# 1 Identification

- **Product identifier**
  - **Product name:** Selenium Standard: 10000 µg/mL Se in 5% HNO3 [100ml bottle]
  - **Part number:** 5190-8448
  - **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  
    **Tel:** 800-227-9770
  - **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**
  - **Hazard pictograms**
    - GHS03 Flame over circle
      - Ox. Liq. 3  
        H272  May intensify fire; oxidizer.
    - GHS08 Health hazard
      - STOT RE 2  
        H373  May cause damage to organs through prolonged or repeated exposure.
    - GHS05 Corrosion
      - Skin Corr. 1A  
        H314  Causes severe skin burns and eye damage.
      - Eye Dam. 1  
        H318  Causes serious eye damage.

- **Label elements**
  - **GHS label elements**
    - The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    - GHS03  
    - GHS05  
    - GHS08

- **Signal word** Danger

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

- **Hazard statements**
  - H272 May intensify fire; oxidizer.
  - H314 Causes severe skin burns and eye damage.
  - H373 May cause damage to organs through prolonged or repeated exposure.

- **Precautionary statements**
  - P221  Take any precaution to avoid mixing with combustibles.
  - P280  Wear protective gloves / eye protection / face protection.
Product name: Selenium Standard: 10000 µg/mL Se in 5% HNO3 [100ml bottle]

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.

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

The substance possesses oxidizing properties.

- HMIS-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
    - RTECS: QU5775000
    - Ox. Liq. 3, H272; Skin Corr. 1A, H314
    - < 10%
  - CAS: 7782-49-2
    - Selenium
    - RTECS: VS7700000
    - Acute Tox. 3, H301; Acute Tox. 3, H331; STOT RE 2, H373; Aquatic Chronic 4, H413
    - < 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.

(Contd. on page 3)
Product name: Selenium Standard: 10000 µg/mL Se in 5% HNO3 [100ml bottle]

· 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 equipment. Keep unprotected persons away.
· Environmental precautions:
  Dilute with plenty of water.
  Do not allow to enter sewers/surface or ground water.
· Methods and material for containment and cleaning up:
  Use neutralizing agent.
  Dispose contaminated material as waste according to item 13.
  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: No special measures required.
· 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.
  · 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

<table>
<thead>
<tr>
<th>Component</th>
<th>PEL</th>
<th>REL</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitric acid</td>
<td>Long-term value: 5 mg/m³, 2 ppm</td>
<td>Long-term value: 5 mg/m³, 2 ppm</td>
<td>Long-term value: 5.2 mg/m³, 2 ppm</td>
</tr>
<tr>
<td>Selenium</td>
<td>Long-term value: 0.2 mg/m³</td>
<td>Long-term value: 0.2 mg/m³</td>
<td>Long-term value: 0.2 mg/m³</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:
    - 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.

(Contd. on page 5)
9 Physical and chemical properties

- **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:** 83 °C (181 °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 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):** 1.06808 g/cm³ (8.913 lbs/gal)
- **Relative density**
- **Vapour density**
- **Evaporation rate**
- **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.
**11 Toxicological information**

- **Information on toxicological effects**
- **Acute toxicity:**
  - **LD/LC50 values that are relevant for classification:**
    | Substance | Oral LD50 | Inhalative LC50/4 h |
    |------------|-----------|---------------------|
    | 7697-37-2 Nitric acid | 430 mg/kg (Human) | 130 mg/l (rat) |

- **Primary irritant effect:**
  - **on the skin:** Caustic effect on skin and mucous 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 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)**
    - 7782-49-2 selenium 3
  - **NTP (National Toxicology Program)**
    - 7782-49-2 selenium R
  - **OSHA-Ca (Occupational Safety & Health Administration)**
    - None of the ingredients is listed.

**12 Ecological information**

- **Toxicity**
  - **Aquatic toxicity:**
    | Substance | LC50/48 |
    |------------|---------|
    | 7697-37-2 Nitric acid | 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 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: 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
  
  DOT: Nitric acid solution
  
  ADR: 2031 Nitric acid solution
  
  IMDG, IATA: NITRIC ACID solution

- 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-B
  
  Segregation groups: Acids

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.
Safety Data Sheet
acc. to OSHA HCS

Product name: Selenium Standard: 10000 µg/mL Se in 5% HNO3 [100ml bottle]

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
    7782-49-2 selenium
- 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)
    7782-49-2 selenium D
  - 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
  - GHS08
- Signal word Danger
- Hazard-determining components of labeling:
  Nitric acid
  selenium
- Hazard statements
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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 05/21/2015 / -
- 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
  Acute Tox. 3: Acute toxicity, Hazard Category 3
  Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A
  Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1
  STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2
  Aquatic Chronic 4: Hazardous to the aquatic environment - Chronic Hazard, Category 4

- Sources