

Safety Data Sheet

29 CFR 1910.1200

Section 1: Company and Product Identification

Product Name: Osmium(VIII) Oxide - 4% Solution

Product Code: 4015-4S

Company: Colonial Metals, Inc.
 Building 20
 505 Blue Ball Road
 Elkton, MD 21921 United States
 Company Contact: EHS Director
 Telephone Number: 410-398-7200
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 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

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.

Conditions Aggravated By Exposure

Any respiratory condition such as asthma will be aggravated.

Conditions Aggravated By Overexposure

Potential kidney damage.

Hazards not otherwise classified:

Section 3: Composition / Information on Ingredients

Hazardous substance (name)	Hazard Category	CAS#	Weight %
Osmium tetroxide/Osmium(VIII) oxide	Toxic	20816-12-0	4
Water		7732-18-2	96
Synonyms Osmium Tetroxide, Osmic Acid Solution, Osmium (VIII) Oxide		Chemical Family: Platinum Group Metal Salts Chemical Formula: OsO4 in H2O	

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: OsO4 is a strong oxidizer and may react explosively with many organic compounds. Emits toxic fumes under fire

Extinguishing In case of fire, use water fog, dry chemical, CO2, 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, Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all

protective equipment and procedures: 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 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

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

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) 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

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

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

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

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

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

Health: 4	<u>HMIS Rating</u>
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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