

# Solder Preforms

## Introduction

**Solder preforms** are used in a variety of applications that require precise amounts of solder.

Preforms come in standard shapes such as squares, rectangles, washers, and discs. Typical sizes range from .010" (.254mm) up to 2" (50.8mm). Smaller and larger sizes, as well as custom shapes, are also available. Dimensions can be held to tight tolerances to assure volume accuracy.

## Selecting Alloys

A wide assortment of alloys is available in liquidus temperatures that range from 47°C to 1063°C. Alloys can be indium-contained, gold-contained, lead-free, fusible or standard tin-lead, as well as many others.

1. Alloy selection should be based on strength and other required physical properties, as well as the preferred soldering temperature and the operating temperature of the device being soldered. A general rule is to select an alloy that melts at least 50°C higher than the operational temperature of the part being soldered.
2. Next, consider the materials being soldered and which solder is most compatible with them. For example, tin-based solders will scavenge the gold from gold-plated parts, forming brittle intermetallics, so indium-based solders are generally recommended in these cases.
3. Metals and alloys have different characteristics that can affect the ease with which they can be made into different shapes and thicknesses. It is important to consider the shape of the final preform in the alloy selection process.
4. The operating environment of the completed assembly is also an important consideration for alloy selection. Will it operate in very high or very low temperatures, or be subjected to vibration? If so, an alloy should be selected that will stand up to these conditions.

Our Application Engineers will work with you to determine the best alloy for your application.



## Selecting Dimensions

The location of the solder joint and the volume of solder needed will determine the size and shape of the preform. Once the flat dimensions (diameter, length, width) have been determined, the thickness can be adjusted to achieve the desired volume of solder. Generally, for through-hole connections, add 10–20% to the calculated volume for a good fillet. For pad-to-pad joints, figure about 5% less surface area than the pad.

Each **solder preform** should have a burr tolerance specified. Stay as close to standard tolerances as possible to avoid adding cost and lead time to your preforms.

Indium Corporation has an extensive library of sizes and shapes from which to choose, or we can create a set-up specifically for your application. Using an existing preform size can eliminate the additional time associated with creating a new set-up.

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## Packaging and Storage

**Solder preforms** come in a variety of packaging options, including tape & reel. To minimize excessive handling, and exposure to air and subsequent oxidation, solder preforms should be packaged according to the quantity used during a typical work shift.

Store in the original container, closed securely, at or below normal room temperature (~70°F/21°C). **Solder preforms** can also be stored in an inert atmosphere, such as a nitrogen dry box.

## Shelf Life

The shelf life of solder preforms is dependent on the alloy composition. Pb-free alloys, and alloys with lead content of <50%, have a shelf life of one year from the date of manufacture (DOM). Alloys with lead content ≥50% have a shelf life of six months from the DOM.

## Technical and Customer 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.

## Safety Data Sheets

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

## Dimensional Specification Recommendations\*

Width/Length or Diameter	Typical Tolerances
Up to .100" (2.54mm)	±.002" (±.051mm)
Over .100" (2.54mm)	±.005" (±.127mm)
Thickness	
Up to .001" (.025mm)	±.0002" (.005mm)
.001" (.025mm) to .002" (.050mm)	±.0003" (.0076mm)
>.002" (.050mm) to .010" (.254mm)	±.0005" (.0127mm)
>.010" (.254mm) to .020" (.508mm)	±.0010" (.0254mm)
>.020" (.508mm) to .050" (1.27mm)	±.0025" (.0635mm)
>.050" (1.27mm)	±5%
Burr Tolerances (Discs, Squares, and Rectangles)	
≤.050" (1.27mm)	.002" (.050mm)
>.050" (1.27mm) to .500" (12.7mm)	.003" (.076mm)
>.500" (12.7mm)	.005" (.127mm)
Burr Tolerances (Washers and Frames)	
≤.100" (2.54mm)	.003" (.076mm)
When thickness ≥ 2/3 of I.D.	.005" (.127mm)

*\*Do not apply to gold-based or braze alloys.*

Also available: solder ribbon and foil, solder wire, solder paste, solder spheres, solder fluxes, solder ingot, and other solder fabrications.

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.

Contact our engineers today: [askus@indium.com](mailto:askus@indium.com)

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