

Product Data Sheet

Indium and Gallium Shot for Thin-Film Deposition

Introduction

Shot are round or tear-dropped shaped pieces of metal that are typically used as source materials for thin-film deposition. Examples include: filling vapor deposition crucibles or filling anode baskets with indium for electroplating.

For tear-dropped shaped shot, the typical diameter of the body is approximately 1/8" (3.175mm) and the length of the tail can vary depending on various parameters, such as the surface tension of the alloy.

Round shot is used to maximize the pack density in deposition crucibles by 15-20%. This option can increase throughput by decreasing downtime caused by source materials depletion.



Tear-drop



Round

Availability

Shot is available in most alloys with common purities up to 6N (99.9999%). Round shot size has a diameter range of 1-3mm for gallium and 1-2mm is common for pure indium.

Packaging

Shot is typically packaged in jars according to weight and backfilled with argon. Custom packaging is available. At room temperature, gallium is already very close to its melting point. Because of this, gallium is only offered as round shot in a regulation approved bottle. As round shot, gallium must be shipped cold to prevent heat exposure and melting during shipment.

Storage and Handling

Shot should be stored in a dry environment at or below room temperature. A nitrogen dry box is ideal. Once opened, containers should be purged with argon and closed tightly before returning to storage.

Gallium is corrosive to most metals. For this reason, it should be stored in regulation approved containers. Shelf life for gallium shot is 1 year when stored <20°C.

Indium oxidizes quite slowly compared to most other metals. Immediately after fabrication, there is an 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. The shelf life for indium shot is 12 months.

Physical Properties

	Indium	Gallium
Atomic Number	49	31
Boiling Point	2072°C	2204°C
Melting Point	157°C	29.8°C
Density	7.31g/cm ³	6.10g/cm ³
Atomic Weight	114.8g/mol	69.7g/mol

Typical Impurities

	4N Indium (ppm)	5N Indium (ppm)	4N Gallium (ppm)
Ag	<1	<1	2 max
Cu	10 max	2 max	15 max
Fe	4 max	1.5 max	4 max
Ni	10 max	2 max	5 max
Pb	25 max	3 max	25 max
Sn	25 max	3 max	15 max
Total	<100	<10	<100

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Technical Support

Indium Corporation's internationally experienced engineers provide in-depth technical assistance to our customers. Thoroughly knowledgeable in all facets of Material Science as it applies to the electronics and semiconductor sectors, Technical Support Engineers provide expert advice in solder properties, alloy compatibility and selection of solder preforms, wire, ribbon and paste. Indium Corporation's Technical Support engineers provide Rapid Response to all technical inquiries.

Material Safety Data Sheet

The MSDS for this product can be found online at <http://www.indium.com/techlibrary/msds.php>

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