Safety Data Sheet
29 CFR 1910.1200

Section 1: Company and Product Identification

Product Name: Chlorohydridotris(triphenylphosphine) Ruthenium (II) Toluene Adduct
Product Code: 8073

Company: Colonial Metals, Inc.
Building 20
505 Blue Ball Road
Elkton, MD 21921 United States

Company Contact: EHS Director
Telephone Number: 410-398-7200
FAX Number: 410-398-2918
E-Mail: info@colonialmetals.com
Web Site: www.colonialmetals.com

Emergency Response:
Supplier Emergency Contacts & Phone Number
Chemtrec: 800-424-9300
World Wide - Call COLLECT to U.S: 703-527-3887

Section 2: Hazards Identification

Signal Word: Warning

Hazard Category:
- Serious eye damage/eye irritation Cat 2
- Skin corrosion/irritation Cat 2
- Acute tox, inh. Cat 4
- Acute tox, dermal Cat 4
- Acute tox, oral Cat 4
- Specific target organ tox, single exp. Cat 3 (resp irrit)

Hazard Statements:
- H319: Causes serious eye irritation
- H315: Causes skin irritation
- H332: Harmful if inhaled
- H312: Harmful in contact with skin
- H302: Harmful if swallowed
- H335: May cause respiratory irritation

Precautionary Statements:
- P261: Avoid breathing dust/fume/gas/mist/vapors/spray
- P264: Wash thoroughly after handling
- P270: Do not eat, drink or smoke when using this product
- P271: Use only outdoors or in a well-ventilated area
- P280: Wear protective gloves/protective clothing/eye protection/face protection
- P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel
- P302+352: IF ON SKIN: Wash with soap and water
- P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position
- P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove
- P312: Call a POISON CENTER or doctor/physician if you feel unwell
- P332: Specific measures (see First Aid Supplement on this label)
- P330: Rinse mouth
- P332+313: If skin irritation occurs: Get medical advice/attention
- P337+313: If eye irritation persists get medical advice/attention
- P362: Take off contaminated clothing and wash before reuse
- P403+233: Store in a well ventilated place. Keep container tightly closed
- P405: Store locked up
- P501: Dispose of contents/container in accordance with

Hazards not otherwise classified: None
Section 3: Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Hazardous substance (name)</th>
<th>Hazard Category</th>
<th>CAS#</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorohydridotris(triphenylphosphine) Ruthenium(II) toluene adduct</td>
<td>Irritant</td>
<td>55102-19-7</td>
<td></td>
</tr>
</tbody>
</table>

**Product Name:** Chlorohydridotris(triphenylphosphine) Ruthenium(II) toluene adduct  
**Chemical Formula:** RuCl(H)(C18H15P)3(C7H8)

Section 4: First Aid Measures

**General Info:** Consult a Physician. Show this safety data sheet to the doctor in attendance.

**Notable Exposure symptoms:**  
- If ingested: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
- If inhaled: Remove the victim from the contaminated area while protecting yourself from exposure by wearing an appropriate respirator. Put a similar respirator on the victim if possible. Get medical attention immediately.
- **Eye contact:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
- **Skin contact:** Wash off with soap and plenty of water. Consult a physician.

Section 5: Fire Fighting Measures

**General Info:** Flash Point: > 113 °C (> 235 °F)  
Flash Point Method: Closed Cup

**Extinguishing Method / Equipment:**  
Carbon oxides, Oxides of phosphorus, Hydrogen chloride gas, Ruthenium oxide. Firefighters should wear self-contained breathing apparatus and full protective gear. Hazardous decomposition products formed under fire conditions.

**Hazardous Decomposition Info:**  
Strong oxidizing agents.

Section 6: Accidental Release Measures

**Personal precautions, protective equipment and procedures:** Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate respiratory protective equipment and clothing during clean-up. Avoid breathing dust. Ventilate area if easy to do so. Contact local authorities if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

**Containment Equipment and Procedures:** Do not let product enter drains. Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

**Cleanup Procedures:** Contain spillage and then collect with an electrically protected vacuum cleaner or by wet brushing and place in container for disposal according to local regulations.

Section 7: Handling and Storage

**Safe Handling:** Do not handle until all safety precautions have been read and understood. Keep containers tightly closed. Ensure adequate ventilation. Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wear appropriate personal protective equipment and wash thoroughly after handling. Keep away from ignition sources.

**Recommendations for Storage:** Air and moisture sensitive. Store in cool, dry area in a tightly closed product container away from sources of ignition or flame in a dry well ventilated place under inert atmosphere at 2-8°C. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

**Incompatibilities:** Strong oxidizing agents.
### Section 8: Exposure Control / Personal Protection

**General / Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks**

**Engineering** and at the end of workday.

**Controls:**

**Work Clothing:** Protective work clothing which covers skin and prevents exposures.

**Eye/face protection:** Wear safety glasses with side shields or goggles or face shield.

**Skin Protection:** Wear chemical resistant gloves.

**Respiratory Protection:** Utilize organic vapor respirator if airborne levels are not maintained or if ventilation is inadequate.

