

Solder Ribbon and Foil

Introduction

High quality **Solder Ribbon and Foil** manufactured by Indium Corporation is available in many standard alloys and sizes. Material can also be custom made to your unique material and dimensional requirements.

Solder Ribbon is supplied in continuous lengths and is packaged on spools. **Solder Foil** is supplied in sheet form.

Ribbon Dimensions

Whether you are looking for large quantities of **Solder Ribbon** in specific widths and thicknesses for automatic die bonding, or a few feet to do testing, Indium Corporation can accommodate your needs.

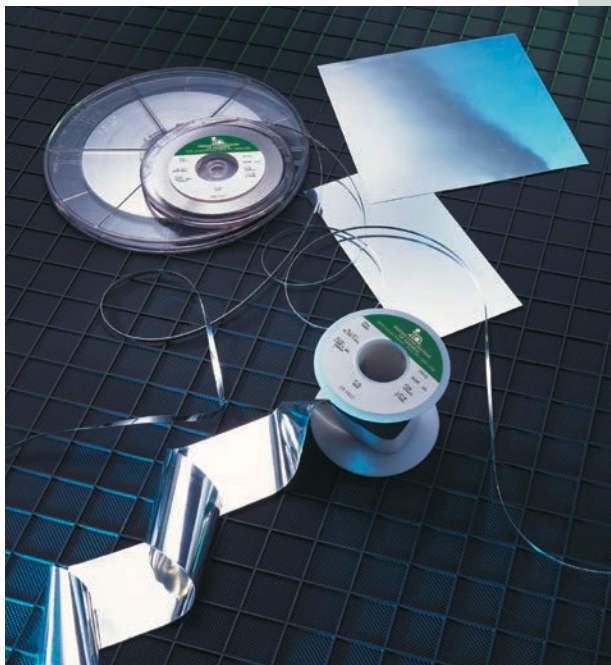
Our capabilities allow us to manufacture widths as small as .020" (.5mm) and up to 3" (76 mm). Thicknesses range from .001" (.025 mm) up to as thick as your application requires. All dimensions are dependent on the properties of the metals involved.

We can work with you on your specific dimensional requirements. Our typical tolerances are:

| Width | |
|------------------------------------|-------------------|
| Up to .099" (2.5 mm) | ±.010" (.254mm) |
| .100" to .999" (2.54mm to 25.37mm) | ±.025" (.635mm) |
| Over 1.00" (25.4mm) | ±.040" (1.01mm) |
| 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% |

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 1 year from the date of manufacture (DOM). Alloys with lead content ≥50% have a shelf life of 6 months from the DOM.



Foil Dimensions

For applications requiring material wider than 3", we make solder foil sheets in sizes up to 144 square inches. We also can custom-cut sheets in larger sizes or special shapes.

Standard tolerances on foil dimensions are ±.062" (1.57mm) on the width and the length and ± .001" (.025mm) on the thickness.

Available Materials

Whether you require pure metal such as indium, tin, gold, lead, etc. or an alloy, we can accommodate your needs. Indium Corporation has over 200 standard pure metals and alloys available, or we can design an alloy just for you. In addition, our standard alloy list includes a large selection of lead-free alloys.

Several of our more popular alloys are listed on the back of this data sheet. If you need a full listing of our standard alloys, please call us and request our Solder Alloy Directory.

OVER→

Form No. 97621 (A4) R5

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Storage

Store **Solder Ribbon and Foil** in the original container, closed securely, in 55% RH or less at or below normal room temperature (~70°F/21°C). It can also be stored in an inert atmosphere, such as a nitrogen dry box.

Packaging

We have developed standard packaging for various alloys and ribbon widths. However, if you have specialized needs such as spool size, quantity per spool, or other requirements, we can meet your unique specifications.

Each order can be shipped with a Certificate of Analysis which includes information on metallic impurities. We can also provide a Certificate of Conformance when **Solder Ribbon and Foil** is made to customer specifications.

