SECTION 1: Identification of the substance/mixture and of the company/undertaking

- 1.1 Product identifier
  - Product name: Rhodium Standard: 1000 µg/mL Rh in 20% HCl [100ml bottle]
  - Part number: 5190-8509

- 1.2 Relevant identified uses of the substance or mixture and uses advised against
  - Application of the substance / the mixture Reference material for laboratory use only
  - Manufacturer/Supplier:
    Agilent Technologies Manufacturing GmbH & Co. KG                      Tel: 0800 603 1000
    Hewlett-Packard-Str. 8
    76337 Waldbronn
    Germany
  - Further information obtainable from: e-mail: pdl-msds_author@agilent.com
  - 1.4 Emergency telephone number: CHEMTREC®: +(44)-870-8200418

SECTION 2: Hazards identification

- 2.1 Classification of the substance or mixture
  - Classification according to Regulation (EC) No 1272/2008
    GHS05 corrosion
    Met. Corr. 1 H290 May be corrosive to metals.
  - Classification according to Directive 67/548/EEC or Directive 1999/45/EC
    Xi; Irritant
    R36: Irritating to eyes.
  - Information concerning particular hazards for human and environment:
    The product has to be labelled due to the calculation procedure of the “General Classification guideline for preparations of the EU” in the latest valid version.
  - Classification system:
    The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

- 2.2 Label elements
  - Labelling according to Regulation (EC) No 1272/2008
    The product is classified and labelled according to the CLP regulation.
  - Hazard pictograms
    GHS05
  - Signal word Warning
  - Hazard statements
    H290 May be corrosive to metals.
    H319 Causes serious eye irritation.
  - Precautionary statements
    P280 Wear protective gloves/protective clothing/eye protection/face protection.

(Contd. on page 2)
Product name: Rhodium Standard: 1000 µg/mL Rh in 20% HCl [100ml bottle]

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.

2.3 Other hazards
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

SECTION 3: Composition/information on ingredients
- 3.2 Chemical characterisation: Mixtures
  - Description:
    Aqueous solution.
    Mixture: consisting of the following components.
    - Dangerous components:
      - hydrochloric acid
        CAS: 7647-01-0
        EINECS: 231-595-7
        RTECS: MW 9620000
        Skin Corr. 1B, H314; STOT SE 3, H335
        < 10%
      - rhodium trichloride
        CAS: 10049-07-7
        EINECS: 233-165-4
        RTECS: VI 9275000
        Met. Corr. 1, H290; Eye Dam. 1, H318; Acute Tox. 4, H302
        < 1.0%
  - Additional information:
    For the wording of the listed risk phrases refer to section 16.

SECTION 4: First aid measures
- 4.1 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.
- 4.2 Most important symptoms and effects, both acute and delayed
  No further relevant information available.
- 4.3 Indication of any immediate medical attention and special treatment needed
  No further relevant information available.

SECTION 5: Firefighting measures
- 5.1 Extinguishing media
  - Suitable extinguishing agents:
    CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- 5.2 Special hazards arising from the substance or mixture
  - Formation of toxic gases is possible during heating or in case of fire.
- 5.3 Advice for firefighters
  - Protective equipment: Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures
- 6.1 Personal precautions, protective equipment and emergency procedures
  Wear protective clothing.

(Contd. on page 3)
SECTION 7: Handling and storage

- 7.1 Precautions for safe handling
  Ensure good ventilation/extraction at the workplace.
  Store in cool, dry place in tightly closed receptacles.
  Prevent formation of aerosols.
- 7.2 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 manufacturer’s 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 container tightly sealed.
- 7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

- Additional information about design of technical facilities: No further data; see item 7.
- 8.1 Control parameters
  - Ingredients with limit values that require monitoring at the workplace:
    | 7647-01-0 hydrochloric acid |
    |-----------------------------|
    | WEL | Short-term value: 8 mg/m³, 5 ppm |
    |     | Long-term value: 2 mg/m³, 1 ppm (gas and aerosol mists) |
    | 10049-07-7 rhodium trichloride |
    | WEL | Short-term value: 0.003 mg/m³ |
    |     | Long-term value: 0.001 mg/m³ as Rh |
- Additional information: Lists used were valid at the time of SDS preparation.
- 8.2 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.
Product name: **Rhodium Standard: 1000 µg/mL Rh in 20% HCl [100ml bottle]**

