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>>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 H<sub>2</sub> 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, H<sub>2</sub>O, acids. Dissolves in molten alkalis. When heated oxidises to OsO<sub>4</sub> (toxic). Metal smells because of vol. OsO<sub>4</sub>

**Melting Point:** Mp 3045°

**Boiling Point:** Bp 5000°

**Other Data:** Reacts with HNO<sub>3</sub>→OsO<sub>4</sub>

**Hazard & Toxicity:** Metal v. toxic and an irritant. Powdered metal is an explosion haz. e.g. with F<sub>2</sub>

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 <sup>12</sup>C

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

>>Variant: Osmium 182

CAS Registry Number: 14993-36-3

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

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

>>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), <sup>184</sup>Os (n,γ), or <sup>185</sup>Re (p,n)

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

>>Variant: Osmium 186

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

>>Variant: Osmium 187

CAS Registry Number: 15766-52-6

**Source/Synthesis:** <sup>187</sup>Re / <sup>187</sup>Os used for radiometric dating of geological samples

**Other Data:** *I* = -½; μ = +0.064651 μ<sub>N</sub>. Nmr relative sensitivity (<sup>1</sup>H=1.00) 1.22 x 10<sup>-5</sup>; receptivity (<sup>13</sup>C=1.00) 0.00114

>>Variant: Osmium 188

CAS Registry Number: 14274-81-8