

MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Material Name: Osmium tetroxide 4% aqueous solution.
Catalogue Number: C011.
Other Names: Osmic acid solution; Osmium oxide; Osmium Tetroxide; Toxic liquid inorganic, n.o.s. (osmium tetroxide 4% solution).
Recommended Use: Used as a fixative for electron microscopy.

Supplier Name: ProSciTech
Street Address: 1/11 Carlton Street, Kirwan, Qld. 4817 Australia
Telephone Number: (07) 4773 9444 - 8:30am – 5:00pm, Monday to Friday (excluding Public Holidays)
Emergency Contact: (07) 4773 9444 - 8:30am – 5:00pm, Monday to Friday (excluding Public Holidays)

SECTION 2 - HAZARDS IDENTIFICATION

Hazard Classification:
 Hazardous according to criteria of Hazardous Substances Information System [HSIS Worksafe Australia].

Hazardous and/or Dangerous Nature:
 HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

Risk Phrases:
 R26/27/28 Very toxic by inhalation, in contact with skin and if swallowed
 R34 Causes burns.

Safety Phrases:
 S1/2 Keep locked up and out of reach of children.
 S7/9 Keep container tightly closed and in a well-ventilated place.
 S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Refer to Section 15 for Poisons Schedule.

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

Pure Substance (Proportion 100%):

Chemical Identity: Osmium tetroxide 4% aqueous solution;
Common Name(s): Osmic acid solution; Osmium oxide; Osmium Tetroxide; Toxic liquid inorganic, n.o.s. (osmium tetroxide 4% solution).
CAS Number): See Below

Mixture Substance:

<i>Ingredients</i>	<i>Cas Number(s)</i>	<i>Proportion (%)</i>
Osmium Tetroxide	20816-12-0	4
Water	7732-18-5	96

SECTION 4 - FIRST AID MEASURES

Ingestion: If swallowed give large quantities of water and induce vomiting unless person is unconscious. Get medical attention immediately.

Inhalation: Remove to fresh air immediately. If discomfort occurs or persists, seek medical attention. If breathing has stopped, perform artificial respiration and get immediate medical aid.

Eye Contact: Flush for 15 minutes with plenty of water. If discomfort occurs or persists, seek medical attention.

Skin Contact: Flush area for 15 minutes with water and wash with soap and water. If discomfort occurs or persists seek medical attention. Remove contaminated clothing and shoes and wash before reuse.

First Aid Facilities: Eyebath/eyewash, Safety shower & general washroom facilities.

Medical Attention & Special Treatment:
 None listed.

Additional Information:

This product is highly toxic. Contact with combustible material may cause fires. Very toxic by inhalation, in contact with skin, and if swallowed. May cause sensitization by inhalation and skin contact. Conditions aggravated by overexposure: potential kidney damage chronic health hazards: laboratory tests have shown mutagenic effects. Sub chronic (target organ effects)-eyes and central nervous system are target organs. Medical conditions generally aggravated by exposure: any respiratory condition such as asthma will be aggravated.

SECTION 5 - FIRE FIGHTING MEASURES

Suitable Extinguishing Media:

Water spray, carbon dioxide, and dry chemical.

Hazards from Combustion Products:

Oso4 is a strong oxidizer and may react explosively with many organic compounds. No known hazardous decomposition or by-products.

Precautions for Fire Fighters:

Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing.

Hazchem Code: 4WE

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Emergency Procedures:

Not available.

Containment & Clean up:

Clean up immediately using recommended personal protection. Remove material to a fume hood or other well ventilated area. Person protected with self-contained breathing apparatus with full face piece.

SECTION 7 - HANDLING & STORAGE

Precautions for Safe Handling:

If eyes are exposed to vapour over a short period of time, night vision will be affected for about one evening. One will notice coloured halos around lights. Store sealed vials in a dry cool area (refrigerator) with sufficient packaging to avoid accidental breakage. Use compatible chemical-resistant gloves. Wash hands thoroughly after handling.

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.

Section 7 notes: escape- any air purifying full face piece respirator (gas mask) with 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.

Precautions for Safe Storage:

Do not store directly on ground. Do not store near combustible materials. Keep container upright. Store in dry place.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards: Osmium Tetroxide, Cas 20816-12-0:
TWA 0.0002ppm; TWA 0.0016mg/m3
STEL 0.0006ppm; STEL 0.0047mg/m3

Biological Limit Values: No biological limit allocated.

Engineering Controls:

Use local or mechanical exhaust. Recommended to use only under a fume hood in a well ventilated area.

Personal Protective Equipment:

Respiratory Protection: 0.1mg/m3 supplied air respirator with a full face piece.

Eye Protection: ANSI approved safety glasses/goggles or full face piece with respirator Skin Protection: rubber/neoprene (use compatible chemical-resistant gloves)

Other Protective Clothing Or Equipment: lab coat/apron, flame and chemical resistant protective clothing, eye wash, safety shower, and hygiene facilities for washing.

Work hygienic practices: wash thoroughly after handling. Wash thoroughly with soap and water after every handling.

Exposure Guidelines: use chemical goggles and face shield

SECTION 9 - PHYSICAL & CHEMICAL PROPERTIES

Appearance:	Colourless to pale yellow solution.
Odour:	Sharp chlorine like odour.
pH:	6-7
Vapour pressure (mm of Hg at °C):	11 TORR at 270°C
Vapour density:	Not available.
Boiling point/range (°C):	1300°C
Freezing/melting point (°C):	350°C
Solubility:	5g/100ml in water.
Specific gravity or density:	(H ₂ O = 1): 1.016
Flash Point:	Not available.
Flammable (explosive) limits:	Not available.
Ignition temperature:	Not available.
Additional Information:	

SECTION 10 - STABILITY AND REACTIVITY

Chemical stability:	Stable under normal conditions of use.
Conditions to avoid:	Elevated temperature. Incompatible materials.
Incompatible Materials:	Elevated temperature. Contact with hydrochloric acid will cause formation of poisonous chlorine gas.
Hazardous Decomposition Products:	None known.
Hazardous Reactions:	Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION**Exposure and Health Effects:**

This product is highly toxic. Contact with combustible material may cause fires. Very toxic by inhalation, in contact with skin, and if swallowed. May cause sensitization by inhalation and skin contact. Conditions aggravated by overexposure: lacrimation, visual disturbance, conjunctivitis, headache, potential damage to corneal damage, coughing, shortness of breath, potential kidney damage.

Chronic health hazards: laboratory tests have shown mutagenic effects.

Subchronic (target organ effects)-eyes and central nervous system are target organs.

Medical conditions generally aggravated by exposure: any respiratory condition such as asthma will be aggravated.

Ingestion:

Irritation, cough, dyspnea, death

Inhalation:

Coughing, shortness of breath, unconsciousness, could cause tracheitis, bronchitis, bronchial spasm which may lead to inflammatory lesions of the lung. May cause sensitization by inhalation.

Eye Contact:

Irritation, lacrimation, visual disturbance, conjunctivitis, headache potential damage to cornea.

Skin Contact:

Dermatitis, possible skin discoloration (green or black). May cause sensitization by skin contact.

Human/Animal data: No data available.

Carcinogenic Category: No data available to classify Carcinogenic Category.

Other Carcinogenic Not available.

Information:**SECTION 12 – ECOLOGICAL INFORMATION**

Ecotoxicity:	Not available.
Persistence and degradability:	Not available.
Mobility:	Not available.
Additional Information:	Not available.

SECTION 13 - DISPOSAL CONSIDERATIONS**Disposal Methods:**

Crystals and solutions may be dissolved and or neutralized in an aqueous solution of sodium or potassium hydroxide (approx. 25%). Consult federal, state and local regulations for proper disposal/recycle/reclamation may make the waste management info presented above incomplete, inaccurate, or otherwise inappropriate.

Special Precautions/Additional Informational:

Not available.

SECTION 14 - TRANSPORT INFORMATION

UN Number: UN3287
UN Proper Shipping Name: Toxic liquid inorganic, n.o.s. (osmium tetroxide 4% solution)
Class and Subsidiary risk: 6.1
Packing Group: III
Special Precautions for User: Not available.
Hazchem Code: 4WE

SECTION 15 - REGULATORY INFORMATION

Poison Schedule Number: None Allocated.

SECTION 16 - OTHER INFORMATION

Date of preparation of MSDS: October 10

Comments:

List of Publications referenced when creating this MSDS;

- Hazardous Substances Information System Consolidated Lists: Safe Work Australia.
- APPROVED CRITERIA FOR CLASSIFYING HAZARDOUS SUBSTANCES [NOHSC:1008(2004)] 3rd Edition: National Occupational Health and Safety Commission.
- Dangerous Goods - Initial Emergency Response Guide (SAA/SNZ HB76:1997).
- IATA Dangerous Goods Regulations.
- Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)].
- Australia Standard for the Uniform Scheduling of Drugs and Poisons [SUSPD] (Australian Government Department of Health and Ageing).

This Material Safety Data Sheet (MSDS) has been prepared in compliance with the National code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC:2011(2003)]. It is the user's responsibility to determine the suitability of this information for adoption of necessary safety precautions. The information published in this MSDS has been compiled from the publications listed in Section 16: to the best of our ability and knowledge these publications are considered accurate. We reserve the right to revise Material Safety Data Sheets as new information becomes available. Copies may be made for non-profit use.

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