



>>Entry Name: Osmium

CAS Registry Number: 7440-04-2

Os

Molecular Formula: Os

Molecular Weight: 190.2

Accurate Mass: 191.961467

Percentage Composition: Os 100.00%

No biological role. Abundance: 0.005 ppm (earth's crust). Hcp struct.

Source/Synthesis: Found in metallic state in Ni/Cu sulfide ores and as alloys with other Pt metals. Metal obt. by H₂ redn. of many compds.

Use/Importance: Of some use in alloys and catalysts but the metal itself has few other technical applications

Physical Description: Lustrous, silvery metal. Unaffected by air, H₂O, acids. Dissolves in molten alkalis. When heated oxidises to OsO₄ (toxic). Metal smells because of vol. OsO₄

Melting Point: Mp 3045°

Boiling Point: Bp 5000°

Other Data: Reacts with HNO₃→OsO₄

Hazard & Toxicity: Metal v. toxic and an irritant. Powdered metal is an explosion haz. e.g. with F₂

Aldrich: 26325-7

Fluka: 75610

>>Variant: Osmium 180

CAS Registry Number: 14993-35-2

Source/Synthesis: Prod. from Tm (N,4n), also by bombardment of W with α particles, or Yb with ¹²C

Other Data: *I* = +0. Decays by orbital electron capture or β⁽⁺⁾ emission to ¹⁸⁰Re

>>Variant: Osmium 182

CAS Registry Number: 14993-36-3

Source/Synthesis: Prod. from Re (p,4n), ¹⁸²W (α,4n), or ¹⁸²W (³He,3n)

Other Data: *I* = +0. Decays by orbital electron capture or β⁽⁺⁾ emission to ¹⁸²Re

>>Variant: Osmium 184

CAS Registry Number: 14922-68-0

Other Data: *I* = +0

>>Variant: Osmium 185

CAS Registry Number: 15766-50-4

Source/Synthesis: Prod. from Re (d,2n), ¹⁸⁴Os (n,γ), or ¹⁸⁵Re (p,n)

Other Data: *I* = -½. Decays by orbital electron capture to ¹⁸⁵Re

>>Variant: Osmium 186

Other Data: *I* = +0. Decays by α emission to W

>>Variant: Osmium 187

CAS Registry Number: 15766-52-6

Source/Synthesis: ¹⁸⁷Re / ¹⁸⁷Os used for radiometric dating of geological samples

Other Data: *I* = -½; μ = +0.064651 μ_N. Nmr relative sensitivity (¹H=1.00) 1.22 x 10⁻⁵; receptivity (¹³C=1.00) 0.00114

>>Variant: Osmium 188

CAS Registry Number: 14274-81-8