Safety Data Sheet

Supplier:
Paul H. Gesswein & Co., Inc.,
201 Hancock Ave., Bridgeport, CT 06605, Phone 203-366-5400, Fax 203-366-3953

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1. IDENTIFICATION

Product Identifier
Product Name               RHODIUM CONCENTRATE #100
Other means of identification
Product Item#              2101000
UN/ID No                   UN1760

Recommended use of the chemical and restrictions on use
Recommended Use            Plating solution.

2. HAZARDS IDENTIFICATION

Appearance          Clear reddish solution  Physical State  Liquid  Odor  No odor

Classification
Acute toxicity - Inhalation (Dusts/Mists) Category 3
Skin corrosion/irritation Category 1  Sub-category B
Serious eye damage/eye irritation Category 1
Carcinogenicity       Category 1A

Signal Word
Danger

Hazard Statements
Toxic if inhaled
Causes severe skin burns and eye damage
May cause cancer

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Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling

Precautionary Statements - Response
If exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a poison center or doctor/physician
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a poison center or doctor/physician
IF SWALLOWED: rinse mouth. Do NOT induce vomiting

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Unknown Acute Toxicity
5% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>7664-93-9</td>
<td>1.2-35.0</td>
</tr>
<tr>
<td>Rhodium metal</td>
<td>7440-16-6</td>
<td>0.2-5.0</td>
</tr>
</tbody>
</table>

**If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.**

4. FIRST-AID MEASURES

First Aid Measures

General Advice
If exposed or concerned: Get medical advice/attention.

Eye Contact
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek immediate medical attention/advice.

Skin Contact
Wash off immediately with plenty of water. Take off contaminated clothing. Wash contaminated clothing before reuse. Get medical attention.

Inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician or poison control center immediately.

Ingestion
Rinse mouth. Drink large amounts of water. Do not induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects

Symptoms
May cause eye burns and permanent eye damage. Prolonged contact may even cause severe skin irritation or mild burn. Contact will cause irritation and redness to exposed areas.
5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical
Product does not burn.

Hazardous Combustion Products Oxides of sulfur.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use personal protective equipment as required.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up Small spills may be neutralized with soda ash. Flush area with water. For waste disposal, see section 13 of the SDS.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protection recommended in Section 8. Wash thoroughly after handling. Do not breathe dust/fume/gas/mist/vapors/spray. Use only in well-ventilated areas. Whenever possible, wash equipment with clean water before repair.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>TWA: 0.2 mg/m³ thoracic fraction</td>
<td>TWA: 1 mg/m³ (vacated) TWA: 1 mg/m³</td>
<td>IDLH: 15 mg/m³ TWA: 1 mg/m³</td>
</tr>
<tr>
<td>Rhodium metal</td>
<td>TWA: 1 mg/m³</td>
<td>TWA: 0.1 mg/m³ fume (vacated) TWA: 0.1 mg/m³ fume</td>
<td>IDLH: 100 mg/m³ fume TWA: 0.1 mg/m³ fume</td>
</tr>
</tbody>
</table>

Appropriate engineering controls

Engineering Controls
Local exhaust ventilation recommended.

Individual protection measures, such as personal protective equipment

Eye/Face Protection
Chemical safety goggles/faceshield.

Skin and Body Protection
Wear rubber or plastic gloves. Aprons.

Respiratory Protection
Wear a NIOSH-approved respirator in a spill.

General Hygiene Considerations
Wash thoroughly with soap and water after handling. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear reddish solution</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Reddish</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>No odor</td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>Acidic</td>
<td></td>
</tr>
<tr>
<td>Melting Point/Freezing Point</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Boiling Point/Boiling Range</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Flammability (Solid, Gas)</td>
<td>n/a-liquid</td>
<td></td>
</tr>
<tr>
<td>Upper Flammability Limit</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Lower Flammability Limit</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.025-1.40</td>
<td>(1=Water)</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Completely soluble</td>
<td></td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Kinematic Viscosity</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Dynamic Viscosity</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>Not determined</td>
<td></td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Hazardous polymerization does not occur.

Conditions to Avoid
Keep out of reach of children.

Incompatible Materials
Caustics. Organic materials.

Hazardous Decomposition Products
Sulfur oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact  Causes severe eye damage.
Skin Contact  Causes severe skin burns.
Inhalation  Toxic if inhaled.
Ingestion  Do not taste or swallow.

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>2140 mg/kg (Rat)</td>
<td>-</td>
<td>510 mg/m^3 (Rat) 2 h</td>
</tr>
<tr>
<td>7664-93-9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Information on physical, chemical and toxicological effects

Symptoms  Please see section 4 of this SDS for symptoms.
Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity

Note: The agencies below have listed Strong Inorganic Acid Mists, Containing Sulfuric Acid as a known carcinogen.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>A2</td>
<td>Group 1</td>
<td>Known</td>
<td>X</td>
</tr>
</tbody>
</table>

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)
A2 - Suspected Human Carcinogen
IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
NTP (National Toxicology Program)
Known - Known Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Numerical measures of toxicity

Not determined

Unknown Acute Toxicity

5% of the mixture consists of ingredient(s) of unknown toxicity.

12. ECOLOGICAL INFORMATION

Ecotoxicity

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td></td>
<td>500: 96 h Brachydanio rerio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7664-93-9</td>
<td></td>
<td>mg/L LC50 static</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence/Degradability

Not determined.

Bioaccumulation

Not determined.

Mobility

Not determined

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

California Hazardous Waste Status

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Hazardous Waste Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>Toxic</td>
</tr>
<tr>
<td>7664-93-9</td>
<td>Corrosive</td>
</tr>
</tbody>
</table>
14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT
UN/ID No UN1760
Proper Shipping Name Corrosive liquid, n.o.s. (sulfuric acid)
Hazard Class 8
Packing Group II

IATA
UN/ID No UN1760
Proper Shipping Name Corrosive liquid, n.o.s. (sulfuric acid)
Hazard Class 8
Packing Group II

IMDG
UN/ID No UN1760
Proper Shipping Name Corrosive liquid, n.o.s. (sulfuric acid)
Hazard Class 8
Packing Group II

15. REGULATORY INFORMATION

International Inventories
Not determined

US Federal Regulations

CERCLA

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Hazardous Substances RRs</th>
<th>CERCLA/SARA RQ</th>
<th>Reportable Quantity (RQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>1000 lb</td>
<td>1000 lb</td>
<td>RQ 1000 lb final RQ</td>
</tr>
<tr>
<td>7664-93-9</td>
<td></td>
<td></td>
<td>RQ 454 kg final RQ</td>
</tr>
</tbody>
</table>

SARA 313

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid - 7664-93-9</td>
<td>7664-93-9</td>
<td>1.2-35.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

CWA (Clean Water Act)

<table>
<thead>
<tr>
<th>Component</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid 7664-93-9 (1.2-35.0)</td>
<td>1000 lb</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

US State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Proposition 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid - 7664-93-9</td>
<td>Carcinogen</td>
</tr>
</tbody>
</table>
Rhodium Plating Solution

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7664-93-9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodium metal</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7440-16-6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

**NFPA**
- Health Hazards: Not determined
- Flammability: Not determined
- Instability: Not determined
- Special Hazards: Not determined

**HMIS**
- Health Hazards: Not determined
- Flammability: Not determined
- Physical Hazards: Not determined
- Protection: Not determined

Issue Date: 01-May-2003
Revision Date: 07-Nov-2013
Revision Note: New format

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet