1 Identification

- **Product identifier**
- **Product name:** Barium Standard: 1000 µg/mL Ba in 5% HNO3 [100ml bottle]
- **Part number:** 5190-8248
- **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**
  - GHS05 Corrosion

  Eye Dam. 1 H318 Causes serious eye damage.

  Skin Irrit. 2 H315 Causes skin irritation.

- **Label elements**
- **GHS label elements**
  The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Signal word** Danger
- **Hazard statements**
  H315 Causes skin irritation.
  H318 Causes serious eye damage.
- **Precautionary statements**
  P280 Wear protective gloves.
  P280 Wear 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.
  P310 Immediately call a poison center/doctor.
  P321 Specific treatment (see on this label).
  P332+P313 If skin irritation occurs: Get medical advice/attention.
- **Classification system:**
- **NFPA ratings (scale 0 - 4)**
  Health = 2
  Fire = 0
  Reactivity = 0

The substance possesses oxidizing properties.

(Contd. on page 2)
Product name: Barium Standard: 1000 µg/mL Ba in 5% HNO3 [100ml bottle]

- HMIS-ratings (scale 0 - 4)
  - Health = 2
  - 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:
  Aqueous solution.
  Also contains substances at levels not considered to be hazardous.

- Dangerous components:
  [CAS: 7697-37-2]
  [RTECS: QU5775000]
  "Nitric acid Ox. Liq. 3, H272; Skin Corr. 1A, H314"

4 First-aid measures
- Description of first aid measures
- 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.
  If skin irritation continues, consult a doctor.
- After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
- After swallowing: Rinse mouth. Do not induce vomiting.
- 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
    Formation of toxic gases is possible during heating or in case of fire.
- Advice for firefighters
- Protective equipment: Wear self-contained respiratory protective device.

6 Accidental release measures
- Personal precautions, protective equipment and emergency procedures: Wear protective clothing.
- Environmental precautions:
  Dilute with plenty of water.
  Do not allow to enter sewers/surface or ground water.
Product name: Barium Standard: 1000 µg/mL Ba in 5% HNO3 [100ml bottle]

- Methods and material for containment and cleaning up:
  Ensure adequate ventilation.
  Absorb liquid components with liquid-binding material.
  DO NOT USE SAWDUST.

- 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.
    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: 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.

- 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 |

- 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 skin.
      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.
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.
  - pH-value at 20 °C (68 °F): < 2
- Change in condition
  - Melting point/Melting range: Not determined.
  - Boiling point/Boiling range: 100 °C (212 °F)
- Flash point: Not applicable.
- Flammability (solid, gaseous): Not determined.
- Ignition temperature:
  - Decomposition temperature: Not determined.
  - Auto igniting: Product is not selfigniting.
  - Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
- 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): 1.02263 g/cm³ (8.534 lbs/gal)
- Relative density: Not determined.
- Vapour density: Not determined.
Product name: Barium Standard: 1000 µg/mL Ba in 5% HNO3 [100ml bottle]

- 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.
- Other information: No further relevant information available.

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 LD0: 430 mg/kg (Human)
  - Inhalative LC50/4 h: 130 mg/l (rat)
- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: 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:
  - Irritant

  - 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.
  - Additional ecological information:
  - General notes:
    - Water hazard class 1 (Self-assessment): slightly hazardous for water
    - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
  - 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 packaging:
    - Recommendation: Dispose in accordance with national regulations.
  - Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- UN-Number: UN2031
- DOT, ADR, IMDG, IATA: Nitric acid solution
- DOT: 8 Corrosive substances
- ADR: 2031 Nitric acid solution
- IMDG, IATA: NITRIC ACID solution
- Transport hazard class(es)
  - DOT
    - Class: 8
    - Label: 8
Product name: Barium Standard: 1000 µg/mL Ba in 5% HNO3 [100ml bottle]

- 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
- 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.
- Carcinogenic categories
- EPA (Environmental Protection Agency)
  None of the ingredients is listed.
- TLV (Threshold Limit Value established by ACGIH)
  None of the ingredients is listed.
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- 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
  
  GHS05

- Signal word Danger

- Hazard statements
  
  H315 Causes skin irritation.
  
  H318 Causes serious eye damage.

- Precautionary statements
  
  P280 Wear protective gloves.
  
  P280 Wear 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.
  
  P310 Immediately call a poison center/doctor.
  
  P321 Specific treatment (see on this label).
  
  P332+P313 If skin irritation occurs: Get medical advice/attention.

- 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 05/21/2015 / -

- 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
  
  Ox. Liq. 3: Oxidising Liquids, Hazard Category 3
  
  Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A
  
  Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
  
  Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1

- Sources
  