

Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 23.09.2024

Version number 6

Revision: 23.09.2024

SECTION 1: Identification of the substance/mixture and of the company/undertaking

· **1.1 Product identifier**

· **Trade name:** Osmium tetroxide



· **Article number:** 31251

· **CAS Number:**

20816-12-0

· **EC number:**

244-058-7

· **Index number:**

076-001-00-5

· **1.2 Relevant identified uses of the substance or mixture and uses advised against**

No further relevant information available.

· **Application of the substance / the mixture:** Laboratory chemicals

· **1.3 Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

SERVA Electrophoresis GmbH

Carl-Benz-Str. 7

D-69115 Heidelberg

Tel.: +49 6221 13840-0

FAX: +49 6221 13840-10

msds.info@serva.de

· **Information department:** Product Safety Department Tel.: +49 6221 13840-35

· **1.4 Emergency telephone number:**

Emergency medical information in case of poisoning

Poison Information Centre Mainz-Tel: +49 (0) 6131 19240

(Counselling in German and English)

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**

· **Classification according to Regulation (EC) No 1272/2008:**



GHS06

Acute Tox. 2 H300 Fatal if swallowed.

Acute Tox. 1 H310 Fatal in contact with skin.

Acute Tox. 2 H330 Fatal if inhaled.



GHS05

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

· **2.2 Label elements**

· **Labelling according to Regulation (EC) No 1272/2008:**

The substance is classified and labelled according to the GB CLP regulation.

· **Hazard pictograms:** GHS05, GHS06

· **Signal word:** Danger

· **Hazard statements:**

H300+H310+H330 Fatal if swallowed, in contact with skin or if inhaled.

H314 Causes severe skin burns and eye damage.

(Contd. on page 2)

GB

Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 23.09.2024

Version number 6

Revision: 23.09.2024

Trade name: Osmium tetroxide

(Contd. of page 1)

· Precautionary statements

- P264 Wash thoroughly after handling.
 P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
 P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
 P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P320 Specific treatment is urgent (see on this label).
 P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

· 2.3 Other hazards**· Results of PBT and vPvB assessment:**

- **PBT:** PBT - Assessment not available.
- **vPvB:** vPvB - Assessment not available.
- **Determination of endocrine-disrupting properties** No further relevant information available.

SECTION 3: Composition/information on ingredients

- **3.1 Substances**
- **CAS No. Description:**
20816-12-0 osmium tetroxide
- **Identification number(s):**
- **EC number:** 244-058-7
- **Index number:** 076-001-00-5
- **Description:**
- **Empirical formula:** Os O₄
- **MW:** 254.2

SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information:**
Remove breathing apparatus only after contaminated clothing have been completely removed.
- **After inhalation:** Supply fresh air and to be sure call for a doctor.
- **After skin contact:**
Wash off immediately with plenty of soap and water; rinse thoroughly; seek medical attention.
- **After eye contact:**
Rinse opened eye for several minutes with running water. Remove contact lenses if possible and continue rinsing. Consult an ophthalmologist immediately.
- **After swallowing:**
Do not induce vomiting!
Drink copious amounts of water and provide fresh air. Call for doctor immediately.
- **4.2 Most important symptoms and effects, both acute and delayed**
Gastric or intestinal disorders.
Coughing
Breathing difficulty
- **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

(Contd. on page 3)

Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 23.09.2024

Version number 6

Revision: 23.09.2024

Trade name: *Osmium tetroxide*

(Contd. of page 2)

- **5.2 Special hazards arising from the substance or mixture:**
During heating or in case of fire poisonous gases are produced.
- **5.3 Advice for firefighters**
- **Protective equipment:**
*Wear self-contained breathing apparatus.
Wear fully protective suit.*
- **Additional information**
*Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
Collect contaminated fire fighting water separately. It must not enter the sewage system.*

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
*Wear protective clothing.
Ensure adequate ventilation
Avoid formation of dust.
Do not inhale dusts.
Avoid contact with eyes and skin.*
- **6.2 Environmental precautions:** *Do not allow to enter sewers/ surface or ground water.*
- **6.3 Methods and material for containment and cleaning up**
*Dispose contaminated material as waste according to section 13.
Pick up mechanically.*
- **6.4 Reference to other sections**
*See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.*

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling:**
*Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of dust.*
- **Information about protection against explosions and fires:** *No special measures required.*
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** *No special requirements.*
- **Information about storage in one common storage facility:**
*Store away from flammable substances.
Store away from oxidising agents.*
- **Further information about storage conditions:**
*Store under lock and key and with access restricted to technical experts or their assistants only.
Store containers tightly closed and dry.*
- **7.3 Specific end use(s):** *No further relevant information available.*

SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**

· **Components with limit values that require monitoring at the workplace:**

20816-12-0 osmium tetroxide (80-100%)

WEL	Short-term value: 0.006 mg/m ³ , 0.0006 ppm Long-term value: 0.002 mg/m ³ , 0.0002 ppm (as Os)
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(Contd. on page 4)

GB

Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 23.09.2024

Version number 6

Revision: 23.09.2024

Trade name: Osmium tetroxide

(Contd. of page 3)

- **Additional information:** *The lists that were valid during the creation were used as basis.*
- **8.2 Exposure controls**
- **Appropriate engineering controls:** *No further data; see section 7.*
- **Individual protection measures, such as personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
- **Breathing equipment:**
Short term filter device:
Filter P3.
- **Hand protection:**
Neoprene gloves
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves:**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
- **Penetration time of glove material:**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**
Chloroprene rubber, CR
Nitrile rubber, NBR
- **Eye/face protection:** *Safety glasses*
- **Body protection:** *Protective work clothing.*

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**
- **General Information:**
- **Physical state:** *Solid.*
- **Colour:** *yellow to greenish*
- **Odour:** *Pungent*
- **Odour threshold:** *Not determined.*
- **Melting point/freezing point:** *40 °C*
- **Boiling point or initial boiling point and boiling range:** *130 °C*
- **Flammability:** *Product is not flammable.*
- **Lower and upper explosion limit:**
- **Lower:** *not applicable*
- **Upper:** *not applicable*
- **Flash point:** *Not applicable*
- **Decomposition temperature:** *No information available*
- **Viscosity:**
- **Kinematic viscosity:** *Not applicable.*
- **Dynamic viscosity:** *Not applicable.*
- **Solubility:**
- **Water at 20 °C:** *65 g/l*

(Contd. on page 5)

Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 23.09.2024

Version number 6

Revision: 23.09.2024

Trade name: Osmium tetroxide

(Contd. of page 4)

- **Partition coefficient n-octanol/water (log value):** No information available
- **Vapour pressure at 20 °C:** 10 hPa
- **Density and/or relative density:**
- **Density at 20 °C:** 4.91 g/cm³
- **Relative density:** No information available
- **Particle characteristics** No information available

9.2 Other information

- **Appearance:**
- **Form:** Crystalline
- **Important information on protection of health and environment, and on safety:**
- **Explosive properties:** Product does not present an explosion hazard.
- **Molecular weight** 254.2 g/mol

SECTION 10: Stability and reactivity

- **10.1 Reactivity:** No further relevant information available.
- **10.2 Chemical stability:**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions:** Reacts with flammable substances
- **10.4 Conditions to avoid:** High temperatures
- **10.5 Incompatible materials:** Avoid contact with: Metals
- **10.6 Hazardous decomposition products:** In case of fire: see section 5
- **Additional information:**
photosensitive
sublimable

SECTION 11: Toxicological information

- **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008:**
- **Acute toxicity:** Fatal if swallowed, in contact with skin or if inhaled.

· LD/LC50 values that are relevant for classification:		
Oral	LD50	15 mg/kg (rat)

- | | | |
|------|------|----------------|
| Oral | LD50 | 15 mg/kg (rat) |
|------|------|----------------|
- **Skin corrosion/irritation:** Causes severe skin burns and eye damage.
 - **Serious eye damage/irritation:** Based on available data, the classification criteria are not met.
 - **Respiratory or skin sensitisation:** Based on available data, the classification criteria are not met.
 - **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
 - **Carcinogenicity:** Based on available data, the classification criteria are not met.
 - **Reproductive toxicity:** Based on available data, the classification criteria are not met.
 - **STOT-single exposure:** Based on available data, the classification criteria are not met.
 - **STOT-repeated exposure:** Based on available data, the classification criteria are not met.
 - **Aspiration hazard:** Based on available data, the classification criteria are not met.
 - **11.2 Information on other hazards:**
 - **Endocrine disrupting properties:** No relevant information available

SECTION 12: Ecological information

- **12.1 Toxicity:**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability:** No further relevant information available.
- **12.3 Bioaccumulative potential:** No further relevant information available.
- **12.4 Mobility in soil:** No further relevant information available.

