

## Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

### Product Identifier:

**Identification as on the label/Trade name:** Osmium, Enriched Osmium.

**Molecular weight:** 190.2

**Chemical formula:** Os

**Synonyms:** Metallic Osmium.

### Details of the supplier of the Safety Data Sheet:

Neonest AB  
Storgatan 70C, Solna  
SE-17152  
Sweden

### Contact details:

+46-76-219-9731

### 24-hour Emergency Contact:

Swedish Poisons Centre  
Phone: 112 - Ask for Poisons Information, 112 – begär Giftinformation.

### Other International Contacts:

CHEMTREC 24-hour: +1-703-741-5500 (US + Worldwide)  
NHS: 111 (UK)  
Charite: +49 30 450 531 000 (Netherlands)  
INTCF: +34 917689800 (Spain)  
CapTv: +33 1 40 05 48 48 (France)

## Section 2: Hazards Identification

### Classification of the substances or mixture:

**The mixture is classified according to:** Regulation EC 1272/2008 [EU-GHS/CLP]

### **Hazard classes/Hazard categories:**

Flammable Solid (Category 1)  
Skin Irritant (Category 2)  
Eye Damage (Category 1)  
STOT SE (Category 3)

### **Hazard statement:**

H228  
H315  
H318  
H335

### Label elements:

**Hazard pictograms:**



**Signal Words:** Danger.

**Hazard Statements:**

H228 Flammable solid.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

**Precautionary Statements:**

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P261 Avoid breathing dust

P280 Wear protective gloves/protective clothing.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/national regulations.

**Other hazards:** None known.

### Section 3: Composition/Information on Ingredients

**Substance/Mixture:** Substance.

**Ingredients:**

Substance name (IUPAC/EC)	CAS-No.	Molecular weight	Concentration % by weight	Classification	
	EC-No.			EC1272/2008	
Osmium	7440-04-2	190.2	>99%	Flam. Sol. 2	H228
	231-114-0			Skin Irrit. 2	H315
				Eye Dam. 1	H318
				STOT SE 3	H335

For explanation of abbreviations see Section 16.

### Section 4: First-Aid Measures

**Description of first aid measures:**

**In case of inhalation:** If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

**In case of skin contact:** Immediately wash skin with soap and copious amounts of water.

**In case of eye contact:** Contamination of the eyes should be treated by immediate and prolonged irrigation with copious amounts of water.

**In case of ingestion:** If swallowed, wash out mouth with water, provided person is conscious. Call a physician.

**Most important symptoms and effects, both acute and delayed:**

**Inhalation:** Irritating to mucous membranes and upper respiratory tract; may cause asthmatic condition, bronchitis.

**Eyes:** Causes severe eye irritation, ocular disturbances, conjunctivitis; may cause blindness.

**Skin contact:** Causes irritation, dermatitis, ulceration of the skin.

**Ingestion:** May cause gastrointestinal irritation.

**Indication of any immediate medical attention and special treatment needed:** Treat symptomatically. Show this safety data sheet to a physician or emergency room.

## Section 5: Fire-Fighting Measures

**Extinguisher media:**

**Suitable extinguisher media:** Flammable solid. If involved in a fire, do not use water, carbon dioxide or halogenated extinguishers. Use dry chemical extinguishing agents, dry sand or dry ground dolomite.

**Unsuitable extinguishing media:** None known.

**Special hazards arising from the mixture:** Emits toxic fumes under fire conditions.

**Advice for fire-fighters:** Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

**Further information:** Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

## Section 6: Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:**

**Personal precautions:** Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.

**Environmental precautions:** Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. Local authorities should be advised if significant spillages cannot be contained.

**Methods for containment and cleaning up:**

**Methods for cleaning up:** Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

**Reference to other sections:**

Treat recovered material as described in the section "Disposal considerations".

## Section 7: Handling and Storage

**Precautions for safe handling:**

**Advice on safe handling:** Avoid contact and inhalation.

**Hygiene measures:** Do not eat, drink or smoke when using this product.

**Conditions for safe storage, including incompatibilities:**

**Requirements for storage areas and containers:** Keep tightly closed. Keep away from heat, sparks and open flame. Store in a cool, dry place.

## Section 8: Exposure Controls/Personal Protection

### Control parameters:

#### Occupational exposure limits:

Country	Source/Type	Value
Poland	NDS	4 mg/m <sup>3</sup>
Poland	NDSch	10 mg/m <sup>3</sup>
Poland	NDSP	-

### Exposure controls:

**Appropriate engineering controls:** Use only in a chemical fume hood. Provide safety shower and eye bath.

### Individual protection measures, such as personal protective equipment:

**Eye/face protection:** Chemical safety goggles.

**Hand protection:** Use chemical resistant gloves. Examples of preferred glove barrier materials include: Butyl rubber, Neoprene, Nitrile/butadiene rubber, Polyethylene, Ethyl vinyl alcohol laminate, polyvinyl alcohol, Polyvinyl chloride.

