



INDIUM



INDIUM AT A GLANCE

- Highly malleable, low melting
- Remains workable in cryogenic temperatures
- Excellent fatigue resistance
- Good for use in difficult joining applications

AIM is a leading supplier of high purity indium solders, compounds and chemicals that are used in a broad range of applications.

INDIUM has unique properties and is a chemically versatile element which is consistently driving its use into a variety of applications in new markets. Indium is a highly malleable, low melting element that remains workable to cryogenic temperatures. Indium alloys offer a broad range of mechanical and melting characteristics, with excellent fatigue resistance, a good option for use in difficult joining applications.

AIM's indium products include:

SOLDERS Paste, wire, preforms, foil, ribbon, spheres.

TARGETS Sputtering target forms or evaporation source.

CHEMICALS & COMPOUNDS Acetate, oxide, hydroxide, sulphamate, sulfate, trichloride.

THERMAL INTERFACE MATERIALS Gaskets, wires.

Published Technical Data on Pure Indium

General Data

Atomic Number	49
Atomic Weight	114.82
Stable Isotopes	113; 115
Valance	3 (2 and 1)
Crystal Structure	a=0.3253 nm c=0.4947nm
Density	Solid (20°C) 7.310 Mg.m ⁻³ Liquid (157°C) 7.023 Mg.m ⁻³
Volume Change, Solidification	2%, 2.5%

Thermal Properties

Melting Point	156.598°C
Boiling Point	2070-2080°C
Latent Heat	Fusion 24.28 kJ.kg ⁻¹
	Evaporation 1959-2024 kJ.kg ⁻¹
Mean Specific Heat	Solid (0-100°C) 243 J.kg ⁻¹ K ⁻¹
	Liquid (200-400°C) 259 J.kg ⁻¹ K ⁻¹
Mean Thermal Conductivity	Solid (0-100°C) 70-80 W.m. ⁻¹ K ⁻¹
	Liquid (160-400°C) 42 W.m. ⁻¹ K ⁻¹
Linear CTE	24.8 x 10 ⁻⁶ K ⁻¹

Liquid Indium Properties

Density (Mg.m ⁻³)	~7.1295-0.6798 x 10 ⁻³ T
Surface Tension (mN.m ⁻¹)	2070-2080°C
Viscosity (mN.s.m ⁻²)	~0.302exp(800/T) (T,K)
Vapor Pressure (p,kPa)log ₁₀ p	~-1.42-(1825/T)-0.0653log ₁₀ T(T,K)

Mechanical Properties

Tensile Data	UTS (294K, 77K)	2.7, 14.5 MPa
	YS (294K, 77K) 1.	4, 5.0 MPa
	Elastic Modulus	10.8-12.8 GPa
Hardness	09 HB	
Poisson's Ratio (20°C)	0.445	

Electrical Properties

Electrical Resistivity	Solid (20°C)	8.8 micro Ohms.cm	Temperature Coefficient of Resistivity (0 - 100°C)	5.2 x 10 ⁻³ K ⁻¹
	Liquid (157°C)	29 micro Ohms.cm	Electrode Potential	0.338V
	Below 3.41k pure indium is superconducting		Electromechanical Equivalent	0.396 41g.Coulomb ⁻¹