No-clean, halide free solder paste

Description

**LP 5707 SnPb(Ag)** is a no-clean, halide free solder paste that has been developed for soldering without nitrogen and long, high reflow profiles.

Additionally the solder paste exhibits extremely low tendency towards solder ball formation.

The absolutely halogen free soldering chemistry, used in **LP 5707 SnPb(Ag)** prevents dewetting when submitted to high temperatures or long profiles, also when soldering without nitrogen.

The solder paste keeps its rheological properties on the stencil for a long time, even under high or low humidity conditions.

Furthermore, the chemistry of **LP 5707 SnPb(Ag)** has been designed to minimize void formation.

Availability

<table>
<thead>
<tr>
<th>alloy</th>
<th>metal content</th>
<th>powder size</th>
<th>packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sn63Pb37</td>
<td>printing: 89% - 90%</td>
<td>standard type 3 (25—45µ)</td>
<td>500g jar</td>
</tr>
<tr>
<td>Sn62Pb36Ag2</td>
<td>dispensing: 86% - 87%</td>
<td>type 4 and type 5 available for certain alloys</td>
<td>1kg—1,2kg—1,3kg in 12 Oz. cartridge</td>
</tr>
<tr>
<td>ATK anti tombstone</td>
<td></td>
<td></td>
<td>5cc—10cc—30cc syringe</td>
</tr>
</tbody>
</table>

Key advantages:

- High and long profile resistant without nitrogen
- Prevents dewetting
- High stability on the stencil, also under more extreme atmospheric conditions
- Low solder ball formation tendency
- Low voiding
- Low transparent residue after reflow
- Absolutely halogen free

More information:

- Reflow profile P. 2
- Profile recommendations P. 2
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Products pictured may differ from the product delivered
Reflow profile for SnPb(Ag) alloys

**General description**

LP 5707 SnPb(Ag) is designed to withstand long and high reflow profiles, also under atmospheric conditions without nitrogen. Both soak and ramp profiles are possible. In general a soak profile is advised and may be used when assembly in a reflow process, care must be taken not to overheat components especially when using air convection or IR ovens. It is very important to know the temperature limitations of the components used on the board. To get a good thermal mapping of the board it is advised to use thermocouples and a thermal measuring tool. Measure on small outline, big outline and temperature sensitive components. Measure on the board side near the conveyor chain, in the middle of the board and close to, or on heat sinks.

**Profile recommendations** (for SnPb(Ag) alloys)

LP 5707 SnPb(Ag) has a wide process window in reflow with few limitations. Below are a few examples of profiles that can be used. It is advisable to limit peak T° to 250°C and keep total profile length (from room to peak T°) below 8 minutes.

- **Preheat**
  - From room T° till +/- 120°C: max. 3°C/s.
  - Higher heating rates could result in component cracking due to absorbed moisture.

- **Soak**
  - Usually between 120°C - 170°C: 0°C/s - 1°C/s.

- **Ramp up to reflow**
  - Max. 4°C/s because of differences in thermal expansion of the materials on the PCB.
  - Peak T° is related to PCB and component specifications. In general between 200°C and 230°C.

- **Reflow**
  - The time in liquidus (over melting point of the alloy) usually:
  - 45s - 90s

- **Cooling**
  - Cooling rate not faster than -4°C/s because of differences in thermal expansion of the materials.
Handling

Storage
Store the solder paste in the original packaging, tightly sealed at a preferred temperature of 3º to 7ºC.

Handling
Let the solder paste reach room Tº prior to opening the packaging. Stir well before use.

Printing
Assure good sealing between PCB and stencil. Apply no more than enough squeegee pressure to get a clean stencil. Apply enough solder paste to the stencil to allow smooth rolling during printing. Regular replenish fresh solder paste.

Maintenance
Set an under stencil clean interval which provides continuous printing quality. This interval will depend on the PCB, the stencil and the atmospheric conditions. ISC8020 is recommended as cleaning agent in pre saturated wipes and USC liquid.

Reuse
Store used paste in a separate closed jar at room Tº in a container with water absorbing material. Before reuse, test the solder paste. When storing for a longer time, press the inner lid firmly on the paste, so that no air is enclosed, clean off paste residues, put on the outer lid and put back into refrigeration. Before reuse, let the solder paste reach room temperature prior to opening and test the solder paste.

Test results
conform IPC J-STD-004A/J-STD-005

<table>
<thead>
<tr>
<th>Property</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>qualitative copper mirror</td>
<td>pass</td>
<td>J-STD-004A IPC-TM-650 2.3.32</td>
</tr>
<tr>
<td>halide content</td>
<td>none</td>
<td>J-STD-004A IPC-TM-650 2.3.28.1</td>
</tr>
<tr>
<td>silver chromate (Cl, Br)</td>
<td>pass</td>
<td>J-STD-004A IPC-TM-650 2.3.33</td>
</tr>
<tr>
<td>flux classification</td>
<td>RO L0</td>
<td>J-STD-004A</td>
</tr>
<tr>
<td>Environmental</td>
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<td></td>
</tr>
<tr>
<td>SIR test</td>
<td>pass</td>
<td>J-STD-004A IPC-TM-650 2.6.3.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>solder ball test</td>
<td>after 15min</td>
<td>pass</td>
</tr>
<tr>
<td></td>
<td>after 4h</td>
<td>pass</td>
</tr>
<tr>
<td>wetting test</td>
<td>pass</td>
<td>J-STD-005 IPC-TM-650 2.4.45</td>
</tr>
<tr>
<td>slump test</td>
<td>after 15min at 25ºC</td>
<td>pass</td>
</tr>
<tr>
<td></td>
<td>after 10min at 150ºC</td>
<td>pass</td>
</tr>
</tbody>
</table>
Operating parameter recommendations

**Printing**
- speed: 20—150 mm/sec
- squeegee pressure: 250g—350g/cm length
- preferred temperature range: 15 to 25°C
- preferred humidity range: 25 % to 90% r.H.

**Mounting**
- tack time: >8 hours

**I.C.T**
- flying probe testable
- pin-bed testable

Trade name: LP 5707 SnPb(Ag) No-Clean, Halide Free Solder Paste

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