

PRODUCT DATA SHEET

# High Purity Indium Metal

## Introduction

Indium Corporation is the leading global supplier of commercial indium, high purity indium, indium fabrications, alloys, and chemicals. Indium metal is extracted from indium-bearing ore and is refined to various grades in high volume utilizing state of the art SPC controlled refining technologies. Rigorous quality standards and advanced analytical instrumentation such as ICP and GDMS, ensures consistent product quality lot to lot.

## High Purity Indium

High purity indium is used as the starting material in the manufacture of indium-based group III-V such as:

- InP
- InAs
- InSb
- InGaAs
- InGaAsP

These compound semiconductors find use in ultra-high efficiency photovoltaic solar cells, infrared detectors, infrared LEDs, and electronic switching applications where silicon-based devices are not suitable.

High purity indium is used as the starting material and reacted with Ga, P, Sb, etc. to produce polycrystalline InGa, InP, InSb, etc. The polycrystalline compound is then grown into a single crystal using Czochralski or Bridgeman single crystal growth techniques to produce a single-crystal boule. The boule is then sliced into wafers, which are subsequently fabricated into individual semiconductor devices.

High purity indium is also used as the source material for semiconductor epitaxial layering using liquid phase, vapor phase, or molecular beam epitaxy.

## Available Physical Forms of High Purity Indium

- Ingot
- Shot

## Grades Available

- 6N (99.9999%)
- 6N5 (99.99995%)

For lower grades, please refer to the Commercial Indium Metal product data sheet.

## Typical Impurities

Please note that these ppm levels are calculated averages from past production lots and do not represent the maximum, minimum, or lot specific levels. The ppm levels in the table should not be used in designing product specifications. Impurities will vary in different lots of indium, but the total impurities will be below the maximum allowed in each grade:

- 6N grade: total impurities < 1 ppm
- 6N5 grade: total impurities < 0.5 ppm

**Additionally, Indium Corporation offers a 6N5 grade with controlled impurities (6N5WCI Grade). Please contact Sales or Technical Support for further information on which impurities can be controlled to lower levels.**

Element	6N Grade (ppm)	6N5 Grade (ppm)
Bi	0.10	0.10
Cu	0.10	0.10
Fe	0.15	0.15
Ni	0.19	Not Found
Pb	0.10	0.18
Sn	0.30	0.10
Tl	0.10	0.09

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Form No. 98376 R4

[www.indium.com](http://www.indium.com)

[askus@indium.com](mailto:askus@indium.com)

ASIA: Singapore, Cheongju, Malaysia: +65 6268 8678  
 CHINA: Suzhou, Shenzhen: +86 (0)512 628 34900  
 EUROPE: Milton Keynes, Torino: +44 (0) 1908 580400  
 USA: Utica, Clinton, Chicago, Rome: +1 315 853 4900



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## High Purity Indium Metal

### Oxidation and Shelf Life

Compared to most metals, indium oxidizes quite slowly. Immediately after fabrication, there is initial rapid oxide growth for a few days until the oxide thickness reaches 80-100 angstroms. If stored in air, the oxide thickness slowly increases over several months depending on storage conditions and the physical form of indium. For physical forms of indium that have a high surface area such as powder, storage in an inert gas such as argon with a desiccant will greatly reduce oxidation formation.

Following are the shelf lives depending on the physical form of indium:

- Indium ingot – 12 months
- Indium fabrications (wire, ribbon, sheet, tubing, and foil) – 6 months
- Indium shot – 12 months
- Indium powder – 3 months

In some cases, excessive oxidation can be removed by immersion in dilute mineral acids. Please contact technical support for more information.

### Technical and Customer Support

Indium Corporation's internationally experienced engineers, material scientists and metallurgists provide in-depth technical assistance to our customers. Thoroughly knowledgeable on all aspects of material science and metallurgy as it pertains to indium metal, its uses and applications, our technical service staff is available to provide rapid response to all technical inquiries. We believe that our long-standing emphasis on providing our customers with superior technical service clearly differentiates Indium Corporation from our competitors.

### Safety Data Sheets

The SDS for this product can be found online at <http://www.indium.com/sds>

This product data sheet is provided for general information only. It is not intended, and shall not be construed, to warrant or guarantee the performance of the products described which are sold subject exclusively to written warranties and limitations thereon included in product packaging and invoices. All Indium Corporation's products and solutions are designed to be commercially available unless specifically stated otherwise.

[www.indium.com](http://www.indium.com)

[askus@indium.com](mailto:askus@indium.com)

ASIA: Singapore, Cheongju, Malaysia: +65 6268 8678  
CHINA: Suzhou, Shenzhen: +86 (0)512 628 34900  
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