1 Identification

- **Product identifier**

- **Product name:** Rhodium Standard: 1000 µg/mL Rh in 20% HCl [100ml bottle]

- **Part number:** 5190-8509

- **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**

  ![GHS05 Corrosion](image)

  Met. Corr.1 H290 May be corrosive to metals.

  ![GHS07](image)

  Eye Irrit. 2A H319 Causes serious eye irritation.

- **Label elements**

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

- **Hazard pictograms**

  ![GHS05](image)

- **Signal word** Warning

- **Hazard statements**
  H290 May be corrosive to metals.
  H319 Causes serious eye irritation.

- **Precautionary statements**

  - **P280** Wear eye protection / face protection.
  - **P234** Keep only in original container.
  - **P264** Wash thoroughly after handling.
  - **P305+P351+P338** If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - **P337+P313** If eye irritation persists: Get medical advice/attention.
  - **P406** Store in corrosive resistant container with a resistant inner liner.

- **Classification system:**

  - **NFPA ratings (scale 0 - 4)**
    - Health = 1
    - Fire = 0
    - Reactivity = 0
Product name: Rhodium Standard: 1000 µg/mL Rh in 20% HCl [100ml bottle]

HMIS-ratings (scale 0 - 4)

- Health = 1
- 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.
  Mixture: consisting of the following components.

Dangerous components:

<table>
<thead>
<tr>
<th>CAS</th>
<th>RTECS</th>
<th>Description</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7647-01-0</td>
<td>MW 9620000</td>
<td>hydrochloric acid</td>
<td>&lt; 10%</td>
</tr>
<tr>
<td>10049-07-7</td>
<td>VI 9275000</td>
<td>rhodium trichloride</td>
<td>&lt; 1.0%</td>
</tr>
</tbody>
</table>

4 First-aid measures

- Description of first aid measures
  - After inhalation: Supply fresh air; consult doctor in case of complaints.
  - After skin contact: Immediately wash with water and soap and rinse thoroughly.
  - 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.

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

<table>
<thead>
<tr>
<th>Substance</th>
<th>PEL Limit Value</th>
<th>REL Limit Value</th>
<th>TLV Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7647-01-0 hydrochloric acid</td>
<td>7 mg/m³, 5 ppm</td>
<td>7 mg/m³, 5 ppm</td>
<td>2.98 mg/m³, 2 ppm</td>
</tr>
<tr>
<td>10049-07-7 rhodium trichloride</td>
<td>0.001 mg/m³ as Rh</td>
<td>0.001 mg/m³ as Rh</td>
<td>0.01 mg/m³ as Rh</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.
**Product name:** Rhodium Standard: 1000 µg/mL Rh in 20% HCl [100ml bottle]

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.

**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

### 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):** < 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.
Product name: Rhodium Standard: 1000 µg/mL Rh in 20% HCl [100ml bottle]

40.0.7
- Vapor pressure at 20 °C (68 °F): 23 hPa (17 mm Hg)
- Density: Not determined.
- 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.
- 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:
    - Primary irritant effect:
      - on the skin: No irritant effect.
      - 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:
    - Irritant
- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    7647-01-0 hydrochloric acid
  - 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:** 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 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** UN1789
- **DOT** Hydrochloric acid solution
- **ADR** 1789 Hydrochloric acid solution
- **IMDG, IATA** HYDROCHLORIC ACID solution

- **Transport hazard class(es)**
  - **DOT**
    - **Class** 8 Corrosive substances
    - **Label** 8
  - **ADR, IMDG, IATA**
    - **Class** 8 Corrosive substances
    - **Label** 8
Product name: **Rhodium Standard: 1000 µg/mL Rh in 20% HCl [100ml bottle]** (Contd. of page 6)

- **DOT, ADR, IMDG, IATA**
- **II**

- **Environmental hazards:**
- **Marine pollutant:**
- No

- **Special precautions for user**
- **Danger code (Kemler):** Warning: Corrosive substances
- **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.

- **UN "Model Regulation":**
- UN1789, Hydrochloric acid solution, 8, II

### 15 Regulatory information

- **Sara**

- **Section 355 (extremely hazardous substances):**
  - 7647-01-0 hydrochloric acid

- **Section 313 (Specific toxic chemical listings):**
  - 7647-01-0 hydrochloric 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.

- **EPA (Environmental Protection Agency)**
  - None of the ingredients is listed.

- **TLV (Threshold Limit Value established by ACGIH)**
  - 7647-01-0 hydrochloric acid A4
  - 10049-07-7 rhodium trichloride A4

- **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). (Contd. on page 8)
Hazard pictograms

GHS05

Signal word Warning

Hazard statements
H290 May be corrosive to metals.
H319 Causes serious eye irritation.

Precautionary statements
P280 Wear eye protection / face protection.
P234 Keep only in original container.
P264 Wash thoroughly after handling.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.
P406 Store in corrosive resistant container with a resistant inner liner.

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 06/12/2015 /

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)
Met. Corr. 1: Corrosive to metals, Hazard Category 1
Acute Tox. 4: Acute toxicity, Hazard Category 4
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1
Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

Sources