

**Safety Data Sheet**  
**29 CFR 1910.1200**

**Section 1: Company and Product Identification**

**Product Name:** Osmium (VIII) Oxide - 2% Solution

**Product Code:** 4015-2S

**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



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**

GHS06 GHS05 GHS07 BLANK

**Hazard Pictograms:**



**Signal Word:** Danger

**Hazard Category:** Acute tox, oral Cat 5  
 Skin corrosion/irritation Cat 2  
 Serious eye damage/eye irritation Cat 1  
 Acute tox, inh. Cat 3  
 Specific target organ tox, single exp. Cat 1  
 Reproductive tox Cat 2

**Hazard Statements:** H303: May be harmful if swallowed  
 H315: Causes skin irritation  
 H318: Causes serious eye damage  
 H331: Toxic if inhaled  
 H370: Causes damage to organs  
 H361: Suspected of damaging fertility or the unborn child

**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.

**Subchronic (Target Organ Effects)**  
 Eyes and Central Nervous System are target organs.

**Chronic/Carcinogenicity Effects**  
 Laboratory tests have shown mutagenic effects. Reproductive hazard.

**Hazards not otherwise classified:** **Conditions Aggravated By Exposure**  
 Any respiratory condition such as asthma will be aggravated.  
**Conditions Aggravated By Overexposure**  
 Potential kidney damage.

**Section 3: Composition / Information on Ingredients**

Hazardous substance (name)	Hazard Category	CAS#	Weight %
Osmium tetroxide/Osmium(VIII) oxide	Toxic	20816-12-0	2
Water		7732-18-2	98
<b>Synonyms</b> Osmium tetroxide, Osmic acid solution, Osmium(VIII) oxide		<b>Chemical Family:</b> Platinum Group Metal Salts <b>Chemical Formula:</b> OsO <sub>4</sub> in H <sub>2</sub> O	

**Section 4: First Aid Measures**

**General Info:** Ensure proper ventilation.

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

**symptoms:**

**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.

**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:** Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do. Get medical attention if irritation develops or persists.

**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:** OsO<sub>4</sub> is a strong oxidizer and may react explosively with many organic compounds. Emits toxic fumes under fire

**Extinguishing Method / Equipment:** In case of fire, use water fog, dry chemical, CO<sub>2</sub>, or "alcohol" foam.

**Method / Equipment:**

**Hazardous** Constituents associated with burning / combustion are to be considered toxic. Firefighters should

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

**Equipment and Procedures:** Collect material and dispose

**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.

**Section 7: Handling and Storage**

**Safe Handling** Do not handle until all safety precautions have been read and understood. Keep containers tightly

**Precautions:** 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 cool, dry area in a tightly closed product container at 2-8 degrees C and away from sources of ignition or flame.

**Other Precautions:** 0.1 mg.m3 supplied air respirator with a full face piece, any self-contained breathing apparatus with a full face piece. Any chemical cartridge respirator with a high efficiency particulate filter with a full face piece and cartridges providing protection against osmic acid. Any air-purifying full face piece respirator (gas mask) with a chin style or front or back mounted canister providing protection against osmium tetroxide and having a high efficiency particulate filter. 1 mg/m3 any supplied air respirator with a full face piece and operated in a pressure-demand or other positive pressure mode

Emergency or planned entry in unknown concentration or immediately dangerous to life or health conditions. Any self-contained breathing apparatus with full face piece and operated in a pressure-demand or other positive pressure mode. Any self-contained breathing apparatus.

Escape: Any air-purifying full face piece respirator (gas mask) with a chin-style or front or back mounted canister providing protection against osmium tetroxide and having a high efficiency particulate filter. Any appropriate escape type self-contained breathing apparatus.  
LDLH 1mg/m3

**Section 8: Exposure Control / Personal Protection**

**General / Engineering Controls:** Ventilation: Local Exhaust: Yes  
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 Protection:** 0.1 mg/m3 supplied air respirator with a full face piece

**Additional Ingredient(s) - Exposure Limits Information:** Osmium tetroxide/Osmium(VIII) oxide  
ACGIH - TLV-STEL -0.0006 ppm  
OSHA PEL - 8H TWA - 0.002 MG/M3  
ACGIH - TLV -TWA - 0.002 MG/M3

