



>>Entry Name: Indium

CAS Registry Number: 7440-74-6

Related CAS Registry Numbers(s): 14133-75-6 14391-66-3 14864-11-0 15756-53-3 22537-23-1 22537-49-1 61178-97-0

In

Molecular Formula: In

Molecular Weight: 114.82

Accurate Mass: 114.90388

Percentage Composition: In 100.00%

In and ^{113}In are stable and useful in nmr spectroscopy. Abundance: 0.24 ppm (earth's crust). 0.02 ppm (sea water). Possesses no biological role. Has fcc struct.

Source/Synthesis: By-product from Zn/Pb extraction processes: obt. from the dusts, slags and fumes. Metal obt. by two-stage electrolysis via In/Hg alloy

Use/Importance: Used as coating for metals to protect against wear and corrosion. In alloys (Pb, Cu, Al, Zn, Au, Ag, Pd) to increase hardness, corrosion resistance.

Component of low melting alloys and solders (e.g. with Sn, Pb, Bi, Cd). In control bars in nuclear reactors. In semiconductor industry. Catalyst in synth. of cyclopropanes and allylic alcohols

Physical Description: Soft silvery white malleable and ductile metal: liq. wets glass. Stable in dry air at 25°. Slowly oxidised in moist air. Reacts with halogens, S, Se, Te, As, P on heating. Dissolves in Hg. Not affected by alkalis. Has plastic props. at cryogenic temps.

Melting Point: Mp 156.2°

Boiling Point: Bp 2070°

Solubility: Insol. H₂O in bulk form; sol. most acids

Aldrich: 26404-0

Fluka: 57078

>>Variant: Indium 107

CAS Registry Number: 15756-53-3

Source/Synthesis: Prod. from Cd (d,n), Cd (p, γ), ^{108}Cd (p,2n), ^{110}Cd (p,4n), or ^{107}Ag (^3He ,3n)

Other Data: $I = +9/2$; $\mu = +5.59 \mu_{\text{N}}$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ^{107}Cd . There is also $^{107\text{m}}\text{In}$, $t_{1/2}$ 50 s

>>Variant: Indium 108

CAS Registry Number: 26842-21-7

Source/Synthesis: Prod. from Ag (α ,3n), Cd (p,n), ^{107}Ag (^3He ,2n), or ^{94}Mo (^{16}O ,np)

Other Data: $I = +3$; $\mu = +4.56 \mu_{\text{N}}$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ^{108}Cd

>>Variant: Indium 108m

Source/Synthesis: Prod. from Ag (α ,3n), Cd (p,n), ^{107}Ag (^3He ,2n), or ^{94}Mo (^{16}O ,np)

Other Data: $I = +6$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ^{108}Cd

>>Variant: Indium 109

CAS Registry Number: 14833-35-3

Source/Synthesis: Prod. from Ag (α ,2n). Daughter of ^{109}Sn

Other Data: $I = +9/2$; $\mu = +5.54 \mu_{\text{N}}$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ^{109}Cd . There are also $^{109\text{m}1}\text{In}$, $t_{1/2}$ 1.34 min. and $^{109\text{m}2}\text{In}$, $t_{1/2}$ 0.210 s

>>Variant: Indium 111

CAS Registry Number: 15750-15-9

Source/Synthesis: Prod. from Ag (α ,2n)

Use/Importance: Used in diagnostic nuclear medicine

Other Data: $I = +9/2$; $\mu = +5.50 \mu_{\text{N}}$. Decays by orbital electron capture to ^{111}Cd

>>Variant: Indium 113

CAS Registry Number: 14885-78-0

Other Data: $I = +9/2$; $\mu = +5.5289 \mu_{\text{N}}$. Nmr relative sensitivity ($^1\text{H}=1.00$) 0.345; receptivity ($^{13}\text{C}=1.00$) 83.8