

SAFETY DATA SHEET

OSMIUM TETROXIDE

1. IDENTIFICATION

Product Identifiers

Product Name: Osmium tetroxide
Other Names: Osmic acid; Osmic acid anhydride; Osmium oxide.
Product No.(s): C010; C012.
EINECS No.: 244-058-7
CAS No.: 20816-12-0

Recommended use of the chemical and restriction on use:

Used as a fixative for electron microscopy, use only in laboratory.

Company Details:

ProSciTech Pty Ltd
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2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Acute toxicity: Oral category 1
Acute toxicity: Dermal category 1
Acute toxicity: Inhalation category 1 (dusts, mists, vapours)

Label Elements:

(Acute Toxicity)

Signal Word: Danger

Hazard Statement(s):

H300 - Fatal if swallowed.
H310 - Fatal in contact with skin.
H330 - Fatal if inhaled.

Precautionary Statement(s):

P264 - Wash with soap and water thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P301+P310 - **IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.**
P321 - Specific treatment, seek immediate medical assistance.
P330 - Rinse Mouth.
P405 - **Store locked up.**
P501 - Dispose of contents/container in accordance with your specific local/state/national regulations.

Primary route(s) of entry:

Inhalation, ingestion, skin and/or eye contact.

Human Health

Inhalation: May be fatal if inhaled, causes severe irritation to respiratory tract.

Ingestion: May be fatal if swallowed.

Eyes: Causes severe irritation to eyes.

Skin: Causes severe irritation to skin.

Environment: This substance may be hazardous to the environment; special attention should be given to crustaceans.

Other Hazards: None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	Cas No.	Content	Classification
Osmium tetroxide	20816-12-0	100%	Acute toxicity: Oral category 1 Acute toxicity: Dermal category 1 Acute toxicity: Inhalation category 1

4. FIRST AID MEASURES

Ingestion

Rinse mouth. Give nothing to drink. Rest. Refer for medical attention.

Inhalation:

Fresh air, rest. Half-upright position. Artificial respiration if indicated. Refer for medical attention.

Skin Contact:

First rinse with plenty of water, then remove contaminated clothes and rinse again. Refer for medical attention.

Eye Contact:

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

Other Information:

Begins to sublime and distil well below boiling point. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential. Immediate administration of an appropriate spray, by a doctor or a person authorized by him/her, should be considered. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT take working clothes home. Rinse contaminated clothes (fire hazard) with plenty of water.

5. FIREFIGHTING MEASURES

Suitable extinguishing equipment

SMALL FIRE:

In case of a fire in the surrounding area, all extinguishing agents allowed.

LARGE FIRE:

In case of a fire in the surrounding area, all extinguishing agents allowed.

HAZCHEM: 3WE

Special protective equipment and precautions for fire fighters

In event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full apparatus with full face piece operated in the pressure demand or other positive pressure mode.

Other Information

NO CONTACT with flammable substances. Risk of fire and explosion when mixed with combustible substances. Osmium tetroxide is a strong oxidizer and may react explosively with many organic compounds. Risk of fire and explosion when mixed with combustible substances. No contact with flammable substances. Not combustible but enhances combustion of other substances. When heated to decomposition, emits highly toxic fumes of osmium. Begins to sublime below boiling point, contact with other materials may cause fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Ventilate the area and wear appropriate protective equipment to prevent contact with material (refer to Section 8) - extra personal protection: complete protective clothing including self-contained breathing apparatus may be required.

Environmental precautions

Do not let this chemical enter the environment, drains or water systems.

Methods and materials for containment and clean up

Sweep spilled substance into containers. If appropriate, moisten first to prevent dusting then remove to safe place. DO NOT absorb in saw-dust or other combustible material.

Other information

Evacuate danger area! Consult an expert! Ventilation. Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting then remove to safe place. Do NOT absorb in saw-dust or other combustible absorbents. Do NOT let this chemical enter the environment (extra personal protection: complete protective clothing including self-contained breathing apparatus).

7. HANDLING AND STORAGE

Precautions for safe handling

Do not eat, drink, or smoke during work. Wash hands before eating. Wear appropriate protective equipment while handling to prevent contact with the material. Wash protective equipment thoroughly after handling. Work hygienic practices: Wash thoroughly with soap and water after every handling.

Conditions for safe storage

Keep locked up Keep away from heat. Keep away from sources of ignition. Keep away from combustible material. Keep container tightly closed. Keep in a cool, well-ventilated place. Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room.

