**Introduction**

PoP Paste Indium9.91 is a no-clean solder paste designed for use in package-on-package (0.3mm and larger) applications. PoP Paste Indium9.91 has a rheology designed to provide a long-lasting dipping process.

**Features**
- Eliminates defects due to package warping
- Air reflow
- Rheology optimized for both dipping and package retention
- Designed for use with SAC305 and Sn63/Pb37 alloys
- Excellent solderability
- Long pot life
- Suitable for use down to 0.3mm pitch

**Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flux Type Classification</td>
<td>ROL1</td>
<td>J-STD-004 (IPC-TM-650: 2.3.32 and 2.3.33)</td>
</tr>
<tr>
<td>Typical Viscosity</td>
<td>150k cps</td>
<td>ANSI/IPC-TM650</td>
</tr>
<tr>
<td>Typical Tack Strength</td>
<td>40g</td>
<td>ANSI/IPC-TM650</td>
</tr>
<tr>
<td>SIR (Ohms)</td>
<td>Pass (&gt;10^8 after 7 days @ 85°C and 85% RH)</td>
<td>ANSI/IPC-TM650</td>
</tr>
<tr>
<td>Shelf Life (Sealed)</td>
<td>6 months at ≤0°C</td>
<td>ICA test method</td>
</tr>
<tr>
<td>Working Life</td>
<td>8 hours at room temperature (&lt;30°C, &lt;70% RH)</td>
<td>ICA test method</td>
</tr>
</tbody>
</table>

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

**Alloys**

PoP Paste Indium9.91 is available with SAC305 (96.5Sn/3.0Ag/0.5Cu) and Sn63 (63.0Sn/37.0Pb).

**Application**

Solder paste is applied to the spheres in a doctor-bladed dipping process (Figure 1).

- Typical package-on-package applications only need dipping to 25–45% of the sphere height

Care must be taken to avoid contaminating the bottom of the package itself with PoP paste, as this may cause bridging defects.

The volume of paste on the package bumps can be optimized by changing the pick and place equipment parameters. The dip depth and the dwell time in the flux reservoir are key process variables to perform optimization for. Both of these variables will need to be optimized for each specific component that is being used in the dipping process. The settings will depend upon the package bump height and pitch. Other equipment settings can also have an effect on the process including the flux shear speed, insertion speed, and extraction speed.

Consistent solder paste volumes are reproducibly attained from dipping 0.3mm or higher pitch packages in the PoP Paste Indium9.91 (Figure 2).
Reflow

Recommended Profile:

**SAC Alloy Reflow Profile Options**

**SnPb Reflow Profile Options**

Peak reflow temperature will vary with the alloy type. A short preheat (140–150°C for 63Sn and 150–160°C for SAC305) for less than 45 seconds may be used to reduce solderballing caused by excess paste. The profile should ideally be a linear ramp at 1–2°C/second up to 20–30°C above solidus temperature, with a rapid cool down afterwards, and a minimum time above liquidus of 20 seconds.

**Cleaning**

Although designed as a no-clean material, the residue from the **PoP Paste Indium9.91** may be cleaned using commercially available cleaning solutions.

**Packaging**

**PoP Paste Indium9.91** is available in airless (bubble-free) packaging. For automated dispense applications:

- 100g (30cc) syringes are standard
- Other packaging may be available to meet specific requirements. Consult with Indium Corporation Sales or Technical Support staff for details.

**Storage and Handling**

**PoP Paste Indium9.91** syringes and cartridges should be stored tip down at <0°C for a maximum of 6 months. **PoP Paste Indium9.91** should be allowed to stand for at least 4 hours at room temperature before using.

Once removed from cold storage, the solder paste in a sealed syringe may remain at room temperature for up to 7 days before usage and during usage. However, once outside the syringe, its working life is estimated to be 8 hours, and may be less under high-temperature (>25°C) and -humidity (>70%RH) conditions.

The paste should not be subjected to multiple cold/heat cycles or viscosity changes and/or flux separation may occur.

**Technical Support**

Indium Corporation sets the industry standard in providing rapid response, onsite technical support for our customers worldwide. Indium Corporation’s team of Technical Support Engineers can provide expertise in all aspects of materials science and semiconductor packaging process applications.

**Safety Data Sheets**

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