**Body protection:** Wear protective clothing.

**Respiratory protection:** Wear appropriate government-approved respirator.

## Section 9: Physical and Chemical Properties

### Information on basic physical and chemical properties

**Appearance (form):** Solid.

**Colour:** Bluish-white.

**Odour:** Odourless.

**Odour threshold:** No data available.

**Molecular Weight:** 190.2

**pH (concentration):** No data available.

**Melting point/range (°C):** 3045 °C

**Boiling point/range (°C):** 5027 °C

**Freezing point (°C):** No data available.

**Flash point (°C):** No data available.

**Evaporation rate:** No data available.

**Flammability (solid, gas):** No data available.

**Ignition temperature (°C):** No data available.

**Upper/lower flammability/explosive limits:** No data available.

**Vapour pressure (20 °C):** 0

**Vapour density:** No data available.

**Relative density (25 °C):** 22.6 gm/cc

**Water solubility (g/L) at 20 °C:** Insoluble.

**n-Octanol/Water partition coefficient:** No data available.

**Auto-ignition temperature:** No data available.

**Decomposition temperature:** No data available.

**Viscosity, dynamic (mPa s):** No data available.

**Explosive properties:** The substance or mixture is not classified as explosive.

**Oxidising properties:** The substance or mixture is not classified as oxidizing.

## Section 10: Stability and Reactivity

**Reactivity:** No dangerous reaction known under conditions of normal use.

**Chemical stability:** Stable under normal conditions.

**Possibility of hazardous reactions:** No dangerous reaction known under conditions of normal use.

**Conditions to avoid:** Extreme heat.

**Incompatible materials:** ClF<sub>3</sub>, OF<sub>2</sub>, halogens, phosphorus, oxygen, oxidizers, acids, organic solvents, NH<sub>4</sub>

**Hazardous decomposition products:** Oxides of osmium. Osmium dust reacts violently with ClF<sub>3</sub> and OF<sub>2</sub>. On heating in air, it gives off poisonous fumes of osmium tetroxide.

## Section 11: Toxicological Information

### Information on toxicological effects:

#### **Acute Effects**

Inhalation: Irritating to mucous membranes and upper respiratory tract; may cause asthmatic condition, bronchitis.

Ingestion: May cause gastrointestinal irritation; no other effects known.

Skin: Causes irritation, dermatitis, ulceration of the skin.

Eye: Causes severe eye irritation, ocular disturbances, conjunctivitis; may cause blindness.

#### **Chronic Effects**

Inhalation: Bronchitis

Ingestion: None known

Skin: Dermatitis

Eye: May cause blindness.

### Classification according to GHS (1272/2008/EG, CLP)

#### **Skin corrosion/irritation:**

Causes skin irritation.

#### **Serious eye damage/eye irritation:**

Causes serious eye damage.

#### **Respiratory or skin sensitisation:**

Not classified based on available information.

#### **Germ cell mutagenicity:**

Not classified based on available information.

#### **Carcinogenicity:**

Not classified based on available information.

#### **Reproductive toxicity:**

Not classified based on available information.

#### **Specific target organ toxicity – single exposure (STOT):**

May cause respiratory irritation.

#### **Specific target organ toxicity (STOT) – repeated exposure:**

Not classified based on available information.

#### **Aspiration toxicity:**

Not classified based on available information.

## Section 12: Ecological Information

**Toxicity:** No data available.

**Persistence and degradability:** No data available.  
**Bioaccumulative potential:** No data available.  
**Mobility in soil:** No data available.  
**Results of PBT& vPvB assessment:** Not relevant.  
**Other adverse effects:** No data available.

### Section 13: Disposal Considerations

**Waste treatment methods:** Material in the elemental state should be recovered for reuse or recycling. Observe all federal, state and local environmental regulations.

### Section 14: Transport Information

**DOT:**

**Proper Shipping Name:** METAL POWDERS, FLAMMABLE, N.O.S.  
**Hazard Class:** 4.1  
**UN Number:** 3089  
**Packing Group:** II  
**Hazard Label:**



**IATA:**

**Proper Shipping Name:** METAL POWDERS, FLAMMABLE, N.O.S.  
**Hazard Class:** 4.1  
**UN Number:** 3089  
**Packing Group:** II

### Section 15: Regulatory Information

**EU regulations:**

**Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended**  
Not listed.

**Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I**  
Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended**  
Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended**  
Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended**

Not listed.

**Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry**

Not listed.

**Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA**

Not listed.

**Authorisations:**

**Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended**

Not listed.

**Restrictions on use:**

**Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use**

Not regulated.

**Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended**

Not listed.

**Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work**

Not regulated.

**Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding.**

Not regulated.

**Other EU regulations:**

**Directive 2012/18/EU on major accident hazards involving dangerous substances**

Not listed.

**Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.**

Always applicable.

**Directive 94/33/EC on the protection of young people at work**

Not listed.

**Other regulations:** The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

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

**SARA 313 Components:** 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 311/312 Hazards:** Fire Hazard, Acute Health Hazards.

**Massachusetts Right to Know Components:** No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right to Know Components:** CAS No. 7440-04-2

**New Jersey Right to Know Components:** CAS No. 7440-04-2

**California Prop. 65 Components:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

**National regulations:** Follow national regulation for work with chemical agents.

**Chemical safety assessment:** No Chemical Safety Assessment has been carried out.

## Section 16: Other Information

### List of abbreviations:

ACGIH American Conference of Governmental Industrial Hygienists  
ADR European Agreement Concerning the International Carriage of Dangerous Goods by Road  
ALARA As Low As Is Reasonably Achievable  
AMU Atomic Mass Unit  
ANSI American National Standards Institute  
BLS Basic Life Support  
CAM Continuous Air Monitor  
CAS Chemical Abstracts Service (division of the American Chemical Society)  
CEN European Committee for Standardization  
CERCLA Comprehensive Environmental Response Compensation and Liability Act  
CLP Classification, Labelling and Packaging (European Union)  
CPR Controlled Products Regulations (Canada)  
CWA Clean Water Act (USA)  
DAC Derived Air Concentration (USA)  
DOE United States Department of Energy (USA)  
DOT United States Department of Transportation (USA)  
DSL Domestic Substances List (Canada)  
EC50 Half Maximal Effective Concentration  
EINECS European Inventory of Existing Commercial Chemical Substances  
EHS Environmentally Hazardous Substance  
ELINCS European List of Notified Chemical Substances  
EMS Emergency Response Procedures for Ships Carrying Dangerous Goods  
EPA Environmental Protection Agency (USA)  
EPCRA Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986  
GHS Globally Harmonized System  
HMIS Hazardous Materials Identification System (USA)  
IARC International Agency for Research on Cancer  
IATA International Air Transport Association  
IBC Intermediate Bulk Containers  
ICAO International Civil Aviation Organization  
IDLH Immediately Dangerous to Life or Health  
IMDG International Maritime Code for Dangerous Goods  
LC50 Lethal concentration, 50 percent  
LD50 Lethal dose, 50 percent  
LDLO Lethal Dose Low  
LOEC Lowest-Observed-Effective Concentration  
MARPOL International Convention for the Prevention of Pollution from Ships  
MSHA Mine Safety and Health Administration (USA)  
NCRP National Council on Radiation Protection & Measurements (USA)  
NDSL Non-Domestic Substances List (Canada)  
NFPA National Fire Protection Association (USA)  
NIOSH National Institute for Occupational Safety and Health (USA)



NOEC No Observed Effect Concentration  
N.O.S. Not Otherwise Specified  
NRC Nuclear Regulatory Commission (USA)  
NTP National Toxicology Program (USA)  
OSHA Occupational Safety and Health Administration (USA)  
PBT Persistent Bioaccumulative and Toxic Chemical  
PEL Permissible Exposure Limit  
PIH Poisonous by Inhalation Hazard  
RCRA Resource Conservation and Recovery Act (USA)  
RCT Radiation Control Technician  
REACH Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)  
RID Regulations Concerning the International Transport of Dangerous Goods by Rail  
RTECS Registry of Toxic Effects of Chemical Substances  
SARA Superfund Amendments and Reauthorization Act (USA)  
TDG Transportation of Dangerous Goods (Canada)  
TIH Toxic by Inhalation Hazard  
TLV Threshold Limit Value  
TPQ Threshold Planning Quantity  
TSCA Toxic Substances Control Act  
TWA Time Weighted Average  
UN United Nations (Number)  
VOC Volatile Organic Compound  
vPvB Very Persistent Very Bioaccumulative Chemical  
WGK Wassergefährdungsklassen (Germany: Water Hazard Classes)  
WHMIS Workplace Hazardous Materials Information System

**References:**

Not available.

**Full text of any H-statements not written out in full under Sections 2 to 15:**

H228 Flammable solid.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

**Revision information:**

None.

**Training information:**

Follow training instructions when handling this material.

**Further Information:**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.