.
  P405 Store locked up.
  P501 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

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.

- Date of preparation / last revision: 05/22/2015
- 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)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  Pyr. Sol. 1: Pyrophoric Solids, Hazard Category 1
  Water-react. 1: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 1
  Ox. Liq. 3: Oxidising Liquids, Hazard Category 3
  Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A
  Eye Dam. 1: Serious eye damage/eye irritation, 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
  Aquatic Chronic 3: Hazardous to the aquatic environment - Chronic Hazard, Category 3
- Sources