

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 09.11.2012

Version number 1

Revision: 08.11.2012

## 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

· Application of the substance / the preparation 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: +49 6131 19240 (university hospital Mainz)

**SERVA**  
Electrophoresis

## 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.

· Classification according to Directive 67/548/EEC or Directive 1999/45/EC



T+; Very toxic

R26/27/28: Very toxic by inhalation, in contact with skin and if swallowed.



C; Corrosive

R34: Causes burns.

· Classification system:

The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

· 2.2. Label elements

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

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

· Hazard pictograms GHS05, GHS06

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- **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.*
- **Precautionary statements**  
*P260 Do not breathe dust/fume/gas/mist/vapours/spray.*  
*P280 Wear protective gloves/protective clothing/eye protection/face protection.*  
*P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.*  
*P302+P350 IF ON SKIN: Gently wash with plenty of soap and water.*  
*P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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.*
- **2.3. Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** PBT - assessment not available.
- **vPvB:** vPvB - assessment not available.

### 3 Composition/information on ingredients

- **3.1. Chemical characterization: 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 O<sub>4</sub>
- **MW:** 254,2

### 4 First aid measures

- **4.1. Description of first aid measures**
- **General information** *Remove contaminated clothing.*
- **After inhalation** *Supply fresh air or oxygen; call for doctor.*
- **After skin contact** *Immediately rinse with water.*
- **After eye contact**  
*Rinse opened eye for several minutes under running water. Remove present contact lenses, if easy to do, and continue rinsing.*
- **After swallowing** *Drink copious amounts of water and provide fresh air. Call for doctor immediately.*
- **Information for doctor**
- **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**  
*If swallowed, gastric irrigation*

### 5 Firefighting measures

- **5.1. Extinguishing media**
- **Suitable extinguishing agents**  
*CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.*
- **5.2. Special hazards arising from the substance or mixture**  
*During heating or in case of fire poisonous gases are produced.*

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- **5.3. Advice for firefighters**
- **Protective equipment:**  
Wear self-contained respiratory protective device.  
Wear fully protective suit.
- **Additional information**  
Collect contaminated fire fighting water separately. It must not enter the sewage system.

## 6 Accidental release measures

- **6.1. Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.
- **6.2. Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **6.3. Methods and material for containment and cleaning up:**  
Pick up mechanically.  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.
- **6.4. Reference to other sections**  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

## 7 Handling and storage

- **Handling**
- **7.1. Precautions for safe handling**  
Thorough dedusting.  
Ensure good ventilation/exhaustion at the workplace.  
Open and handle receptacle with care.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **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 oxidizing agents.
- **Further information about storage conditions:**  
Store under lock and key and with access restricted to technical experts or their assistants only.  
Store in dry conditions.  
Protect from heat and direct sunlight.
- **7.3. Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **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 <sup>3</sup> , 0.0006 ppm
	Long-term value: 0.002 mg/m <sup>3</sup> , 0.0002 ppm
	(as Os)

- **Additional information:** The lists that were valid during the creation were used as basis.

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- **8.2. Exposure controls**
- **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.
- **Protection of hands:**  
Neoprene gloves  
Protective 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 protection:** Safety glasses
- **Body protection:** Protective work clothing.

## 9 Physical and chemical properties

- **9.1. Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**

<b>Form:</b>	Crystalline
<b>Colour:</b>	Yellow
<b>Odour:</b>	Pungent
- **Change in condition**

<b>Melting point/Melting range:</b>	40°C
<b>Boiling point/Boiling range:</b>	130°C
- **Flash point:** Not applicable
- **Flammability (solid, gaseous)** Product is not flammable.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Vapour pressure at 20°C:** 10 hPa
- **Density at 20°C:** 4.91 g/cm<sup>3</sup>
- **Bulk density at 20°C:** ca. 1500 kg/m<sup>3</sup>
- **Solubility in / Miscibility with**

<b>Water at 20°C:</b>	60 g/l
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· **9.2. Other information** No further relevant information available.

## 10 Stability and reactivity

- **10.1. Reactivity**
- **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 fats and oils  
Reacts with flammable substances
- **10.4. Conditions to avoid** No further relevant information available.
- **10.5. Incompatible materials:** No further relevant information available.
- **10.6. Hazardous decomposition products:** Poisonous gases/vapours
- **Additional information:**  
sensitive to light  
sublimatable

## 11 Toxicological information

- **11.1. Information on toxicological effects**
- **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

Oral	LD50	15 mg/kg (rat)
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- **Primary irritant effect:**
- **on the skin:** Caustic effect on skin and mucous membranes.
- **on the eye:** Strong caustic effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**  
Danger through skin resorption.  
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

## 12 Ecological information

- **12.1. Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2. Persistence and degradability** No further relevant information available.
- **Behaviour in environmental systems:**
- **12.3. Bioaccumulative potential** No further relevant information available.
- **12.4. Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**  
Water danger class 3 (German Regulation) (Assessment by list): extremely hazardous for water.  
Do not allow product to reach ground water, water course or sewage system, even in small quantities.  
Must not reach sewage water or drainage ditch undiluted or unneutralized.  
Danger to drinking water if even extremely small quantities leak into the ground.
- **12.5. Results of PBT and vPvB assessment**
- **PBT:** PBT - assessment not available.
- **vPvB:** vPvB - assessment not available.
- **12.6. Other adverse effects** No further relevant information available.

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### 13 Disposal considerations

- **13.1. Waste treatment methods**
- **Recommendation** Must be specially treated adhering to official regulations.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

### 14 Transport information

- |   |   |
|---|---|
| · <b>14.1. UN-Number</b><br>· <b>ADR, IMDG, IATA</b>  | UN2471  |
| · <b>14.2. UN proper shipping name</b><br>· <b>ADR</b><br>· <b>IMDG</b><br>· <b>IATA</b>              | 2471 OSMIUM TETROXIDE<br>OSMIUM TETROXIDE<br>Osmium tetroxide |
| · <b>14.3. Transport hazard class(es)</b><br>· <b>ADR, IATA</b>                                       |   |
|                     |   |
| · <b>Class</b><br>· <b>Label</b>  | 6.1 Toxic substances.<br>6.1                                  |
| · <b>IMDG</b>   |   |
|                    |   |
| · <b>Class</b><br>· <b>Label</b>  | 6.1 Toxic substances.<br>6.1                                  |
| · <b>14.4. Packing group</b><br>· <b>ADR, IMDG, IATA</b>  | I   |
| · <b>14.5. Environmental hazards:</b><br>· <b>Marine pollutant:</b>                                   | Yes (PP)<br>Symbol (fish and tree)                            |
| · <b>14.6. Special precautions for user</b><br>· <b>Danger code (Kemler):</b><br>· <b>EMS Number:</b> | Warning: Toxic substances.<br>66<br>F-A,S-A                   |
| · <b>14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>                | Not applicable.   |
| · <b>Transport/Additional information:</b>  |   |
| · <b>ADR</b><br>· <b>Tunnel restriction code</b>  | C/E   |
| · <b>UN "Model Regulation":</b>   | UN2471, OSMIUM TETROXIDE, 6.1, I                              |

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### 15 Regulatory information

· **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **National regulations**

· **Technical instructions (air):**

Class	Share in %
I	80-100

· **Water hazard class:** Water danger class 3 (Assessment by list): extremely hazardous for water.

· **15.2. Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 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 MSDS:** Product safety department

· **Contact:** +49 6221 13840-35

· **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 Organization*

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

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

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

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

*ADR: Accord européen sur le transport 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 Harmonized 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*

· **\* Data compared to the previous version altered.**

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