



STANNOL



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|---------------------|---------------------------------|--------------------|-------------|
| SOLDER WIRES | SOLDER PASTES | FLUXES | SOLDER BARS |
| SOLDERING EQUIPMENT | MEASUREMENT AND TESTING SYSTEMS | CONFORMAL COATINGS | ACCESSORIES |

SOLDER PASTES

FOR ELECTRONICS MANUFACTURING



WE HAVE THE RIGHT SOLDER PASTE FOR EVERY APPLICATION.

BOTH LEADED AND LEAD-FREE SOLDER PASTES ARE USED IN ELECTRONICS – FOR REFLOW SOLDERING AND REWORK SOLDERING PROCESSES.

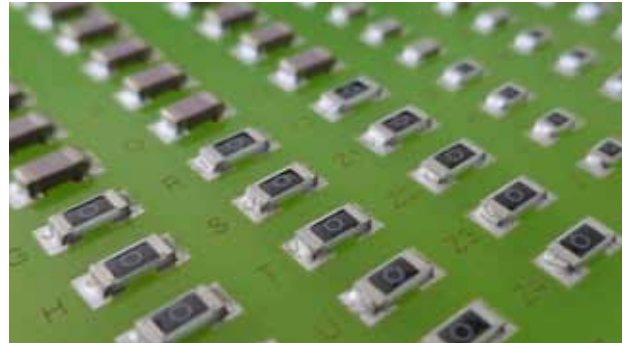
Stannol supplies both lead containing and lead-free solder pastes in various particle sizes and packaging (e.g. jars and cartridges) for a wide range of application. We offer eutectic silver containing, low-silver and silver-free solder pastes specifically developed for lead-free applications.

This brochure features some popular solder pastes, as well as several new developments for use in SMT manufacturing. Please do not hesitate to contact us for further details about additional solder pastes in our portfolio.

LEAD-FREE SOLDER PASTES

The No-Clean solder pastes **SP2100** and **SP2200** were developed for use with lead-free alloys in stencil printing. In addition to the long open time, even after long printer down times, both pastes immediately show a perfect print definition. Due to activation as a type L1 flux, SP2100 solder paste is more suitable for use on surfaces that are difficult to solder. This paste achieves good wetting and soldering results.

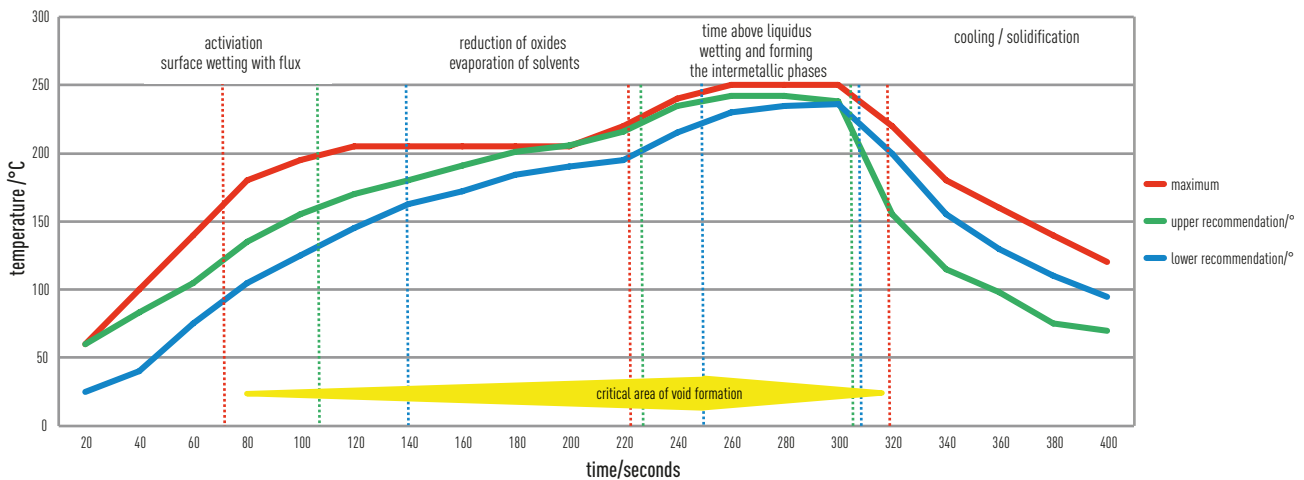
No-Clean SP2200 solder paste, by contrast, is activated to type L0. This activation ensures good wetting combined with a high level of electrical safety on all surfaces used in electronics today. Both solder pastes leave only small amounts of residues after the reflow process, which are bright and transparent and do not have to be removed.



