



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

- **1.1 Product identifier**
- **Trade name:** *Osmium powder*
- **CAS Number:**  
7440-04-2
- **EC number:**  
231-114-0
- **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**  
*Intermediate*  
*Precious metal alloy for technical purposes*
- **Manufacturer/Supplier:**  
*Heraeus Deutschland GmbH & Co. KG*  
*Heraeusstr. 12-14*  
*D-63450 Hanau*  
*Germany*  
*Tel: +49-(0)6181-355707*
- **Further information obtainable from:** *sds@heraeus.com*
- **1.4 Emergency telephone number:**  
*Emergency Contact (24-Hour-Phone Number)*  
*GBK-GmbH, Ingelheim: (international) +49 6132-84463*  
*GBK/ Infotrac ID 105241: (China domestic) 4001 200 761*

**SECTION 2: Hazards identification**

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**  
*Eye Dam. 1 H318 Causes serious eye damage.*  
*Acute Tox. 4 H302 Harmful if swallowed.*  
*Acute Tox. 4 H312 Harmful in contact with skin.*  
*Acute Tox. 4 H332 Harmful if inhaled.*  
*Skin Irrit. 2 H315 Causes skin irritation.*  
*STOT SE 3 H335 May cause respiratory irritation.*
- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**  
*Xn; Harmful*  
*R20/21/22: Harmful by inhalation, in contact with skin and if swallowed.*  
*Xi; Irritant*  
*R37/38-41: Irritating to respiratory system and skin. Risk of serious damage to eyes.*
- **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 GHS07
- **Signal word** *Danger*
- **Hazard-determining components of labelling:**  
*osmium*
- **Hazard statements**  
*H302 Harmful if swallowed.*

**Trade name: Osmium powder**

(Contd. of page 1)

*H312 Harmful in contact with skin.**H332 Harmful if inhaled.**H315 Causes skin irritation.**H318 Causes serious eye damage.**H335 May cause respiratory irritation.***· Precautionary statements***P280 Wear protective gloves/protective clothing/eye protection/face protection.**P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**P403+P233 Store in a well-ventilated place. Keep container tightly closed.***· 2.3 Other hazards****· Results of PBT and vPvB assessment****· PBT:** Not applicable.**· vPvB:** Not applicable.**SECTION 3: Composition/information on ingredients****· 3.1 Chemical characterisation: Substances****· CAS No. Description***7440-04-2 osmium***· Identification number(s)****· EC number:** 231-114-0**SECTION 4: First aid measures****· 4.1 Description of first aid measures****· General information:** *In case of accident or if you feel unwell, seek medical advice immediately.***· After inhalation:***Supply fresh air.**Call a doctor immediately.***· After skin contact:***Immediately wash with water and soap and rinse thoroughly.**Seek medical treatment.***· After eye contact:***Rinse opened eye for several minutes under running water.**Call a doctor immediately.***· After swallowing:***Rinse mouth with water.**Call a doctor immediately.***· 4.2 Most important symptoms and effects, both acute and delayed** *No further relevant information available.***· 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:***Dry sand**Extinguishing powder. Do not use water.***· For safety reasons unsuitable extinguishing agents:** *Water***· 5.2 Special hazards arising from the substance or mixture** *In case of fire, the following can be released:***· 5.3 Advice for firefighters****· Protective equipment:***Wear self-contained respiratory protective device.*

(Contd. on page 3)

**Trade name: Osmium powder**

Wear fully protective suit.

(Contd. of page 2)

**SECTION 6: Accidental release measures**

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.  
Avoid contact with substance.  
Avoid formation of dust.  
Ensure adequate ventilation
- **6.2 Environmental precautions:**  
Do not allow to enter sewers/ surface or ground water.  
Do not allow to penetrate the ground/soil.
- **6.3 Methods and material for containment and cleaning up:**  
Pick up mechanically.  
Prevent formation of dust.  
Send for recovery or disposal in suitable receptacles.
- **6.4 Reference to other sections**  
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**  
Wear protective equipment. Keep unprotected persons away.  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of dust.  
Work only in fume cupboard.  
Only accessible to qualified persons.
- **Information about fire - and explosion protection:** see chapter 5
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**  
Keep container tightly sealed.  
Store receptacle in a well ventilated area.  
Store under lock and key and with access restricted to technical experts or their assistants only.
- **7.3 Specific end use(s)** No further relevant information available.

**SECTION 8: Exposure controls/personal protection**

- **Additional information about design of technical facilities:** No further data; see item 7.
- **8.1 Control parameters**

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

**20816-12-0 osmium tetroxide**

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)
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- **8.2 Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
Do not eat or drink while working.  
Keep away from foodstuffs, beverages and feed.

(Contd. on page 4)

**Trade name: Osmium powder**

(Contd. of page 3)

*Immediately remove all soiled and contaminated clothing*

*Wash hands before breaks and at the end of work.*

*Avoid contact with the eyes and skin.*

*Do not inhale dust / smoke / mist.*

**· Respiratory protection:**

*If the exhausting device is not sufficient use respiratory protection filter.*

*combined filter: B/P3*

**· Protection of hands:**

**· For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**

*Nitrile rubber, NBR*

*Butyl rubber, BR*

*Fluorocarbon rubber (Viton)*

**· Eye protection:**



*Tightly sealed goggles*

**· Body protection:** *Protective work clothing*

### SECTION 9: Physical and chemical properties

**· 9.1 Information on basic physical and chemical properties**

**· General Information**

**· Appearance:**

**Form:** *Solid*

**Colour:** *Blue*

*Grey*

**· Odour:** *Chlorine-like*

**· Change in condition**

**Melting point/Melting range:** *3045 °C*

**Boiling point/Boiling range:** *5000 °C*

**· Flash point:** *Not applicable.*

**· Danger of explosion:** *Product does not present an explosion hazard.*

**· Density at 20 °C:** *22.6 g/cm<sup>3</sup>*

**· Solubility in / Miscibility with**

**water:** *Insoluble.*

**Organic solvents:** *0.0 %*

**Solids content:** *100.0 %*

**· 9.2 Other information** *No further relevant information available.*

### SECTION 10: Stability and reactivity

**· 10.3 Possibility of hazardous reactions** *No dangerous reactions known.*

**· 10.4 Conditions to avoid** *No further relevant information available.*

**· 10.5 Incompatible materials:**

*At room temperature the powder will be oxidised gradually to very toxic osmium(VIII) oxide. Therefore store in a tightly closed container.*

**· Additional information:** -

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(Contd. on page 5)

Trade name: Osmium powder

(Contd. of page 4)

**SECTION 11: Toxicological information**· **11.1 Information on toxicological effects**· **Acute toxicity:**· **LD/LC50 values relevant for classification:**

20816-12-0 osmium tetroxide

Inhalative	TC(low)	0.133 mg/m <sup>3</sup> (human man)
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· **Primary irritant effect:**

- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Strong irritant with the danger of severe eye injury.

· **Sensitisation:** No sensitising effects known.· **Additional toxicological information:**

At room temperature the powder will be oxidised gradually to very toxic osmium(VIII) oxide. Therefore the substance is classified as harmful by inhalation, in contact with skin and if swallowed as a precaution.

**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.

· **Ecotoxicological effects:**· **Remark:** No data available.· **Additional ecological information:**· **General notes:** Avoid transfer into the environment.· **12.5 Results of PBT and vPvB assessment**· **PBT:** Not applicable.· **vPvB:** Not applicable.· **12.6 Other adverse effects** No further relevant information available.**SECTION 13: Disposal considerations**· **13.1 Waste treatment methods**· **Recommendation**

Product or residue of product should be recycled because of precious metal content (national regulations must be observed). Material can be returned to supplier or other recycling companies.

If residues of products are classified as waste from administrative bodies or recycling of precious metal is not intended use the legal requirements to assign the European Waste Code (depending on branche of industry and industrial process).

Disposal must be made according to official regulations.

· **Uncleaned packaging:**· **Recommendation:**

Uncleaned or with product residues contaminated packing should be treated like the product itself.

Packages, which do not contain product residues, should be recycled; if there does not exist a collecting system, packages can be treated as rubbish.

**SECTION 14: Transport information**· **14.1 UN-Number**· **ADR, IMDG, IATA**

Void

(Contd. on page 6)

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**Trade name: Osmium powder**

(Contd. of page 5)

· 14.2 UN proper shipping name · ADR, IMDG, IATA	Void
· 14.3 Transport hazard class(es) · ADR, IMDG, IATA · Class	Void
· 14.4 Packing group · ADR, IMDG, IATA	Void
· 14.5 Environmental hazards: · Marine pollutant:	No
· 14.6 Special precautions for user	Not applicable.
· 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· UN "Model Regulation":	-

**SECTION 15: Regulatory information**

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture  
No further relevant information available.
- 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 MSDS:** HH-EHS- Chemical Safety
- **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)  
 IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
 ICAO: International Civil Aviation Organisation  
 ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)  
 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  
 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  
 Acute Tox. 4: Acute toxicity, Hazard Category 4  
 Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2  
 Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1  
 STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
- **\* Data compared to the previous version altered.**

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