Safety Data Sheet  
29 CFR 1910.1200

Section 1:  Company and Product Identification

Product Name: Ammonium Hexachloroosmate (IV)  
Product Code: 4005

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

Hazard Pictograms:  

Signal Word: Danger

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

Hazard Statements:  
H302: Harmful if swallowed  
H311: Toxic in contact with skin  
H332: Harmful if inhaled  
H315: Causes skin irritation  
H319: Causes serious eye irritation  
H335: May cause respiratory irritation

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  
P261: Avoid breathing dust/fume/gas/mist/vapors/spray  
P264: Wash thoroughly after handling  
P280: Wear protective gloves/protective clothing/eye protection/face protection  
P284: Wear respiratory protection  
P302+352: IF ON SKIN: Wash with soap and water  
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove  
P310: Immediately call a POISON CENTER or doctor/physician

Hazards not otherwise classified:  
Avoid breathing dust, fume, gas, mist, vapors, and spray.
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>AMMONIUM Hexachloroosmate (IV)</td>
<td>Toxic</td>
<td>12125-08-5</td>
<td></td>
</tr>
</tbody>
</table>

Chemical Name: Ammonium Hexachloosmate (IV)  
Chemical Family: Platinum Group Metal  
Chemical Formula: H8Cl6N2Os  
Synonyms: Osmium (IV)-ammonium chloride

Section 4: First Aid Measures

General Info: Ensure proper ventilation.

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

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If ingested: Rinse mouth. Seek immediate medical attention. Clear the airway and administer artificial respiration if not breathing. If swallowed, do not induce vomiting unless directed to do so by medical personnel. CONTACT A PHYSICIAN IMMEDIATELY

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. If victim is not breathing provide artificial respiration. If breathing is difficult give oxygen. Get medical attention immediately.

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do. CONTACT A PHYSICIAN if irritation/discomfort persists.

Skin contact: Take off immediately all contaminated clothing. Rinse with water thoroughly. CONTACT A PHYSICIAN if irritation/discomfort 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: There are no fire or explosion hazards associated with this product

Extinguishing: In case of fire, use water fog, dry chemical, CO2, or “alcohol” foam. Water may be ineffective.

Method / Equipment:

Hazardous: 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:

Containment: Large Spills: Contain actively spilling material if safe and easy to do so, avoid generating dust.

Equipment and Procedures:

Small Spills: Sweep and collect to waste receptacles.

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. Ventilate area and wash spill site after cleanup is complete.

Section 7: Handling and Storage

Safe Handling: Avoid contact with skin and clothing. Avoid creating dust. Avoid contact with eyes. This product is hygroscopic.

Recommendations for Storage:

Store in original vented container.

Other Precautions: Wash thoroughly with soap and water after handling.
Section 8: Exposure Control / Personal Protection

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

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: NIOSH approved chemical cartridge respirator for acid gas and dust/mist/fume or self-contained 
Protection: breathing apparatus with full face shield.

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>338 °F 170 °C</td>
</tr>
<tr>
<td>Freezing Point:</td>
<td>N/A</td>
</tr>
<tr>
<td>Color:</td>
<td>Red Powder</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>439.02</td>
</tr>
<tr>
<td>Odor:</td>
<td>Sharp chlorine like</td>
</tr>
<tr>
<td>Water Solubility:</td>
<td>Soluble</td>
</tr>
<tr>
<td>Evaporation rate:</td>
<td>N/A</td>
</tr>
<tr>
<td>Flash Point:</td>
<td>N/A</td>
</tr>
<tr>
<td>Packing Density:</td>
<td>3.42 g/cm³ @25C (77F)</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 (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. 
Conditions To Avoid (Stability): Exposure to moisture may affect product quality.

Incompatible materials: Strong oxidizing agents
Decomposition products formed under fire conditions - nitrogen oxides, (NOx), Hydrogen Chloride

Section 11: Toxicological Information

General Information: Acute Inhalation Effects: May cause respiratory tract irritation.
Toxicological 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

General information: Product not tested. Toxicity - Aquatic And Terrestrial Plants
Aquatic toxicity: No specific data available. Do not allow large quantities of product to reach water, ground water, water courses or sewer systems.

Section 13: Disposal Information

Product disposal: Consult Federal EPA, State and local regulations for proper disposal/recycle/reclamation. RCRA Information O₃O₄ is a listed EPA Hazardous Waste - P087
Container disposal: Treat empty containers with extra care. Consult waste contractor.
Section 14: Transport Information

DOT: Proper Shipping Name:
Toxic Solid, Corrosive, Inorganic, N.O.S. (Ammonium Hexachloroosmate IV)

Hazard Class:
6.1

Secondary Hazard Class:
8

DOT Identification Number:
3290

DOT Shipping Label:
Toxic Solid, Corrosive, Inorganic, N.O.S. (Ammonium Hexachloroosmate IV)

Packaging Requirements:
Packaging group II - Limited Quantity

Packaging Exceptions
DOT Exempt Box

IMO/IMDG:
UN number: 3290 Class: 6.1 (8) Packing group: II EMS-No: F-A, S-B

Proper shipping name: Toxic Solid, Corrosive, Inorganic, N.O.S. (Ammonium Hexachloroosmate IV)

Marine Pollutant: No

IATA:
UN number: 3290 Class: 6.1 (8) Packing group: II

Proper shipping name: Toxic solid, corrosive, inorganic, n.o.s. (Dipotassium hexachloroosmate

OTHER:
See IATA regulations for Air shipping.

Section 15: Regulatory Information

TSCA: All ingredients of this product are listed or are excluded from listing under the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory

SARA 313 SARA Section 313 Notification:
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 302 Components:
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Canadian DSL: All ingredients of this product comply with the New Substances Notification requirements of the Canadian Environmental Protection Act (CEPA).

European Union (EU) R20/21/22 - Harmful by inhalation, in contact with skin, and if swallowed.

Regulatory Information:
R24/25 - Toxic in contact with skin and if swallowed
S7/9 - Keep container tightly closed and in a well-ventilated place
S24/25 - Avoid contact with skin and eyes

Section 16: Other Information

<table>
<thead>
<tr>
<th>NFP A Rating</th>
<th>HMIS Rating</th>
<th>Precautionary Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health: 2</td>
<td>Health: 2</td>
<td>Toxic and Corrosive</td>
</tr>
<tr>
<td>Fire: 0</td>
<td>Fire: 0</td>
<td></td>
</tr>
<tr>
<td>Reactivity: 0</td>
<td>Reactivity: 0</td>
<td></td>
</tr>
<tr>
<td>Other: TOX</td>
<td>Personal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protection: C</td>
<td></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 believed 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: 11/24/2015