Minimal amount of residues at highest electrical safety are the highlights of our latest and future oriented paste generations.

IDEAL REFLOW PROFILE

Recommended temperature profile for Solderpaste series SP2200-2500 in TSC305 (Sn96,5Ag3,0Cu0,5)



The integration of new paste developments in established processes is usually quite easy and simple but in some cases may require minor modifications in the reflow profile due to board and component configuration. This will ensure the highest possible performance of the flux formulation at minimal adjustments. Easy basic setting can start with 25°C above liquidus for 40-60 seconds as the average process window which still is respecting the sensitivity of the majority of components.

The special conditions in vapor phase equipment, critical components or circuit boards could require a faster or linear profile instead. Please do not hesitate to contact our technical specialists for personal support and optimization purposes resulting in also individual and time saving solutions.

ANTI-TOMBSTONE

The tombstone effect describes the uplift of smaller components in the reflow process. Due to specially developed solder pastes, adjusted temperature profiles and optimised pad geometry, this effect can be significantly reduced.

VOIDS

VOIDS are defining certain inclusions or structures in the solder joint mainly underneath components with larger areas or thermal connections i.e. QFN / BGA. These inclusions can be significantly reduced with dedicated solderpastes combined with optimized thermal profiles and stencil apertures.

NEW SP2500 SOLDER PASTE



The main drivers to develop the **SP 2500** have been defined being the requirements to significantly reduce if not eliminating voiding and contemporary avoid solderballing. Even with large area paste deposits or thermal pad bonding the SP 2500 proves significant characteristics to exceed the IPC defaults as well as a comfortable process window.

The halogen free formulation of the RELO flux is convincing at oxygen or nitrogen atmosphere with an uncompromising wetting and printability. To specially address the enhanced challenges in fine pitch soldering the SP 2500 predominantly cocreates the scope of T4 powdersize. Operators with enhanced optical relevance will be more than satisfied with the improved transparency. To be used in soak and linear profiles our new solderpaste is equally effective. Available in TSC 305 Powdersize 3 & 4 as well as TSC 0307 in Powdersize 3 the SP 2500 is qualified for the usage in ramp and linear profiles.



The main drivers to develop the SP 2500 have been defined being the requirements to significantly reduce if not eliminating voiding and contemporary avoid solderballing.

LEAD CONTAINING SOLDER PASTES

SP1100 and **SP1200** solder pastes are only available with lead containing alloys. These pastes are distinguished by their classification and hence by their different wetting behaviour. While the SP1100 as a highly activated ROM1 solder paste can also achieve good soldering results on surfaces that are difficult to solder, the SP1200 as a ROL1 solder paste is designed for showing best results on good solderable surfaces. The residues of these two No-Clean solder pastes do not have to be removed.

The further leaded solder paste, **SP15 63S4** allow us to offer solutions to eliminate tombstones. By using combinations of alloys or a particular alloy in these solder paste, different approaches are selected in order to reduce the number of raised components. The choice of solder paste is only one aspect of removing defects. Layout, solder paste quantity and other manufacturing parameters are just as important to reduce tombstones. Nevertheless, the use of a suitable solder paste can support the safe overall reduction of defects, especially in increasingly smaller components.

SOLDER PASTE FOR DISPENSING

For dispensing applications we offer the **SP651M** solder paste in lead-free alloy TSC305 (Sn96.5Ag3.0Cu0.5) as a standard product. This solder paste has been designed for reliable automatic dispensing processes with inner dispensing needle diameters down to 0.4mm in particle size 3. The flux medium

is classified as ROL0 according to J-STD-004. It is a halide ZERO formulation and shows a good process window due to its well- balanced activity. This solder paste leaves only minor amounts of clear and transparent residues.

OPEN TIME

The open time of a solder paste is made up of two parts: The useful time of the solder paste in the printer during the printing process and the open time of the printed circuit board between print, pick-and-place and reflow.

STORAGE

Stannol solder pastes have to be stored at 5–10°C and brought to room temperature at least two hours prior to use. This is due to the risk of condensation of moisture on the cold surface of the solder paste, which can cause thickening of the solder paste.

