Safety Data Sheet
acc. to OSHA HCS

Printing date 05/29/2015 Reviewed on 05/29/2015

1 Identification

- Product identifier
- Product name: Tungsten Standard: 1000 µg/mL W in 5% HNO3, tr. HF [100ml bottle]
- Part number: 5190-8547
- 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.

  GHS07
  Acute Tox. 4  H302  Harmful if swallowed.
  Acute Tox. 4  H312  Harmful in contact with skin.
  Acute Tox. 4  H332  Harmful if inhaled.
  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).
  Hazard pictograms
  GHS05  GHS07

- Signal word Danger

- Hazard-determining components of labeling:
  Hydrofluoric acid -

- Hazard statements
  H302+H312+H332  Harmful if swallowed, in contact with skin or if inhaled.
  H315  Causes skin irritation.
  H318  Causes serious eye damage.

- Precautionary statements
  P261  Avoid breathing dust/fume/gas/mist/vapors/spray
  P280  Wear protective gloves.
  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).
  P501  Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 2)
**Product name:** Tungsten Standard: 1000 µg/mL W in 5% HNO3, tr. HF [100ml bottle]

- **Classification system:**
  - NFPA ratings (scale 0 - 4)
    - Health = 2
    - Fire = 0
    - Reactivity = 0
  - 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.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
<th>RTECS Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitric acid</td>
<td>7697-37-2</td>
<td>QU5775000</td>
<td>Ox. Liq. 3, H272; Skin Corr. 1A, H314 &lt; 5%</td>
</tr>
<tr>
<td>Hydrofluoric acid</td>
<td>7664-39-3</td>
<td>MW 7875000</td>
<td>Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330; Skin Corr. 1A, H314 &lt; 1.0%</td>
</tr>
</tbody>
</table>

### 4 First-aid measures

- **Description of first aid measures**
- **General information:**
  Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

- **After inhalation:**
  Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
  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. If symptoms persist, consult a doctor.

- **After swallowing:**
  Rinse mouth. Do not induce vomiting. Immediately call a doctor.

- **Information for doctor:**
  - Most important symptoms and effects, both acute and delayed 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:
  
  - Mouth respiratory protective device.
  
  - 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.

- Methods and material for containment and cleaning up:
  
  - 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 Long-term value: 5 mg/m³, 2 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 Nitric acid</td>
<td>REL Short-term value: 10 mg/m³, 4 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 5 mg/m³, 2 ppm</td>
</tr>
<tr>
<td></td>
<td>TLV Short-term value: 10 mg/m³, 4 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 5.2 mg/m³, 2 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>PEL Long-term value: 3 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>7664-39-3 Hydrofluoric acid</td>
<td>REL Long-term value: 2.5 mg/m³, 3 ppm</td>
</tr>
<tr>
<td></td>
<td>Ceiling limit value: 5 mg/m³, 6 ppm</td>
</tr>
<tr>
<td></td>
<td>15-min. as F</td>
</tr>
<tr>
<td></td>
<td>TLV Long-term value: 0.41 mg/m³, 0.5 ppm</td>
</tr>
<tr>
<td></td>
<td>Ceiling limit value: 1.64 mg/m³, 2 ppm</td>
</tr>
<tr>
<td></td>
<td>as F; Skin, BEI</td>
</tr>
</tbody>
</table>

- **Ingredients with biological limit values**

<table>
<thead>
<tr>
<th>Component</th>
<th>BEI 3 mg/g creatinine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medium: urine</td>
</tr>
<tr>
<td></td>
<td>Time: prior to shift</td>
</tr>
<tr>
<td></td>
<td>Parameter: Fluorides (background, nonspecific)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>10 mg/g creatinine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medium: urine</td>
</tr>
<tr>
<td></td>
<td>Time: end of shift</td>
</tr>
<tr>
<td></td>
<td>Parameter: Fluorides (background, nonspecific)</td>
</tr>
</tbody>
</table>

- **Additional information**: The lists that were valid during the creation were used as basis.

- **Exposure controls**

- **Personal protective equipment**:

<table>
<thead>
<tr>
<th>General protective and hygienic measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep away from foodstuffs, beverages and feed.</td>
</tr>
<tr>
<td>Immediately remove all soiled and contaminated clothing.</td>
</tr>
<tr>
<td>Wash hands before breaks and at the end of work.</td>
</tr>
<tr>
<td>Avoid contact with the eyes and skin.</td>
</tr>
</tbody>
</table>

- **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**

| Neoprene gloves |

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

- Information on basic physical and chemical properties
- General Information
- Appearance:
  - Form: Liquid
  - Color: Clear
  - Odor: Odorless
  - Odour threshold: Not determined.
- pH-value at 20 °C (68 °F): < 1.5
- 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: Not determined.
- 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): 1.01949 g/cm³ (8.508 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.
  - Kinematic: Not determined.
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:
  Bases.
  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:

    | Substance                        | Oral LD50 | Inhalative LC50/4 h |
    |---------------------------------|-----------|---------------------|
    | 7697-37-2 Nitric acid           | 430 mg/kg | 130 mg/l (rat)      |
    | 7664-39-3 Hydrofluoric acid     | 1276 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:
  Harmful
  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 packagings:**
  - **Recommendation:** Dispose in accordance with national regulations.
  - **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- **UN-Number**
  - DOT, ADR, IMDG, IATA UN3264

- **DOT**
  - Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric acid)

- **ADR**
  - 3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric acid)

- **IMDG, IATA**
  - CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, HYDROFLUORIC ACID)

- **Transport hazard class(es)**
  - **DOT**
    - Class 8 Corrosive substances
### Safety Data Sheet

**Product name:** Tungsten Standard: 1000 µg/mL W in 5% HNO3, tr. HF [100ml bottle]

<table>
<thead>
<tr>
<th>· Label</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>· ADR, IMDG, IATA</td>
<td></td>
</tr>
<tr>
<td>· Class</td>
<td>8 Corrosive substances</td>
</tr>
<tr>
<td>· Packing group</td>
<td>II</td>
</tr>
<tr>
<td>· DOT, ADR, IMDG, IATA</td>
<td></td>
</tr>
<tr>
<td>· Environmental hazards:</td>
<td></td>
</tr>
<tr>
<td>· Marine pollutant:</td>
<td>No</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>
</tbody>
</table>

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

**UN "Model Regulation":**
UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid, Hydrofluoric acid), 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 |
| 7664-39-3 | Hydrofluoric acid - |

| · Section 313 (Specific toxic chemical listings): |
| --- | --- |
| 7697-37-2 | Nitric acid |
| 7664-39-3 | Hydrofluoric 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. |
Product name: Tungsten Standard: 1000 µg/mL W in 5% HNO3, tr. HF [100ml bottle]

- **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.
  - **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
    - GHS07

- **Signal word** Danger

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

- **Hazard statements**
  - H302+H312+H332 Harmful if swallowed, in contact with skin or if inhaled.
  - H315 Causes skin irritation.
  - H318 Causes serious eye damage.

- **Precautionary statements**
  - P261 Avoid breathing dust/fume/gas/mist/vapors/spray
  - P280 Wear protective gloves.
  - 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).
  - 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** 05/29/2015 / 2

- **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

(Contd. on page 10)
Product name: Tungsten Standard: 1000 µg/mL W in 5% HNO₃, tr. HF [100ml bottle]

Acute Tox. 2: Acute toxicity, Hazard Category 2
Acute Tox. 4: Acute toxicity, Hazard Category 4
Acute Tox. 1: Acute toxicity, Hazard Category 1
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