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, foil and paste. Indium Corporation's Technical Support engineers provide rapid response to all technical inquiries.

Safety Data Sheets

The SDSs for these products can be found online at <http://www.indium.com/sds>

Some Physical Properties of Common Solder Ribbon and Foil Alloys

| Liquidus (°C/°F) | Solidus (°C/°F) | Indalloy® Number | Composition | Plastic Range (°C/°F) | Mass Density (gm/cm ³) | Electrical Conductivity (% of Cu) | Thermal Conductivity W/cm ² °C @ 85°C | Thermal Coefficient of Expansion μ in/in/°C @ 20°C | Tensile Strength (PSI) | Bond Holding Strength (Shear) (PSI) |
|------------------|-----------------|------------------|----------------|-----------------------|------------------------------------|-----------------------------------|--|--|------------------------|-------------------------------------|
| 118/244 | 118/244 | 1E | 52In/48Sn | Eutectic | 7.30 | 11.70 | 0.34 | 20.0 | 1720 | 1630 |
| 138/281 | 138/281 | 281 | 58Bi/42Sn | Eutectic | 8.56 | 4.5 | 0.19 | 15.0 | 8000 | 500 |
| 143/290 | 143/290 | 290 | 97In/3Ag | Eutectic | 7.38 | 23.00 | 0.73 | 22.0 | 800 | — |
| 154/309 | 149/300 | 2 | 80In/15Pb/5Ag | 5/9 | 7.85 | 13.00 | 0.43 | 28.0 | 2550 | 2150 |
| 157/315 | 157/315 | 4 | 100In | Melting Point | 7.31 | 24.00 | 0.86 | 29.0 | 273 | 890 |
| 167/333 | 154/309 | 9 | 70Sn/18Pb/12In | 13/24 | 7.79 | 12.20 | 0.45 | 24.0 | 5320 | 4190 |
| 175/347 | 165/329 | 204 | 70In/30Pb | 10/18 | 8.19 | 8.80 | 0.38 | 28.0 | 3450 | — |
| 179/354 | 179/354 | Sn62 | 62Sn/36Pb/2Ag | Eutectic | 8.41 | 11.90 | 0.50 | 27.0 | 7000 | 7540 |
| 181/358 | 173/343 | 205 | 60In/40Pb | 8/15 | 8.52 | 7.00 | 0.29 | 27.0 | 4150 | — |
| 183/361 | 183/361 | Sn63 | 63Sn/37Pb | Eutectic | 8.40 | 11.50 | 0.50 | 25.0 | 7500 | 6200 |
| 210/410 | 184/363 | 7 | 50In/50Pb | 26/47 | 8.86 | 6.00 | 0.22 | 27.0 | 4670 | 2680 |
| 221/430 | 221/430 | 121 | 96.5Sn/3.5Ag | Eutectic | 7.36 | 16.00 | 0.33 | 30.2 | 5620 | — |
| 232/450 | 232/450 | 128 | 100Sn | Melting Point | 7.28 | 15.60 | 0.73 | 24.0 | 1900 | — |
| 260/500 | 240/464 | 10 | 75Pb/25In | 20/36 | 9.97 | 4.60 | 0.18 | 26.0 | 5450 | 3520 |
| 280/536 | 280/536 | 182 | 80Au/20Sn | Eutectic | 14.51 | — | 0.57 | 16.0 | 40000 | 40000 |
| 356/673 | 356/673 | 183 | 88Au/12Ge | Eutectic | 14.67 | — | 0.44 | 13.0 | 26825 | 26825 |
| 1064/1948 | 1064/1948 | 200 | 100Au | Melting Point | 19.30 | 73.4 | 3.18 | 14.0 | 18000-20000 | — |

All information is for reference only. Not to be used as incoming product specifications.

Also available: solder preforms, 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.

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