



## Technical Data Sheet

# STANNOL® Solder paste SP1300

Anti-Tombstone solder paste REL0 with good wetting properties

### Key benefits

- ✓ Exceptional print to print consistency
- ✓ Suitable for fine pitch down to 0,4mm
- ✓ Compatible with a wide range of solderable surfaces
- ✓ Effective over a wide range of reflow profiles in air or nitrogen
- ✓ Overall wide process window in print and reflow
- ✓ High tackiness for high speed pick and place equipment
- ✓ Temperature range for application 20-32°C

### Description

The solder paste **STANNOL® SP1300** was developed for lead-containing alloys with the Sn63Pb37 as a standard alloy. It contains a highly active type L No-Clean flux. The unique combination of flux and alloy ensures a reduction of tombstone defects, which are depending mostly on design issues. With a special formulation for perfect wetting, the SP1300 fulfils all the requirements for a modern solder paste, which can be used in a high volume electronics manufacturing. Wetting properties have been optimized for all known surfaces in the electronics industry. As this solder paste leaves only very small amounts of residues after soldering on the PCB, and these small amounts of residues show exceptional electrical safety, there is no need for cleaning.

### Application

**Solder Paste Printing:** The solder paste **SP1300** was developed for stencil printing. In combination with the alloy Sn63 Pb37 in solder particle size type 3 (25-45µm) it can be used on every open and most closed stencil printing systems.

**Typical application parameters:** 0.4-0.65mm Pitch at 150µm stencil thickness  
<0.4mm Pitch at 120µm stencil thickness

**Minimum pad width:** 180-200µm at 150µm stencil thickness

#### Recommendation for solder paste printing:

- Use always the thinnest possible stencil thickness.
- Use always stencils with rounded corners, to reduce clogging of apertures to the lowest possible minimum.
- Set the squeegee pressure to 1kg for each 5cm of squeegee length. Then reduce the pressure step by step, till the solder paste starts smearing on the stencil. Then add 1kg to the squeegee pressure and check, that the solder paste leaves no residues after printing on the surface of the stencil. Evaluate this parameter at your desired print speed.
- Optimum print results can be achieved at print speeds between 10-75 mm sec<sup>-1</sup>.
- Please ensure a perfect sealing between PCB and stencil. The PCB has to have the best possible support, to achieve the optimum sealing to the stencil, so that the solder paste cannot be printed between pads and stencil. This avoids solder balling.
- Printer down times up to 30min can be achieved. The following first print after 1h should give good filling of apertures and a good print result. Open times of the PCB between print and reflow up to 24h can be realised by storing the printed PCB in a closed container to prevent the solvents from evaporating.

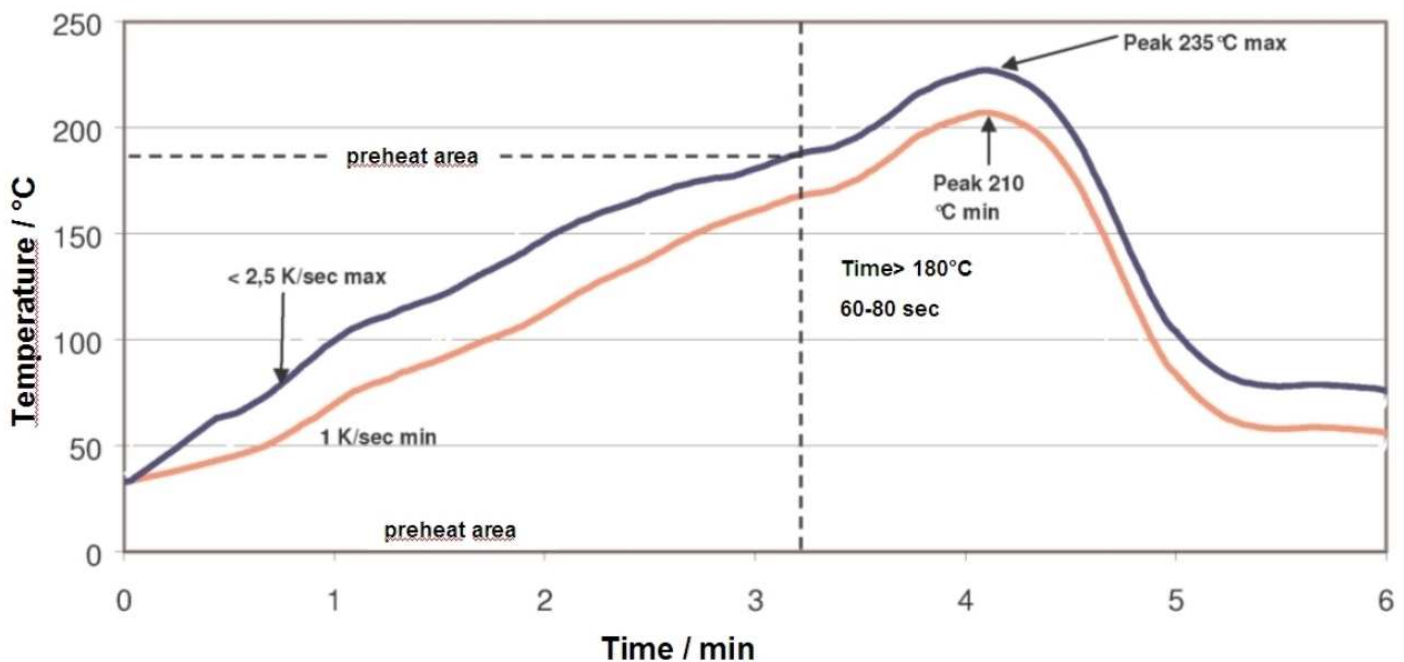
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- The printed solder paste on the circuit board shows up to 16h a good tackiness, which still allows pick and place of components and the following reflow. This time may be optimized by avoiding air flow and high temperatures during storage. Storage of the printed PCB in a refrigerator is not recommended, as this may lead to condensation of water on the solder paste, when removing the PCB from the cold storage. The total time is depending very strong on storage conditions, size and form of the printed pad and component and velocity during the pick and place process. Therefore this time has to be evaluated for each manufacturing site.