SOLDER PASTES OVERVIEW

| NAME | ALLOY | CLASS ¹ | MELTING RANGE | PARTICLE SIZE | METAL CONTENT | APPLICATION | PACKAGING SIZES ³ | ART.-NO. |
|--------|--------------------------------|--------------------|---------------|----------------|---------------|------------------|------------------------------|----------|
| SP15 | Sn62.8Pb36.8Ag0.4 ² | ROL1 | 179-183°C | 3/5 (10-45 µm) | 89.5% | stencil printing | 500 g jar | 690015 |
| SP15 | Sn62.8Pb36.8Ag0.4 ² | ROL1 | 179-183°C | 3/5 (10-45 µm) | 89.5% | stencil printing | 12 oz Semco | 690017 |
| SP1100 | Sn62Pb36Ag2 | ROM1 | 179°C | 3 (25-45 µm) | 90% | stencil printing | 500 g jar | 691100 |
| SP1200 | Sn62Pb36Ag2 | REL1 | 179°C | 3 (25-45 µm) | 90% | stencil printing | 500 g jar | 691200 |
| SP2100 | Sn95.5Ag4Cu0.5 | REL1 | 217-223°C | 3 (25-45 µm) | 88% | stencil printing | 500 g jar | 692100 |
| SP2200 | Sn95.5Ag4Cu0.5 | RELO | 217-223°C | 3 (25-45 µm) | 89% | stencil printing | 500 g jar | 692200 |
| SP2200 | Sn96.5Ag3Cu0.5 | RELO | 217-220°C | 3 (25-45 µm) | 89% | stencil printing | 500 g jar | 692210 |
| SP2200 | Sn96.5Ag3Cu0.5 | RELO | 217-220°C | 4 (20-38 µm) | 89% | stencil printing | 500 g jar | 692250 |
| SP2200 | Sn96.5Ag3Cu0.5 | RELO | 217-220°C | 4 (20-38 µm) | 89% | stencil printing | 12 oz Semco | 692252 |
| SP2200 | Sn99Cu0.7Ag0.3 | RELO | 217-227°C | 3 (25-45 µm) | 89% | stencil printing | 500 g jar | 692220 |
| SP2200 | Sn96.5Cu3Ag0.5 | RELO | 217-220°C | 3 (25-45 µm) | 89% | stencil printing | 600 g Semco | 692215 |
| SP2500 | Sn96.5Ag3Cu0.5 ⁴ | RELO | 217-224°C | 3 (25-45 µm) | 89% | stencil printing | 500 g jar | 692500 |
| SP2500 | Sn99Ag0.3Cu0.7 ⁴ | RELO | 217-227°C | 3 (25-45 µm) | 89% | stencil printing | 500 g jar | 692520 |
| SP2500 | Sn96.5Ag3Cu0.5 ⁴ | RELO | 217-220°C | 4 (20-38 µm) | 89% | stencil printing | 500 g jar | 692550 |

| SOLDER PASTE FOR DISPENSING | | | | | | | | |
|-----------------------------|------------------|------|-----------|--------------|-----|-------------------|----------------------------------|--------|
| SP651M | Sn96.5Ag3.0Cu0.5 | ROLO | 217-220°C | 3 (25-45 µm) | 84% | autom. dispensing | 75g/30 cm ³ cartridge | 690102 |

¹ According to J-STD-004 | ² Optimized against Tombstone-Effect | ³ Other packaging sizes are available on request | ⁴ Anti-Voiding formulation.

PACKAGING SIZES

The following packaging sizes are available as standard: **6 oz / 12 oz / 10 cm³ / 30 cm³ / 500 g jar.**

OUR SERVICE FOR YOU



This brochure only shows a limited selection of solder pastes and has therefore focused on our top sellers. Other pastes, as well as our new and innovative product selector, can be

found at www.stannol.de. By selecting the category "Products", you can find the matching solder pastes according to many different criteria.

PARTICLE SIZE

Solder pastes contain metals in the form of spheric solder powder with a precisely defined diameter. The required diameter of the particles is determined by the size of the stencil. Standard solder pastes are generally available in particle sizes 3 (25-45 µm) and 4 (20-38 µm). Finer particle sizes, such as type 5 (15-25 µm) are only available in selected solder pastes.

CLASSIFICATION

The standards J-STD-004 and DIN EN 61190-1 are used to classify flux according to its composition. Fluxes are referred to, for example ROLO or REL1. They are also rated according to the reliability and influence of the flux residues on the PCB during its life time. The difference between the two standards depends on the allowed amount of halogen within the flux, which determines the various classifications.



STANNOL

TRADITION AND INNOVATION.

SOLDERING TECHNOLOGY SINCE 1879 – MADE IN GERMANY



SOLDER WIRES



FLUXES



SOLDERING STATIONS



SOLDER PASTES



ACCESSORIES



SOLDER BARS



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