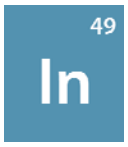
Stable isotopes of indium available from ISOFLEX

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Enrichment Level	Chemical Form
In-113	49	64	112.904062	4.29%	>93.00%	Metal
In-115	49	66	114.903879	95.71%	99.99%	Metal



Indium was discovered in 1863 by Ferdinand Reich and Theodore Richter. It is named for the indigo line in its atomic spectrum.

A silver-white, lustrous, soft metal, indium is highly malleable and ductile, with a face-centered tetragonal crystalline structure. It is soluble in acids and insoluble in alkalis. It is corrosion-resistant at room temperatures but oxidizes readily at higher temperatures. It is nontoxic and becomes a superconductor at -269.8 ºC.

Indium is stable in air at ambient temperatures. At red heat, it oxidizes to indium trioxide. Three other oxides of indium are known: the suboxide, the monoxide, and the sesquioxide — a mixture of the trioxide and the monoxide. Chemical properties of indium are similar to those of aluminum. When heated with chlorine at 200 ºC, indium becomes a dichloride. However, in the presence of excess chlorine, indium trichloride is formed. Similar reactions with other halogens. Indium dissolves in mineral acids. Concentration or evaporation of the solution produces corresponding salts. With sulfuric acid, it forms indium trisulfate and indium hydrogen sulfate. The metal combines with sulfur and phosphorus on heating, forming the sulfide and phosphide salts. Metalloid elements, such as arsenic, antimony, selenium, and tellurium, also combine with indium at elevated temperatures, forming their respective binary salts. Indium combines with several metals, such as sodium, potassium, magnesium, iron, palladium, platinum, lanthanum and cerium, forming semiconductor-type intermetallic compounds.

A major use of indium metal is in the production of bearings for automobile and aircraft engines. The addition of indium improves strength and hardness of bearings as well as their resistance to corrosion and fatigue. Electroplated coatings of indium are applied onto aluminum for electrical wiring and as indium oxide coatings in sodium-vapor lamps. In the semiconductor industry, indium is used as a doping agent to obtain p-type germanium. Other applications are in glass-to-metal seals, in electroluminescent panels, as conductive coatings on glasses and ceramics, and in nuclear reactor control rods.

Properties of Indium

Name	Indium
Symbol	In
Atomic number	49
Atomic weight	114.82

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Properties of Indium (continued)

Standard state	Solid at 298 °K
CAS Registry ID	7440-74-6
Group in periodic table	13
Group name	None
Period in periodic table	5
Block in periodic table	p-block
Color	Silvery lustrous gray
Classification	Metallic
Melting point	156.6 °C
Boiling point	2080 °C
Thermal conductivity	81.8 W/(m· K) at 298.2 °K
Electrical resistivity	8.37 μΩ·cm at 20 °C
Electronegativity	1.7
Specific heat	0.24 kJ/kg K
Heat of vaporization	53.7 $kJ \cdot mol^{-1}$ at 2080 °C
Heat of fusion	0.781 $kJ \cdot mol^{-1}$ mole
Density of liquid	7.02 g/cm^{-3} at 156.6 °C
Density of solid	7.31 g/cm^3
Electron configuration	$[Kr]4d^{10}5s^25p^1$
Oxidation states	+1, +2, +3
Most common oxidation state	+3