- **Respiratory protection:**
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

- **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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**SECTION 9: Physical and chemical properties**

- **9.1 Information on basic physical and chemical properties**
  - **General Information**
  - **Appearance:**
    - Form: Liquid
    - Colour: Colourless
    - Odour: Odourless
    - Odour threshold: Not determined.
  - **pH-value at 20 °C:** < 1.5
  - **Change in condition**
    - Melting point/Melting range: Not determined.
    - Boiling point/Boiling range: 100 °C
  - **Flash point:** Not applicable.
  - **Flammability (solid, gaseous):** Not determined.
  - **Ignition temperature:**
    - Decomposition temperature: Not determined.
    - Self-igniting: Product is not selfigniting.
    - Danger of explosion: Not determined.
  - **Explosion limits:**
    - Lower: Not determined.
    - Upper: Not determined.
  - **Vapour pressure at 20 °C:** 23 hPa
  - **Density:** Not determined.

(Contd. on page 5)
Product name: Rhodium Standard: 1000 µg/mL Rh in 20% HCl [100ml bottle]

(Contd. from page 4)

- 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.

- 9.2 Other information: No further relevant information available.

SECTION 10: Stability and reactivity

- 10.1 Reactivity: Stable under normal conditions.
- 10.2 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.
- 10.3 Possibility of hazardous reactions: No dangerous reactions known.
- 10.4 Conditions to avoid: Heat.
- 10.5 Incompatible materials: Strong oxidizing agents.
- 10.6 Hazardous decomposition products:
  - Formation of toxic gases is possible during heating or in case of fire.

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects
  - Acute toxicity:
    - Primary irritant effect:
      - on the skin: No irritating effect.
      - on the eye: Irritating effect.
    - Sensitisation: No sensitising effects known.
  - Additional toxicological information:
    - The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:
      - Irritant

SECTION 12: Ecological information

- 12.1 Toxicity
  - Aquatic toxicity: No further relevant information available.
- 12.2 Persistence and degradability: No further relevant information available.
- 12.3 Bioaccumulative potential: No further relevant information available.
- 12.4 Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    - Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
    - Do not allow undiluted product to reach ground water, water course or sewage system.
- 12.5 Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
**SECTION 13: Disposal considerations**

- **13.1 Waste treatment methods**
  - **Recommendation**
    Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
  - **European waste catalogue**
    Waste disposal key numbers from EWC have to be assigned depending on origin and processing.
  - **Uncleaned packaging:**
    - **Recommendation:** Dispose of in accordance with national regulations.
  - **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

**SECTION 14: Transport information**

- **14.1 UN-Number**
  - ADR, IMDG, IATA: UN1789
  - ADR: 1789 HYDROCHLORIC ACID solution
  - IMDG, IATA: HYDROCHLORIC ACID solution

- **14.3 Transport hazard class(es)**
  - ADR, IMDG, IATA
    - **Class:** 8 Corrosive substances.
    - **Label:** 8

- **14.4 Packing group**
  - ADR, IMDG, IATA: II

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

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

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

- **Transport/Additional information:**
  - **ADR**
    - **Limited quantities (LQ):** 1L
    - **Transport category:** 2
    - **Tunnel restriction code:** E
  - **UN "Model Regulation":** UN1789, HYDROCHLORIC ACID solution, 8, II

(Contd. from page 5)
SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/législation specific for the substance or mixture

- Philippines Inventory of Chemicals and Chemical Substances
  All ingredients are listed.

- Australian Inventory of Chemical Substances
  All ingredients are listed.

- Standard for the Uniform Scheduling of Medicines and Poisons
  7647-01-0 hydrochloric acid S5, S6

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 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.

Relevant phrases

H290 May be corrosive to metals.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
R22 Harmful if swallowed.
R34 Causes burns.
R37 Irritating to respiratory system.
R41 Risk of serious damage to eyes.

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
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
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)
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. 2: Serious eye damage/eye irritation, Hazard Category 2
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

Sources