



>>Entry Name: Thulium

CAS Registry Number: 7440-30-4

Related CAS Registry Numbers(s): 16910-52-4 22541-23-7

Tm

Molecular Formula: Tm

Molecular Weight: 168.934

Accurate Mass: 168.934212

Percentage Composition: Tm 100.00%

Abundance: 0.5 ppm (earth's crust). Rarest of the lanthanide metals. Hcp struct. Discovered in 1879 by P.T. Cleve (Uppsala)

Source/Synthesis: Minerals include monazite and euxenite. Metal obt. by redn. of Tm_2O_3 with La or TmF_3 with Ca

Use/Importance: Target material in sealed-tube neutron generators

Physical Description: Bright silvery metal, air-stable when dry. Dissolved by dil. acid, slowly attacked by H_2O

Melting Point: Mp 1545°

Boiling Point: Bp 1950° (1727°)

Aldrich: 26322-2

Fluka: 89240

>>Variant: Thulium 165

CAS Registry Number: 14041-48-6

Source/Synthesis: Prod. from Er (p,2n), also by proton bombardment of U or Ta

Other Data: $I = +\frac{1}{2}$; $\mu = 0.139 \mu_N$. Decays by orbital electron capture to ^{165}Er

>>Variant: Thulium 166

CAS Registry Number: 15690-75-2

Source/Synthesis: Prod. from Ho (α ,3n), or by proton bombardment of Er. Daughter of ^{166}Yb

Other Data: $I = +2$; $\mu = +0.092 \mu_N$. Decays by orbital electron capture (98%) or $\beta^{(+)}$ emission (2%) to ^{166}Er

>>Variant: Thulium 167

CAS Registry Number: 14391-22-1

Source/Synthesis: Prod. from Ho (α ,2n), also by proton bombardment of Er or U

Other Data: $I = +\frac{1}{2}$; $\mu = -0.197 \mu_N$. Decays by orbital electron capture to ^{167}Er

>>Variant: Thulium 168

CAS Registry Number: 14900-13-1

Source/Synthesis: Prod. from Er (p,3n), ^{65}Ho (α ,n), ^{168}Er (p,n), or ^{168}Er (d,2n)

Other Data: $I = +3$; $\mu = 0.23 \mu_N$. Decays by orbital electron capture (98%) to ^{168}Er

>>Variant: Thulium 169

Other Data: $I = +\frac{1}{2}$; $\mu = -0.2316 \mu_N$. Nmr relative sensitivity ($^1\text{H}=1.00$) 5.66×10^{-4} ; receptivity ($^{13}\text{C}=1.00$) 3.21

>>Variant: Thulium 170

CAS Registry Number: 13981-30-1

Source/Synthesis: Prod. from Tm (n, γ), or ^{170}Er (p,n)

Other Data: $I = -1$; $\mu = 0.2476 \mu_N$. Decays by $\beta^{(-)}$ emission (99.8%) to ^{170}Yb , or by orbital electron capture (0.2%) to ^{170}Er

>>Variant: Thulium 171

CAS Registry Number: 14333-45-0

Source/Synthesis: Daughter of Er

Other Data: $I = +\frac{1}{2}$; $\mu = -0.2303 \mu_N$. Decays by $\beta^{(-)}$ emission to ^{171}Yb