(Contd. on page 6)

GB

Safety data sheet
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Version number 6

Revision: 23.09.2024

Trade name: Osmium tetroxide



(Contd. of page 5)

- **12.5 Results of PBT and vPvB assessment:**
 - **PBT:** PBT - assessment not available.
 - **vPvB:** vPvB - assessment not available.
 - **12.6 Endocrine disrupting properties:** For information on endocrine disrupting properties see section 11.
 - **12.7 Other adverse effects:**
 - **Additional ecological information:**
 - **General notes:**
- Do not allow product to reach ground water, water course or sewage system.
Water danger class 3 (German Regulation) (Self-assessment): extremely hazardous for water.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
 - **Recommendation**
- Dispose of in accordance with official regulations.
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
 - **Recommendation:**
- Uncleaned packaging must be disposed of in the same way as the product in accordance with official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

SECTION 14: Transport information

- | | |
|--|---|
| <ul style="list-style-type: none"> · 14.1 UN number or ID number · ADR, IMDG, IATA | <p align="center">UN2471</p> |
| <ul style="list-style-type: none"> · 14.2 UN proper shipping name · ADR · IMDG · IATA | <p align="center">2471 OSMIUM TETROXIDE
OSMIUM TETROXIDE, MARINE POLLUTANT
OSMIUM TETROXIDE</p> |
| <ul style="list-style-type: none"> · 14.3 Transport hazard class(es) · ADR, IATA <div style="text-align: center;">  </div> <ul style="list-style-type: none"> · Class: · Label: <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> · IMDG <div style="text-align: center;">  </div> <ul style="list-style-type: none"> · Class · Label | <p align="center">6.1 Toxic substances.
6.1</p> <hr style="border-top: 1px dashed black;"/> <p align="center">6.1 Toxic substances.
6.1</p> |
| <ul style="list-style-type: none"> · 14.4 Packing group · ADR, IMDG, IATA | <p align="center">I</p> |
| <ul style="list-style-type: none"> · 14.5 Environmental hazards · Marine pollutant: | <p align="center">Yes (PP)
Symbol (fish and tree)</p> |

(Contd. on page 7)

Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 23.09.2024

Version number 6

Revision: 23.09.2024

Trade name: Osmium tetroxide

(Contd. of page 6)

· 14.6 Special precautions for user	Warning: Toxic substances.
· Hazard identification number (Kemler code):	66
· EMS Number:	F-A,S-A
· Stowage Category	B
· Stowage Code	SW2 Clear of living quarters.
· 14.7 Maritime transport in bulk according to IMO instruments	Not applicable.
· Transport/Additional information:	
· ADR	
· Limited quantities (LQ)	0
· Excepted quantities (EQ)	Code: E5 Maximum net quantity per inner packaging: 1 g Maximum net quantity per outer packaging: 300 g
· Transport category	1
· Tunnel restriction code	C/E
· IMDG	
· Limited quantities (LQ)	0
· Excepted quantities (EQ)	Code: E5 Maximum net quantity per inner packaging: 1 g Maximum net quantity per outer packaging: 300 g
· UN "Model Regulation":	UN 2471 OSMIUM TETROXIDE, 6.1, I

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Poisons Act**
- **Regulated explosives precursors** Substance is not listed.
- **Regulated poisons** Substance is not listed.
- **Reportable explosives precursors** Substance is not listed.
- **Reportable poisons** Substance is not listed.
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** Substance is not listed.
- **Seveso category H1** ACUTE TOXIC
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 20 t
- **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 75
- **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**
Substance is not listed.
- **REGULATION (EU) 2019/1148**
- **Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))**
Substance is not listed.
- **Annex II - REPORTABLE EXPLOSIVES PRECURSORS** Substance is not listed.
- **Regulation (EC) No 273/2004 on drug precursors** Substance is not listed.
- **Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors**
Substance is not listed.

(Contd. on page 8)

GB

Safety data sheet
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(Contd. of page 7)

· **National regulations:**· **Technical instructions (air):**

Class	Share in %
I	80-100

· **Water hazard class:** Water danger class 3 (Self-assessment): extremely hazardous for water.· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** Product Safety Department· **Contact:** +49 6221 13840-35· **Date of previous version:** 24.03.2020· **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

PBT: persistent, bioaccumulative, toxic substance (UK REACH)

vPvB: very persistent, very bioaccumulative substance (UK REACH)

UK REACH: Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

GB CLP: Regulation on classification, labelling and packaging of substances and mixtures

bw: body weight

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

PP: Severe Marine Pollutant

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Acute Tox. 2: Acute toxicity – Category 2

Acute Tox. 1: Acute toxicity – Category 1

Skin Corr. 1B: Skin corrosion/irritation – Category 1B

GB