**Section 9: Physical and Chemical Properties**

<b>State:</b> Liquid	<b>Melting Point:</b> 0 °C	<b>Freezing Point:</b> N/A
<b>Color:</b> Colorless to pale yellow	<b>Boiling Point/Range:</b> 100 °C	<b>pH</b> 6-7
<b>Molecular Wt.</b> 254.2	<b>Odor:</b> Sharp chlorine like	<b>Water Solubility:</b> Soluble, 5g OsO4/100 ml
<b>Evaporation rate:</b> N/A	<b>Flash Point:</b> N/A	<b>Part. Coeff (n-octanol/water):</b> N/A
<b>Upper Flam Limits:</b> N/A	<b>Lower Flam Limits:</b> N/A	<b>Vapor Pressure:</b> 63.591 mmHg
<b>VOC Content (lbs/gal):</b> N/A	<b>Viscosity:</b> N/A	<b>Autoignition Temp:</b> N/A

**Section 10: Stability and Reactivity**

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**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) Elevated temperature. Contact with Hydrochloric Acid will cause formation of poisonous chlorine gas.

**Incompatible materials:** Strong reducing agents, organic materials, hydrochloric acid, bases, chlorine gas, and finely powdered metals. Contact with HCL will form poisonous chlorine gas.

**Decomposition products:** Nature of decomposition products not known.

**Section 11: Toxicological Information**

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**General Information:****Toxicological Acute Studies**

**Information (product):** Intraperitoneal  
Rat  
14100 UG/KG  
LD50

**Oral**

Mouse  
162 mg/kg  
LD50

**Intraperitoneal**

Mouse  
13500 UG/KG  
LD50

**Subchronic (Target Organ Effects)**

Kidneys. Male reproductive system. Central nervous system. Eyes.

**Reproductive Effects**

Species: Rat  
Dose: 20336 UG/KG  
Route of Application: Intratesticular  
Exposure Time: (1D MALE)  
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal Effects: Testes, epididymis, sperm duct.

Species: Mouse

Dose: 20336 UG/KG  
Route of Application: Subcutaneous  
Exposure Time: (30D MALE)  
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal Effects: Testes, epididymis, sperm duct.

**Mutagenicity (Genetic Effects)**

Species: Hamster  
Dose: 200 UMOL/L  
Cell Type: Embryo

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

**Toxicological Information (contained substances)**

**Carcinogenicity or mutagenicity:** No data available

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

**Section 12: Ecological Information**

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**General information:** Product not tested.

**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**

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**Product disposal:** Crystals and solutions may be dissolved and/or neutralized in an aqueous solution of sodium or potassium hydroxide (approx. 25%). 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**

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**DOT:** Toxic Liquid, inorganic, n.o.s. **Hazard Class:** 6.1 **ID Number:**3287 **Shipping Label:** Toxic  
**IMO/IMDG:** Same as DOT 49 CFR. Always consult IATA Manual before shipping

**IATA:** Same as DOT 49 CFR. Always consult IATA Manual before shipping

**OTHER:** Inquire for further transport information.

**Comments: Packaging Requirements:** II

**Section 15: Regulatory Information**

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**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 product is subject to SARA Section 313 reporting requirements.

**Ingredient(s) - U.S. Regulatory Information**

Osmium Tetroxide/Osmium Oxide  
RCRA Hazardous Waste

**Canadian DSL:** This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

**European Union (EU) Regulatory Information:** Symbol of Danger: T  
Indication of Danger: Toxic

R: 23/24/25

Risk Statements: Toxic by inhalation, in contact with skin and if swallowed.

S: 7/9-23-36/37-45

Safety Statements: Keep container tightly closed and in well-ventilated place. Do not breathe vapor spray. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**Section 16: Other Information**

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Health: 4	<b><u>HMIS Rating</u></b>
Fire: 0	Health: 4
Reactivity: 1	Fire: 0
Other: TOX	Reactivity: 1
	Personal
	Protection: J

**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.

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