SECTION 1 - IDENTIFICATION

PRODUCT (TRADE) NAME: Rhodium Wire
CHEMICAL NAME: Rhodium
CHEMICAL FAMILY: Platinum Metal Group
SUPPLIER: OMEGA ENGINEERING INC.
            PO BOX 4047
            STAMFORD, CT 06907
DATE PREPARED: 4/89
TELEPHONE: (203) 359-1660

SHIPPING NAME (UN NUMBER PER TRANSPORTATION AUTHORITY):
DOT: Not Regulated

SECTION 2 - HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>MATERIAL/COMPONENT</th>
<th>%</th>
<th>TLV (UNITS)</th>
<th>PEL (UNITS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhodium (CAS No. 7440-16-6)</td>
<td>100</td>
<td>1 mg/m³</td>
<td>0.1 mg/m³</td>
</tr>
</tbody>
</table>

SECTION 3 - PHYSICAL DATA

BOILING POINT: 3727 Degrees C
MELTING POINT: 1986 Degrees C
VAPOR PRESSURE (mmHg): Not Applicable
VAPOR DENSITY (Air=1): Not Applicable
SPECIFIC GRAVITY (H₂O=1): 12.4
SOLUBILITY IN WATER: Insoluble
EVAPORATION RATE: Not Applicable
APPEARANCE AND ODOR: Gray metallic

Insoluble in water. Soluble in H₂SO₄ + HCl, conc. H₂SO₄; slightly soluble in acids, aqua regia.

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: Flammable (dust)
FLAMMABLE LIMITS: Not known
LEL: —
UEL: —

EXTINGUISHING MEDIA: Water. For small fires involving coated aluminum powder, use dry chemical, sand, water spray, or foam. For small fires involving uncoated alumina powder, use dry chemical soda ash, or lime. For large fires involving uncoated alumina power, withdraw and let fire burn.
SECTION 4 - FIRE AND EXPLOSION HAZARD DATA (CONT'D)

SPECIAL FIRE FIGHTING PROCEDURES: Fire fighter should wear NIOSH/MSHA approved pressure demand self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Finely divided rhodium may be pyrophoric, especially when in contact with organic materials. There is a potential for fire when rhodium dust is exposed to heat or flame. Rhodium will react violently with chlorine trifluoride and oxygen difluoride. It can undergo catalytic ignition on exposure to air when heated with hydrogen.

SECTION 5 - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: This material will irritate the eyes. Rhodium is not listed by NTP, IARC, or OSHA as a potential carcinogen.

PHYSICIAN'S NOTE: A similar compound, rhodium oxide (Rh2O3), was found to have an oral rat LD50 greater than 2000 mg/kg. The primary skin irritation score was found to be 0.1 (mild irritant). Tested according to OECD guidelines, 1981, Section 404 with 4 hour contact. It was found to be a negative eye irritant for both unwashed (group total score 15) and washed (group total score 10) groups of rabbits. The sensitization rate is 0% - weak (grade I) sensitizer on the Magnusson and Kligcr scale.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: Remove person to fresh air. If breathing has stopped, perform artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

SKIN: Wash area with soap and water. Remove contaminated clothing and shoes. Wash or clean before reuse.

EYES: Flush with water for 15 minutes. Get immediate medical attention.

INGESTION: If a person is conscious, induce vomiting by giving large amounts of water and sticking fingers on the back of the throat. Do not make an unconscious person vomit. Get medical attention.

SECTION 6 - REACTIVITY DATA

STABILITY: Stable under normal conditions. Reacts violently with internalogens. Will react with aqua regia in finely divided form.

CONDITIONS TO AVOID: Avoid heating where it may be inhaled and avoid open flame.

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid chlorine trifluoride, oxygen difluoride, bromide pentafuoride, or other internalogens due to violent reactions.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides or elemental rhodium

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: None Known
SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Prevent wastage. Promptly absorb spill. Conserve and accumulate material and all mops, wipes, sand or vermiculite used to clean up a spill. Remove sources of ignition. Cover drains to prevent entry into waterways.

Wear personal protective equipment (clothing and gloves) when handling spilled materials. (See Section on Special Protection Information, below.) Seal residues in appropriate containers which have chemical identification and hazard warning information.

Clean up residues with an electrically grounded vacuum cleaner containing a high-efficiency particulate air (HEPA) filter.

WASTE DISPOSAL METHOD: Return accumulated residues, wipes, mops, sand and vermiculite to refinery for metals recovery. Store material in inert containers such a polyethylene or polypropylene which have chemical identification and hazard warning information. Follow local, State and Federal regulations for packaging, labeling, manifesting, transportation, and disposal.

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): If there is a possibility that the TLVs or PELs may be exceeded, NIOSH/MSHA approved respirator with high-efficiency dust-fume-mist filters represents the minimum level oil respiratory protection.

In addition, to ensure proper respirator selection and use, an 11-point written respirator program indicating respirator limitations and meeting the requirements of 29 CFR 1910.134 and the latest edition of ANSI Z 88.2 will be needed if respirators are used.

VENTILATION: —

LOCAL EXHAUST: Fume hood at point of generation with sufficient exhaust to remove material from breathing zone.

MECHANICAL (GENERAL): Use with sufficient ventilation to remove material from breathing zone.

SPECIAL: Not Applicable
OTHER: Not Applicable
PROTECTIVE GLOVES: Rubber or impervious gloves
EYE PROTECTIVE EQUIPMENT: Chemical safety goggles

OTHER PROTECTIVE EQUIPMENT: Wear disposable protective clothing to facilitate recovery of any materials spilled.
SECTION 9 - SPECIAL PRECAUTIONS

SPECIAL HANDLING AND STORAGE RECOMMENDATIONS: Store in a cool, dry place away from incompatible materials identified in Section 6.

OTHER RECOMMENDATIONS AND PRECAUTIONS: Follow good industrial hygiene and housekeeping practices. Do not eat, drink, or smoke while working with this material. Wash hands before eating, drinking, smoking, or applying cosmetics, and at the end of the work shift. Avoid contact with eyes, skin, or clothing. Do not ingest. Avoid prolonged breathing of dust. Keep container closed when not in use. Use with adequate ventilation.

SECTION 10 - REFERENCES