**Reflow profile:** The reflow can be done either in air or nitrogen. Following is an example for a temperature profile for the solder paste **SP1300**, which has shown good reflow results in practice with best wetting. Depending on the soldering equipment and PCBs, different temperature profiles may be used. This temperature profile can only be a recommendation. Our recommendation for this solder paste is to use a linear profile, as this will ensure the optimum activity of the solder paste and ensures perfect wetting. If a non-linear (soak) profile has to be used for some reasons, the temperature in the preheat area should not exceed 120sec. at max. 160°C.

## Alloy Sn63 Pb37



**Cleaning:** Residues, left on the PCB after using the solder paste **STANNOL® SP1300** do not need to be removed. This solder paste has been designed as No-Clean solder paste. For extreme high reliable PCBs it may be possible to investigate if cleaning is necessary or not by carrying out SIR and ionic contamination measurements. Should a cleaning be required, standard cleaning processes may be used. More information about cleaning is available on request.

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## Technical Specification

**Solder powder:** The solder powder for **STANNOL® SP1300** solder pastes is produced by atomising alloys conforming to the purity requirements of J-STD-006, EN 29453 or other national and international standards where relevant. Careful control of production processes ensures exact solder powder particle distribution in a spherical shape.

Solder paste type	STANNOL® SP1300 62-90-3-AT
Properties	
Alloy	Sn63 Pb37
Melting range, °C	183
Metal content, %	90
Solder powder, µm	25-45
Application	stencil printing
Viscosity Brookfield cPs <sup>(1)</sup> , 25°C	300.000-550.000

<sup>(1)</sup> measured at 25°C, using the TF spindle at 5 Rpm after 2 minutes

Tests	Specification	Result
Copper mirror corrosion	IPC-SF-818 / ANSI J-STD-004	Pass, type L
Surface insulation resistance (without cleaning)	ANSI J-STD-004 - IPC-TM650	pass
Silver chromate paper test	IPC-SF-818 / ANSI J-STD-004	pass
Solder balling	After 1h @ RT After 24 @ RT	pass, class 1 pass, class 1
Tackiness	JIS-Z-3284	At least 100g after 24h
Flux Activity Classification (without cleaning)	DIN 61190-1-1 ANSI J-STD-004	RE L0 L0

## Packaging

**STANNOL® SP1300** solder pastes are supplied in:

- 500g plastic jars with an air seal insert
- 600g and 1200g Semco cartridges.

Other forms of packaging are available on request, probably subject to minimum order quantities

## Storage and Shelf life

Providing **SP1300** solder pastes are stored at 0-10°C tightly sealed in the original container, this solder paste has a minimum shelf life of 6 months. Please let the solder paste after storage allow recovering to room temperature before opening the jar for at least 8-12h to avoid condensation of humidity on the solder paste surface.

## Health and Safety

Before using please read the material safety data sheet carefully and observe the safety precautions described.

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