

## Indium ${}_{49}\text{In}^{114.82}$

Indium was discovered in 1863 by Ferdinand Reich and Hieronymous Richter at Freiberg, Germany.

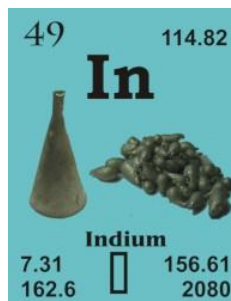
[Named after the indigo line in its spectrum]

French: indium

German: indium

Italian: indio

Spanish: indio



Atomic number	49
Density in g/cm <sup>3</sup>	7.31
Atomic radius in pm	156
Atomic weight	114.82
Melting point in °C	156.61
Boiling point in °C	2080

**Description:** Indium is a soft, silvery-white metal, and has one of the longest liquid range of all the elements. It is stable in air and with water; it dissolves in acids. Indium is used in low-melting alloys in safety devices. Indium arsenide and indium antimonide have uses in transistors and thermistors.

### INDIUM SINGLE CRYSTAL PROPERTIES

<b>State:</b>	single crystal
<b>Crystal structure:</b>	tetragonal
<b>Production method:</b>	Bridgeman
<b>Standard size:</b>	diameter 7mm thickness 3mm
<b>Orientation:</b>	(001)
<b>Orientation accuracy:</b>	<2°, <1°, <0.4° or <0.1°
<b>Polishing:</b>	as cut, <0.1µm
<b>Roughness of surface:</b>	
<b>Purity:</b>	99.9999%
	C 3
	H < 1
	O 9
	N < 5
	Cu 1.60
	Fe 1.80
	Ni < 1
	Pb 0.30
	Si 0.30
	Ga, Hf and Ta are below the detection limit
<b>Density:</b>	7.31 g/cm <sup>3</sup>
<b>Melting point:</b>	156.17 °C / 429.32 °K
<b>Boiling point:</b>	2079.85 °C / 2353 °K
<b>Molar volume:</b>	15.71 cm <sup>3</sup>
<b>Thermal conductivity:</b>	81.6 [300 K] Wm <sup>-1</sup> K <sup>-1</sup>

#### Typical analysis (ppm):



<b>Coefficient of linear thermal expansion:</b>	33 x 10 <sup>-6</sup> K <sup>-1</sup>
<b>Electrical resistivity:</b>	8.37x 10 <sup>-8</sup> [293 K] Wm
<b>Mass magnetic susceptibility:</b>	-7.0 x 10 <sup>-9</sup> (s) kg <sup>-1</sup> m <sup>3</sup>
<b>Young's modulus:</b>	10.6 GPa
<b>Rigidity modulus:</b>	3.68 GPa
<b>Bulk modulus:</b>	n.a. GPa
<b>Poisson's ratio:</b>	0.45
<b>Radii:</b>	In3+ 92; atomic 163; covalent 150
<b>Electronegativity:</b>	1.78 (Pauling); 1.49 (Allred); 3.1 eV (absolute)
<b>Effective nuclear charge:</b>	5.00 (Slater); 8.47 (Clementi); 9.66 (Froese-Fischer)
<b>Number of Isotopes (incl. nuclear isomers):</b>	59
<b>Isotope mass range:</b>	102 -> 132
<b>Crystal structure, (cell dimensions / pm), space group</b>	tetragonal
<b>X-ray diffraction: mass absorption coefficients:</b>	CuK $\alpha$ 243 ( $\mu/r$ ) / cm <sup>2</sup> g <sup>-1</sup> MoK $\alpha$ 29.3 ( $\mu/r$ ) / cm <sup>2</sup> g <sup>-1</sup>
<b>Neutron scattering length:</b>	0.4065 b/10 <sup>-12</sup> cm
<b>Thermal neutron capture cross-section:</b>	194 sa / barns

