No-clean solder paste for dispensing

Description:
The solder paste IF 9007' is a No Clean solder paste, especially developed to work in closed systems like Proflow(Dek), Rheopump(MPM), PuckPack™ and others. It has been tested and approved in these systems. The rheology of the IF9007’ allows high printing speeds. The paste does not dry out in the head and does not show leakage from closed system cartridges. Furthermore it offers good tackiness, high stencil life and low residue after soldering. The IF 9007’ is suitable for dispensing.

Key advantages:
• Suitable for high printing speed
• Tack life>8 hours*
• No disturbing smell
• Excellent wetting on Sn/Pb, Ni/Au, OSP, Ag/Pd
• Low residue after reflow
• Excellent for dispensing

More information:
- Reflow profile
- Profile recommendations
- Product handling
- Test results
- Operating parameter recommendations

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: 88 – 88,5%</td>
<td>Standard type 3 (25—45µ)</td>
<td>500g jar</td>
</tr>
<tr>
<td>Sn62Pb36Ag2</td>
<td>dispensing: 84—85%</td>
<td>other sizes upon request</td>
<td>500g in 6Oz. Cartridge</td>
</tr>
<tr>
<td>SnPbAg — AT</td>
<td></td>
<td></td>
<td>1kg—1,2kg—1,3kg in 12 Oz. cartridge</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5—10—30cc syringes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PuckPack™ and ProFlow™ cassettes</td>
</tr>
</tbody>
</table>

* test conditions upon request
Reflow profile for SnPb and SnPbAg alloys

General description
In general a soak profile is advised and may be used when temperature differences across a board, due to a high mix of components or large board sizes, need to be levelled out. Or when the number of voids, if present because of material combination, need to be decreased.

When soldering in air the profile’s peak temperature should occur within a frame time of maximum 300sec or 5 minutes from the profile’s starting point. The correct conveyor speed (m/min) can be calculated by dividing the total chamber length (m) of the heating zones by the desired process time (min). Soldering under nitrogen has fewer limitations.

When soldering an assembly in a lead free solder 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

Preheat
From room temperature until ±150°C at a rate of 1-3 °C/s. Faster rates could result in component cracking due to absorbed moisture evaporating.

Soak zone
Around 150°C. A soak zone is used to level out temperature differences on a board. It is often used in IR ovens and on boards with a big diversity of components and Cu distribution.

Ramp to reflow
From 170°C to peak temperature.

Reflow
Peak temperature related to component specifications, in general from 200-230°C. Time above liquidus: In general 30s-90s

Cool down
Maximum -4°C/s because of different thermal expansion coefficients of the materials involved.

Maximum 4°C/s because of different thermal expansion coefficients inside the components.
Handling

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

**Reuse**
Do not mix used and fresh paste. Do not put packages back into refrigeration when already opened. Store used paste in a separate jar at room temperature.

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

**Reuse**
Do not mix used and fresh paste. Do not put packages back into refrigeration when already opened. Store used paste in a separate jar at room temperature.

**Maintenance**
Set an under stencil clean interval which provides continuous printing quality.

**Reflow**
Consult profile

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**Test results**

<table>
<thead>
<tr>
<th>Property</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemical</strong></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>qualitative halide</td>
<td>pass</td>
<td>J-STD-004A IPC-TM-650 2.3.33</td>
</tr>
<tr>
<td>silver chromate (Cl, Br)</td>
<td>pass</td>
<td>J-STD-004A IPC-TM-650 2.3.35</td>
</tr>
<tr>
<td>quantitative halide</td>
<td>0,0%</td>
<td>J-STD-004A IPC-TM-650 2.3.35</td>
</tr>
<tr>
<td><strong>Environmental</strong></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>

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<thead>
<tr>
<th>Property</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mechanical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>solder ball test</td>
<td>preferred</td>
<td>J-STD-005 IPC-TM-650 2.4.43</td>
</tr>
<tr>
<td>after 15min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>after 4h</td>
<td>preferred</td>
<td>J-STD-005 IPC-TM-650 2.4.43</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>pass</td>
<td>J-STD-005 IPC-TM-650 2.4.35</td>
</tr>
<tr>
<td>after 15min at 25°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pass</td>
<td>J-STD-005 IPC-TM-650 2.4.35</td>
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</tbody>
</table>
Operating parameter recommendations

**Printing**
- Speed: 20 – 70 mm/sec
- Squeegee pressure: ±250g/cm length
- U.S.C. Interval: every 10 boards
- Temperature range: 15°C to 25°C

**Dispensing**
- Needle gauge: ≤ 22G
- Needle length: 1/2” (12mm)

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

**Reflow**
- Reflow profile: linear and soak
- Heating type: convection, vapour phase, etc

**I.C.T**
- Flying probe testable
- Pin-bed testable

**Cleaning**
- Safe residues (no-clean formulation)
- 100% halide free
- No post reflow cleaning necessary, however, residue is easily completely removed

Un-reflowed paste and stencil cleaning recommended with:
- VIGON®: SC200, SC202, SC400
- ZESTRON®: SD300, SD301
- ATRON®: SP200
- INTERFLUX®: SC8020*

(spray in air in stencil cleaning equipment - * Under Stencil Cleaners of printers or pre-saturated wipes)

Reflowed paste residue is easily removed with:
- Following recommended cleaning agents:
  - VIGON®: A200, A300
  - ZESTRON®: FA+, VD

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