



>>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<sub>2</sub>O<sub>3</sub> with La or TmF<sub>3</sub> 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<sub>2</sub>O

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 <sup>165</sup>Er

>>Variant: Thulium 166

CAS Registry Number: 15690-75-2

Source/Synthesis: Prod. from Ho ( $\alpha$ ,3n), or by proton bombardment of Er. Daughter of <sup>166</sup>Yb

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

>>Variant: Thulium 167

CAS Registry Number: 14391-22-1

Source/Synthesis: Prod. from Ho ( $\alpha$ ,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 <sup>167</sup>Er

>>Variant: Thulium 168

CAS Registry Number: 14900-13-1

Source/Synthesis: Prod. from Er (p,3n), <sup>65</sup>Ho ( $\alpha$ ,n), <sup>168</sup>Er (p,n), or <sup>168</sup>Er (d,2n)

Other Data:  $I = +3$ ;  $\mu = 0.23 \mu_N$ . Decays by orbital electron capture (98%) to <sup>168</sup>Er

>>Variant: Thulium 169

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

>>Variant: Thulium 170

CAS Registry Number: 13981-30-1

Source/Synthesis: Prod. from Tm (n, $\gamma$ ), or <sup>170</sup>Er (p,n)

Other Data:  $I = -1$ ;  $\mu = 0.2476 \mu_N$ . Decays by  $\beta^{(-)}$  emission (99.8%) to <sup>170</sup>Yb, or by orbital electron capture (0.2%) to <sup>170</sup>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 <sup>171</sup>Yb