Other information

{here}

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Standards

Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³
Osmium tetroxide (Cas No.: 20816-12-0)	0.0002	0.002	0.006	0.0006

Engineering controls

Local exhaust required in handling area. Mechanical exhaust is desirable to insure concentration of material below TWA levels. Use material under a fume hood. Provide an eye wash, safety shower, and hygiene facilities for washing.

Personal protective equipment:

Eye and face protection

ANSI approved safety glasses/goggles or full face piece with respirator.

Skin protection

Rubber/neoprene (use compatible chemical-resistant gloves).

Body Protection

Lab coat/apron, flame and chemical resistant protective clothing,

Respiratory protection

Use a 0.1mg/m³ supplied air respirator with a full face piece.

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance:	Colourless, crystalline solid or pale-yellow mass
Odour:	Unpleasant, acrid, chlorine-like odour.
pH:	Not available.
Vapour pressure:	kPa at 27°C: 1.5
Vapour density:	Air = 1: 8.8
Boiling point:	130°C
Melting point:	42.25°C
Solubility:	6% at 25°C in water
Specific gravity or density:	H ₂ O = 1: 5.10
Flash Point:	Not available.
Flammable (explosive) limits:	Not available.
Ignition temperature:	Not available.
Formula:	OsO ₄
Molecular Mass:	254.2

10. STABILITY AND REACTIVITY

Reactivity

Begins to sublime below Boiling Point. Contact with other materials may cause fire.

Chemical stability

Stable under normal conditions of use.

Possibility of hazardous reactions

The substance decomposes on heating producing fumes of osmium.

It's a strong oxidant and reacts with combustible and reducing materials.

Reacts with hydrochloric acid to form toxic chlorine gas. Forms unstable compounds with alkalis.

Not combustible but enhances combustion of other substances.

Conditions to avoid

Contact with incompatible materials.

Incompatible materials

Hydrochloric acid; easily oxidised organic materials; Combustible material; HCL; and oxidised agents.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

May be fatal if swallowed or inhaled. Causes severe irritation to eyes, skin and respiratory tract. Potential kidney damage.

Acute effects

Tear drawing. The substance is corrosive to the eyes, the skin, and the respiratory tract. Inhalation of this substance may cause lung oedema (see Notes). Exposure to high concentrations may result in death. The effects may be delayed. Medical observation is indicated.

Eye contact

Redness. Pain. Blurred vision. Loss of vision. Severe deep burns.

Skin contact

Redness. Skin burns. Pain. Skin discoloration. Blisters.

Ingestion

Abdominal cramps. Burning sensation. Shock or collapse. (See Inhalation).

Inhalation

Burning sensation. Cough. Headache. Wheezing. Shortness of breath. Visual disturbances. Symptoms may be delayed. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential. Immediate administration of an appropriate spray, by a doctor or a person authorized by him/her, should be considered. The odour warning when the exposure limit value is exceeded is insufficient.

Chronic effects

Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the kidneys.

Toxicity and irritation

Osmium tetroxide: ORAL (LD50): Acute: 162 mg/kg [Mouse].

12. ECOLOGICAL INFORMATION

Ecotoxicity

This substance may be hazardous to the environment; special attention should be given to crustacea.

Persistence and degradability

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise. The products of degradation are as toxic as the original product.

Bioaccumulative potential

No data available.

Other adverse effects

No data available.

13. DISPOSAL CONSIDERATIONS

General information

Consult Federal, State and Local regulations for proper disposal/recycle/reclamation note: chemical additions, processing, or otherwise altering this material may make the waste management information presented above incomplete, inaccurate, or otherwise inappropriate.

14. TRANSPORT INFORMATION



ADG label required: 6.1 Toxic

HAZCHEM: 3WE

UN number:	UN2471
Proper shipping name:	Osmium tetroxide
Transport hazard class:	6.1
Packing group:	PG I
Environmental hazard:	Yes
Special precautions for users:	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Severe marine pollutant.
Additional information:	None known.

15. REGULATORY INFORMATION

Poisons Schedule Number: Not classified according to the Australia Standard for the Uniform Scheduling of Drugs and Poisons [SUSPD] 2012

16. OTHER INFORMATION

SDS preparation date: 21/08/2012

Comments:

List of Publications referenced when creating this SDS;

- 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 Safety Data Sheet (SDS) has been prepared in compliance with the Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice 2011. It is the user's responsibility to determine the suitability of this information for adoption of necessary safety precautions. The information published in this SDS 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 Safety Data Sheets as new information becomes available. Copies may be made for non-profit use. ... End of SDS ...