



>>Entry Name: Tantalum

CAS Registry Number: 7440-25-7

Related CAS Registry Numbers(s): 20561-66-4

Ta

Molecular Formula: Ta

Molecular Weight: 180.948

Accurate Mass: 180.947992

Percentage Composition: Ta 100.00%

Discovered by A.G. Ekeberg (Uppsala) in 1802. No biological role. Bcc struct.

Source/Synthesis: Chief mineral is tantalite. Solv. extraction (dil. HF and methyl isobutyl ketone) eventually yields Ta₂O₅. Also obt. as byproduct from Sn extraction. Metal obt. from Ta₂O₅ + C, Na or Ca, or from K₂TaF₇ + Na. Reduced metal may contain ≤ 7.5 at % (7000 ppm) of residual O₂

Use/Importance: Used to line chemical plant and in prostheses and dental materials. Main use in capacitors, and as TaC in cutting tools

Physical Description: Silvery metal, soft and ductile when pure. V. air and H₂O corrosion resistant (oxide film). Attacked by HF, and by fused alkalis, as well as by fuming H₂SO₄

Melting Point: Mp 3000° (2980°)

Boiling Point: Bp 5534° (ca. 5425°)

Other Data: Reacts with most non-metals when pure and heated. Reacts with halogens, F₂ at r.t., Cl₂ at 200°, Br₂ at 300°, I₂ at 300-350°

Hazard & Toxicity: Dry powdered metal ignites in air. V. reactive to F₂

Aldrich: 35725-1

Fluka: 86270

>>Variant: Tantalum 177

CAS Registry Number: 15759-27-0

Source/Synthesis: Prod. from ¹⁷⁷Lu (α,2n), or by proton bombardment of Hf. Daughter of ¹⁷⁷W

Other Data: *I* = + 7/2 ; μ = 2.25 μ_N. Decays by orbital electron capture to ¹⁷⁷Hf

>>Variant: Tantalum 179

CAS Registry Number: 14391-27-6

Source/Synthesis: Prod. from ¹⁸¹Ta (α,n), or by proton bombardment of ¹⁸¹Ta

Other Data: *I* = + 7/2 . Decays by orbital electron capture to ¹⁷⁹Hf

>>Variant: Tantalum 180

Other Data: *I* = -9

>>Variant: Tantalum 181

Other Data: *I* = + 7/2 ; μ = 2.370 μ_N. Nmr relative sensitivity (¹H=1.00) 0.0260; receptivity (¹³C=1.00) 204

>>Variant: Tantalum 182

CAS Registry Number: 13982-00-8

Source/Synthesis: Prod. from ¹⁸²Ta (n,γ)

Other Data: *I* = -3; μ = +3.02 μ_N. Decays by β⁽⁻⁾ emission to ¹⁸²W

>>Variant: Tantalum 183

CAS Registry Number: 14683-36-4

Source/Synthesis: Prod. by multiple neutron capture from ¹⁸¹Ta

Other Data: *I* = + 7/2 ; μ = +2.36 μ_N. Decays by β⁽⁻⁾ emission to ¹⁸³W