>>**Entry Name: Dysprosium**

CAS Registry Number: 7429-91-6
Related CAS Registry Numbers(s): 14701-44-1 20575-26-2 22541-21-5
Type of Compound Code(s): NA0020
Dy

Molecular Formula: Dy
Molecular Weight: 162.5
Accurate Mass: 163.929171
Percentage Composition: Dy 100.00%
General Statement: Atomic No. 66. Ground state electron config. [Xe]$4f^{10}6s^2$. Atomic radius 177 pm. 21 Isotopes have been reported of which ^{162}Dy (25.5%), ^{165}Dy (25%) and ^{164}Dy (28.2%) are the more abundant of 7 natural isotopes. Discovered in 1886 by P.-E. Lecoq de Boisbaudran (Paris). Abundance: 4.5 ppm (earth's crust). Three modifications: rhombic transforms into hcp form at –187°, which is stable to 1381° becoming bcc. A high pressure form is also known
Source/Synthesis: More important ores are monazite and bastnaesite. Metal obt. from DyF_3 with Ca
Use/Importance: Used in nuclear reactor control rods
Physical Description: Hard lustrous silvery metal; relatively stable, but reacts slowly with H_2O, dissolves in dil. acid
Melting Point: Mp 1412° (1407°)
Boiling Point: Bp 2567° (2559°)

Aldrich: 26302-8
Fluka: 44640

>>**Variant: Dysprosium 150**

CAS Registry Number: 15055-17-1
General Statement: Radioactive, $t_{½}$ 7.17 min.
Source/Synthesis: Prod. from ^{141}Pr (^{14}N,5n), ^{140}Ce (^{16}O,6n), or ^{159}Tb (p,10n). Also obt. by proton bombardment of Er or Ta
Other Data: I = +0. Decays by orbital electron capture or $\beta^{(+)}$ emission (69%) to ^{150}Tb, also by α emission (31%) to ^{146}Gd

>>**Variant: Dysprosium 151**

CAS Registry Number: 15055-18-2
General Statement: Radioactive, $t_{½}$ 16.9 min.
Source/Synthesis: Prod. from ^{141}Pr (^{14}N,4n), ^{140}Ce (^{16}O,5n), ^{159}Tb (p,9n), or ^{142}Nd (^{12}C,3n)
Other Data: I = - 7/2 ; μ = -0.95 μ_N. Decays by orbital electron capture (89%) or $\beta^{(+)}$ emission (5%) to ^{151}Tb, also by α emission (6%) to ^{147}Gd

>>**Variant: Dysprosium 152**

CAS Registry Number: 15904-62-8
General Statement: Radioactive, $t_{½}$ 2.38 h
Source/Synthesis: Prod. from ^{141}Pr (^{14}N,3n), ^{152}Gd (α,4n), ^{142}Nd (^{12}C,2n), ^{154}Gd (^{3}He,5n), or by proton bombardment of Ta
Other Data: I = +0. Decays by orbital electron capture (99.90%) to ^{152}Tb, or α emission (0.10%) to ^{148}Gd

>>**Variant: Dysprosium 153**

CAS Registry Number: 14981-96-5
General Statement: Radioactive, $t_{½}$ 6.4 h
Source/Synthesis: Prod. from^{152}Gd (α,3n), or ^{154}Gd (^{3}He,4n)
Other Data: I = - 7/2 ; μ = -0.78 μ_N. Decays by orbital electron capture (*ca.* 99%) or $\beta^{(+)}$ emission (*ca.* 1%) to ^{153}Tb, also by α emission (0.009%) to ^{149}Gd

>>**Variant: Dysprosium 154**

CAS Registry Number: 16484-49-4
General Statement: Radioactive, $t_{½}$ 3 x 10^6 y
Source/Synthesis: Prod. from ^{154}Gd (α,4n), or by proton bombardment of Ta
Other Data: I = +0. Decays by α emission to ^{150}Gd

>>**Variant: Dysprosium 155**

CAS Registry Number: 14982-00-4
General Statement: Radioactive, $t_{½}$ 10.0 h
Source/Synthesis: Prod. from ^{159}Tb (p,5n), ^{153}Gd (α,2n), ^{154}Gd (α,3n), ^{152}Gd (α,n), or ^{159}Tb (d,6n). Also obt. by proton bombardment of U or Ta
Other Data: I = - 3/2 ; μ = -0.385 μ_N. Decays by orbital electron capture (98%) or $\beta^{(+)}$ emission (2%) to ^{155}Tb