**Additional** Observe good chemical hygiene practices. Do not smoke or eat while using this product. Wash Information: hands or exposed skin after using the product.

### Section 9: Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Solid</td>
</tr>
<tr>
<td>Melting Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Color</td>
<td>N/A</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>N/A</td>
</tr>
<tr>
<td>pH</td>
<td>N/A</td>
</tr>
<tr>
<td>Molecular Wt.</td>
<td>1016.53 g/mol</td>
</tr>
<tr>
<td>Odor</td>
<td>N/A</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>N/A</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>N/A</td>
</tr>
<tr>
<td>Flash Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Part. Coeff (n-octanol/water)</td>
<td>N/A</td>
</tr>
<tr>
<td>Upper Flam Limits</td>
<td>N/A</td>
</tr>
<tr>
<td>Lower Flam Limits</td>
<td>N/A</td>
</tr>
<tr>
<td>Lower Flam Limits</td>
<td>N/A</td>
</tr>
<tr>
<td>VOC Content (lbs/gal)</td>
<td>N/A</td>
</tr>
<tr>
<td>Viscosity</td>
<td>N/A</td>
</tr>
<tr>
<td>Autoignition Temp</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Section 10: Stability and Reactivity

**General:** This product is stable and non-reactive under normal conditions of use. Product is not subject to hazardous polymerization. Avoid open flame and ignition sources.

**Incompatible materials:** Strong oxidizing agents.

**Decomposition products:** Hazardous decomposition products formed under fire conditions: Carbon Oxides; Hydrogen Chloride Gas; Ruthenium Oxide; Oxides of phosphorus

### Section 11: Toxicological Information

**General Information:** To the best of our knowledge, the chemical, the physical, and toxicological properties of this compound have not been thoroughly investigated.

**Toxicological Information** Inhalation studies on toluene have demonstrated the development of inflammatory and ulcerous lesions of the penis, prepuce, and scrotum in animals., Cough, Shortness of breath, Headache, (product): Nausea, Vomiting, Lung irritation

**Likely Routes of Exposure:**

- Eye Contact
- Skin Contact
- Inhalation
- Ingestion - possible, but considered unlikely

**Sensitization:** Product is not expected to be a sensitizer.

### Section 12: Ecological Information

**General information:** No data available.

### Section 13: Disposal Information

**Product disposal:** Place in a sealed container. Consult Federal EPA, State and local regulations for proper disposal/recycle/reclamation.

**Container disposal:** Treat empty containers with extra care. Consult waste contractor.
Section 14: Transport Information

**DOT:** Proper Shipping Name: Not Dangerous Goods

**Hazard Class:** Non-hazardous for shipping

**IMO/IMDG:** No data available

**IATA:** IATA: Non-hazardous for shipping. Consult IATA regulations before shipping.

Section 15: Regulatory Information

**TSCA:** Not Listed -

**SARA**

**SARA 302:** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313:** This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards:** Acute Health Hazard; Chronic Health Hazard

**Right to Know, Massachusetts Right To Know Components:** No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know Components:**

Chlorohydridotris(triphenylphosphine) ruthenium(II) toluene adduct   CAS-No. 217661-36-4

Revision Date

**New Jersey Right To Know Components:**

Chlorohydridotris(triphenylphosphine) ruthenium(II) toluene adduct   CAS-No. 217661-36-4

Revision Date

**California Prop. 65 Components:** This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Section 16: Other Information

<table>
<thead>
<tr>
<th>NFPA Rating</th>
<th>HMIS Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health: 2</td>
<td>Health: 2</td>
</tr>
<tr>
<td>Fire: 0</td>
<td>Fire: 0</td>
</tr>
<tr>
<td>Reactivity: 0</td>
<td>Reactivity: 0</td>
</tr>
<tr>
<td>Personal</td>
<td>Personal</td>
</tr>
<tr>
<td>Protection: 1</td>
<td>Protection: 1</td>
</tr>
</tbody>
</table>

**Disclaimer:** In compliance with the OSHA Hazard communication Standard, 2.9 C.F.R 1910.1200, we are providing you with a Materials Safety Data Sheet (MSDS) for the hazardous material you are purchasing.

It is your responsibility to educate your employees on the safe use of the hazardous material. With this in mind, a copy should be forwarded to the supervisor of the user or to the user themselves, and copy should be retained in your files for future reference.

Colonial Metals, Inc. makes no presentation as to the accuracy of the information in the MSDS. The information is believe to be correct; however, you (the customer), should perform your own investigation and independent verification. If you resell the product, you are responsible to forward the information in the MSDS to your customer.

Colonial Metals, Inc.

**SDS Author:** John Kerchner

**Version Date:** 7/30/2015