



>>Entry Name: Yttrium

CAS Registry Number: 7440-65-5

Related CAS Registry Numbers(s): 14234-24-3 14782-34-4 14809-53-1 14981-70-5 15422-72-7 15751-59-4 22537-40-2

Y

Molecular Formula: Y

Molecular Weight: 88.906

Accurate Mass: 88.905849

Percentage Composition: Y 100.00%

by F. Wöhler, 1828. Abundance: 31 ppm (earth's crust). Has no biological role. α -Form (hcp) transforms into β -form (bcc) at 1490°

Source/Synthesis: Natural ores principally monazite and bastnäsite. Metal obt. from $\text{YF}_3 + \text{Ca}$, and $\text{YCl}_3 + \text{K}$

Use/Importance: Used to make phosphors for TV tubes (Y_2O_3 , YVO_4), yttrium garnets (microwave filters), gemstones, manuf. of corrosion-resistant alloys

Physical Description: Lustrous silver metal, reasonably air-stable; grey-black when finely divided. Brittle, rather harder than zinc. Reacts slowly with cold H_2O , rapidly with dil. acid. Burns easily. Reacts with Cl_2 at 200° and O_2 at 400°

Melting Point: Mp 1522°

Boiling Point: Bp 3338° (3264°, 3200°)

Hazard & Toxicity: Finely divided metal unstable in air. Suspected carcinogen and blood anticoagulant

Aldrich: 26299-4

Fluka: 95799

>>Variant: Yttrium 87

CAS Registry Number: 14274-68-1

Source/Synthesis: Prod. by Sr (d,n), Sr (p,n), or ^{87}Sr (d,2n)

Other Data: $I = -\frac{1}{2}$. Decays by orbital electron capture to ^{87}Sr

>>Variant: Yttrium 87m

Source/Synthesis: Prod. from Sr (d,n), or ^{87}Sr (p,n). Daughter of ^{87}Zr

Other Data: $I = +9/2$. Decays by isomeric transition to ^{87}Y (98.4%)

>>Variant: Yttrium 88

CAS Registry Number: 13982-36-0

Source/Synthesis: Prod. from Sr (p,n), or ^{88}Sr (d,2n). Commercial production route: recovered from ^{88}Zr parent

Other Data: $I = -4$. Decays by orbital electron capture to ^{88}Sr

>>Variant: Yttrium 89

Other Data: $I = -\frac{1}{2}$; $\mu = -0.1368 \mu_N$. Nmr relative sensitivity ($^1\text{H}=1.00$) 1.18×10^{-4} ; receptivity ($^{13}\text{C}=1.00$) 0.668

>>Variant: Yttrium 90

CAS Registry Number: 10098-91-6

Source/Synthesis: Prod. from Y (n, γ). Daughter of ^{90}Sr

Use/Importance: Used in diagnostic nuclear medicine

Other Data: $I = -2$; $\mu = -1.630 \mu_N$. Decays by $\beta^{(-)}$ emission to ^{90}Zr

References: