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>>Entry Name: Neodymium

CAS Registry Number: 7440-00-8

Related CAS Registry Numbers(s): 14913-52-1 16727-26-7 17778-97-1

Nd

Molecular Formula: Nd

Molecular Weight: 144.24

Accurate Mass: 141.907719

Percentage Composition: Nd 100.00%

most abundant of 7 natural ones. Abundance: 40 ppm (earth's crust). Obt. by C. Auer von Welsbach (Vienna) in 1885.  $\alpha$ -Form (hcp) transforms into  $\beta$ -form (bcc) at 862°. Also fcc struct. under pressure

Source/Synthesis: Main ores are monazite and bastnaesite. Metal obt. from NdCl<sub>3</sub> with Ca

Use/Importance: Used in mischmetal (18%), colouring glass, enamels. Nd compounds used in lasers

Physical Description: Bright silvery metal, tarnishes quickly in air. Dissolves in dil. acid. Reacts slowly with cold H<sub>2</sub>O, faster with hot H<sub>2</sub>O

Melting Point: Mp 1024° (1010°)

Boiling Point: Bp 3074° (3027°), (3068°)

Hazard & Toxicity: Little information on toxicity, but thought to be mod. toxic

Aldrich: 26115-7

Fluka: 72100

>>Variant: Neodymium 138

CAS Registry Number: 15700-34-2

Source/Synthesis: Prod. from Ce ( $\alpha$ ,2n), or <sup>141</sup>Pr (p,4n). Also obt. by proton bombardment of Ta, Er or Gd

Other Data:  $I = +0$ . Decays by orbital electron capture to <sup>138</sup>Pr

>>Variant: Neodymium 139

CAS Registry Number: 18411-36-4

Source/Synthesis: Prod. from Pr (d,4n), Pr (p,3n), or by proton bombardment of Gd. Daughter of <sup>139m</sup>Nd (5.5 h) also of <sup>139</sup>Pm

Other Data:  $I = +3/2$ ;  $\mu = 0.91 \mu_N$ . Decays by  $\beta^{(+)}$  emission (25%) or orbital electron capture (75%) to <sup>139</sup>Pr

>>Variant: Neodymium 139m

Source/Synthesis: Prod. from Pr (p,3n), <sup>142</sup>Nd ( $\gamma$ ,3n), or by proton bombardment of Gd

Other Data:  $I = -11/2$ . Decays by isomeric transition (12%) to <sup>139</sup>Nd, or  $\beta^{(+)}$  emission (88%) to <sup>139</sup>Pr

>>Variant: Neodymium 140

CAS Registry Number: 14952-28-4

Source/Synthesis: Prod. from Pr (p,2n), <sup>41</sup>Pr (d,3n), or by proton bombardment of Gd

Other Data:  $I = +0$ . Decays by orbital electron capture to <sup>140</sup>Pr

>>Variant: Neodymium 141

CAS Registry Number: 14877-64-6

Source/Synthesis: Prod. from Pr (p,3n), <sup>41</sup>Pr (d,2n), <sup>142</sup>Nd (n,2n), or by proton bombardment of Gd

Other Data:  $I = +3/2$ ;  $\mu = 1.01 \mu_N$ . Decays by orbital electron capture or  $\beta^{(+)}$  emission to <sup>141</sup>Pr

>>Variant: Neodymium 142

CAS Registry Number: 14336-82-4

Other Data:  $I = +0$

>>Variant: Neodymium 143

CAS Registry Number: 14336-83-5