Section 1: Company and Product Identification

Product Name: Tricyclohexylphosphine(1,5-cyclooctadiene) (pyridine) Iridium (I) hexafluorophosphate

Product Code: 3048

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

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:
Chemtrec: 800-424-9300
World Wide - Call COLLECT to U.S: 703-527-3887

Section 2: Hazards Identification

Signal Word: Warning

Hazard Category:
Acute tox, oral Cat 5
Skin corrosion/irritation Cat 2
Serious eye damage/eye irritation Cat 3
Acute tox, inh. Cat 4

Hazard Statements:
H303: May be harmful if swallowed
H315: Causes skin irritation
H320: Causes eye irritation
H332: Harmful if inhaled

Precautionary Statements:
P202: Do not handle until all safety precautions have been read and understood
P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking
P264: Wash thoroughly after handling
P280: Wear protective gloves/protective clothing/eye protection/face protection
P308+313: IF exposed or concerned: Get medical advice/attention
P402+404: Store in a dry place. Store in a closed container
P501: Dispose of contents/container in accordance with local/national/international rules.

Hazard Pictograms:

No ingredients are hazardous according to OSHA criteria

Conditions Aggravated By Exposure:
May cause irritation of the respiratory system. Maintain housekeeping and personal hygiene to minimize exposure and prevent sensitization.

Conditions Aggravated By Overexposure:
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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>Tricyclohexylphosphine(1,5-cyclooctadiene) (pyridine) Iridium (I) hexafluorophosphate</td>
<td>Irritant</td>
<td>64536-78-3</td>
<td>99 - 100</td>
</tr>
</tbody>
</table>

Chemical Name: Crabtree's Catalyst
Chemical Family: Organometallic Complex
Chemical Formula: C31H50F6NP2Ir
Section 4: First Aid Measures

General Info: Ensure proper ventilation.

Notable Exposure: Irritation to skin, eyes and areas of contact.

- **If ingested:** Wash out mouth with water provided the victim is conscious. Never give anything by mouth to an unconscious person. Contact a physician immediately.
- **If inhaled:** Remove to fresh air immediately. If victim is not breathing provide artificial respiration. Contact a physician immediately.
- **Eye contact:** Flush for 15 minutes with plenty of water. If discomfort occurs or persists, contact a physician immediately.
- **Skin contact:** Take off immediately all contaminated clothing. Rinse with water thoroughly. Get medical advice if irritation develops or persists.

Additional Info: Observe for any symptoms for several hours after exposure. Follow up with medical attention if symptoms develop.

Section 5: Fire Fighting Measures

General Info: Wear self-contained breathing apparatus for firefighting if necessary.

- **Extinguishing Method / Equipment:**
  - Use water spray, foam, dry chemical, carbon dioxide or medium for primary source.

- **Hazardous Decomposition Info:**
  - Constituents associated with burning / combustion are to be considered toxic. Firefighters should wear self-contained breathing apparatus and full protective gear.

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 protective equipment (SCBA) and clothing during clean-up. Avoid breathing dust. Ventilate area if easy to do so and wash spill site after clean up is complete. Contact local authorities if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

- **Containment:** Collect actively spilling material if safe and easy to do so, avoid generating dust. Collect material and dispose.

- **Cleanup Procedures:** Collect all contaminated media, or other cleanup materials into a waste receptacle. If cleaning surface is necessary, utilize vacuum cleaner, provided adequate ventilation is available.

Section 7: Handling and Storage

- **Safe Handling Precautions:** 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.

- **Recommendations for Storage:** Store in a tightly sealed container in a cool, dry, well ventilated place.

- **Other Precautions:**
  - 0.01 ppm high efficiency particulate respirator/supplied air respirator/self-contained breathing apparatus; 0.2 ppm same as above with full face piece; 1 ppm powdered air purifying respirator with high efficiency filter/type C supplied air respirator operated in pressure demand mode. Store in a sealed container, plastic or plastic liner, in a cool, well ventilated, dry area away from volatile acids.

Section 8: Exposure Control / Personal Protection

- **General / Engineering Controls:**
  - Ventilation: Local Exhaust: Yes
  - Other: Fume Hood
  - Mechanical: Yes

- **Work Clothing:** Protective work clothing which covers skin and prevents exposures. Lab coat/apron, flame and chemical resistant protective clothing, eye wash, safety shower, and hygiene facilities for washing.

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

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

- **Respiratory Protection:** NIOSH approved chemical cartridge respirator for particulates and acid gas or self-contained breathing apparatus with full face shield.

- **Additional Information:** Lab coat/apron, flame and chemical resistant protective clothing, eye wash, safety shower, and hygiene facilities for washing. Do not let product enter drains.
## 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>347°F 175°C</td>
</tr>
<tr>
<td>Color</td>
<td>Orange Crystals</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Molecular Wt.</td>
<td>804.89 g/mol</td>
</tr>
<tr>
<td>Evaporation Rate</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>VOC Content</td>
<td>N/A</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Water Solubility</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>Vapor Pressure</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. Air sensitive

**Decomposition products:** Carbon oxides, nitrogen oxides (NOx), oxides of phosphorus, hydrogen fluoride, iridium oxides.

## Section 11: Toxicological Information

**Likely Routes of Exposure:**
- Eye Contact
- Skin Contact
- Inhalation
- Ingestion - possible, but considered unlikely.

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

## Section 12: Ecological Information

**Aquatic toxicity:** No specific data available. Do not allow large quantities of product to reach water, ground water, water courses or sewer systems.

**Degradation / Mobility info:** No specific data available.

**Bioaccumulative potential:** No specific data available.

## Section 13: Disposal Information

**Product disposal:** Consult Federal EPA, State and local regulations for proper disposal/recycle/reclamation.

**Container disposal:** Treat empty containers with extra care. Consult waste contractor.

**Other considerations:** NOTE: Chemical additions, processing, or otherwise altering this material may make the waste management information presented above incomplete, inaccurate, or otherwise inappropriate.

## Section 14: Transport Information

**DOT:** Considered non-hazardous for transport. Not Dangerous Goods

**IMO/IMDG:** Considered non-hazardous for transport.

**IATA:** Considered non-hazardous for transport.

## Section 15: Regulatory Information

**SARA Section 311/312 Hazards:** Acute Health Hazard

**European Union (EU) Symbol of Danger:** Xi

**Indications of Danger:** Irritant

**Risk Statements:** Irritating to the eyes. Irritating to the respiratory system. Irritating to the skin.

**Safety Statements:** In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.
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 Protection: J</td>
<td></td>
</tr>
</tbody>
</table>

**Disclaimer:** In compliance with the OSHA Hazard communication Standard, 29 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 believed to be correct; however, you (the customer), should preform 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: 9/8/2015