



>>Entry Name: Erbium

CAS Registry Number: 7440-52-0

Related CAS Registry Numbers(s): 15724-60-4 18472-30-5

Er

Molecular Formula: Er

Molecular Weight: 167.26

Accurate Mass: 165.93029

Percentage Composition: Er 100.00%

General Statement: Atomic No. 68. Ground state electron config. $[\text{Xe}]4f^{12}6s^2$. Atomic radius 176 pm. 16 Isotopes have been reported of which 6 are natural (^{166}Er is the most abundant, 33.4%). Abundance: 3.5 ppm (earth's crust). Discovered in 1842 by C.G. Mosander (Stockholm). α -Form (hcp) transforms into β -form (bcc) at 1367°

Source/Synthesis: Principal ores are monazite, bastnaesite and euxemite. Metal obt. by metallothermic redn. of halides

Use/Importance: Pink colourant for glasses and enamels. Target material in neutron generators

Physical Description: Reasonably air-stable, soft, malleable, silvery metal. Slowly attacked by moist air; sol. dil. acid

Melting Point: Mp 1529° (1497°)

Boiling Point: Bp 2900° (2868°, 2510°)

Aldrich: 26305-2

Fluka: 45400

>>Variant: Erbium 156

CAS Registry Number: 15840-11-6

General Statement: Radioactive, $t_{1/2}$ 19.5 min.

Source/Synthesis: Prod. by proton bombardment of Ta

Other Data: $I = +0$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ^{156}Ho

>>Variant: Erbium 158

CAS Registry Number: 15840-29-6

General Statement: Radioactive, $t_{1/2}$ 2.25 h

Source/Synthesis: Prod. by proton bombardment of Ta, also from ^{165}Ho (p,8n), ^{150}Sm (^{12}C ,4n), or ^{151}Eu (^{11}B ,4n)

Other Data: $I = +0$. Decays by orbital electron capture (99.5%) or $\beta^{(+)}$ emission (0.5%) to ^{158}Ho

>>Variant: Erbium 160

CAS Registry Number: 15758-19-7

General Statement: Radioactive, $t_{1/2}$ 1.19 d

Source/Synthesis: Prod. by proton bombardment of Er or U

Other Data: $I = +0$. Decays by orbital electron capture to ^{160}Ho

>>Variant: Erbium 161

CAS Registry Number: 14967-67-0

General Statement: Radioactive, $t_{1/2}$ 3.24 h

Source/Synthesis: Prod. from ^{165}Ho (p,5n), ^{162}Er (γ ,n), ^{162}Dy (α ,5n), or ^{161}Dy (α ,4n). Also obt. by proton bombardment of Er or Ta

Other Data: $I = -3/2$; $\mu = -0.37 \mu_N$. Decays by orbital electron capture to ^{161}Ho

>>Variant: Erbium 162

CAS Registry Number: 15840-05-8

General Statement: Stable. Representative abundance 0.14 atom %

Other Data: $I = +0$

>>Variant: Erbium 163

CAS Registry Number: 17018-37-0

General Statement: Radioactive, $t_{1/2}$ 1.250 h

Source/Synthesis: Prod. from ^{165}Ho (p,3n), ^{162}Er (n, γ), or ^{164}Er (γ ,n). Daughter of ^{163}Tm

Other Data: $I = -5/2$; $\mu = +0.557 \mu_N$. Decays by orbital electron capture to ^{163}Ho

>>Variant: Erbium 164

CAS Registry Number: 14900-10-8

General Statement: Stable. Representative abundance 1.61 atom %

Other Data: $I = +0$