

Product Description

Due to its special and fully halide-free recipe and the use of high-quality materials, lead-free solder paste AP-20 offers the user many advantages while satisfying at the same time all requirements regarding the reliability of lead-free solder joints. The unique properties of the used materials allow the user to process boards even 10 hours and more after printing without losing any of the original tackiness of the printed solder deposit. This facilitates in many cases flexible planning and implementation of the individual process steps of printed circuit board assembly.

The use of chemically modified materials results in a very high reproducibility of the solder paste. For the user this means constant printing results from board to board. Interruptions and defects in the printing process are minimised and the throughput is increased considerably in comparison to conventional pastes.

Measurements over longer periods have shown that under suitable storage conditions the viscosity remains practically unchanged. As a result, solder paste AP-20 can be stored for 6 months (maintaining the recommended temperature ranges) without any deterioration of the excellent processing properties of the paste (good rolling on the stencil, slump resistance, tackiness). So even smaller and medium-sized operations will be able to enjoy the benefits of procuring economically attractive solder paste quantities.

ELSOLD solder paste AP-20 is well suited for fine-pitch applications. Optimised production processes and high-grade materials guarantee unequalled slump resistance. No slumping of the printed solder paste deposits has been observed and – as a consequence – no bridging or solder balling after reflow. The solder paste deposits show very constant shapes and profiles, from print to print, from shift to shift (DIN 32513, 150 mm stencil, smallest gap 0.2 mm, at room temperature and 5 min at 150°C).

Besides these special benefits ELSOLD solder paste AP-20 has a wide process window, both under air as well as under nitrogen, meeting the diverse requirements of different PCB configurations. While a linear profile will guarantee best results, soak profiles have in many cases yielded excellent results as well.

With AP-20 excellent soldering results can be achieved on all normal surfaces and with different component surface finishes. Solder balling, wetting, and slump resistance test results exceed customer requirements.

Approvals

ELSOLD solder paste AP-20 has been recommended by Siemens Corporate Technology Lab, Berlin, for further evaluation under production conditions. The test certificate is available upon request.

Classification

ELSOLD solder paste AP-20 is completely free from halides and halogens and classified as RELO per J-STD-004 or DIN EN 61190-1-1.

Technical Product Information

ELSOLD Lead-free Solder Paste AP-20

Physical Properties

All data apply to Sn96.5Ag3Cu0.5, 89 %
Metal content, grain size 25 – 45 µm

Viscosity 650 ± 50 Pa·s (Plate Viscosimeter)

Reliability Properties

Copper mirror Test: Passed

J-STD-004, IPC-TM-650, Method 2.3.32

Silver chromate Test: Passed

J-STD-004, IPC-TM-650, Method 2.3.33

Solder Balling Test: Passed

J-STD-005, IPC-TM-650, Method 2.4.34

SIR Measurements: > 10⁸ Ω, 2,0 x 10⁹ Ω*)

climate 40 °C/93 % rh., 168 hrs, 5 V DC

track width 400 µm, gap 200 µm

Electro-migration: no dendrites

climate: 40 °C/93 % r.h., 168 hrs, 5 V DC

*) smallest value measured during the test
duration of 168 hrs

Application

The solder paste can be used by dispensing, stencil printing or screen printing. In general we recommend the following metal content ratios for the respective processes:

Alloy	Powder Type	Melting Point / Range	Metal Content for Printing	Metal Content for Dispensing
Sn96.5Ag3Cu0.5	T3 (25 – 45 µm)	217 – 219 °C	87 – 89 %	85 – 87 %
Sn96.5Ag3Cu0.5	T4 (20 – 38 µm)	217 – 219 °C	87 – 89 %	85 – 87 %
Sn96.5Ag3Cu0.5	T5 (15 – 25 µm)	217 – 219 °C	86 – 88 %	86 %
Sn96.5Ag3Cu0.5	T6 (05 – 15 µm)	217 – 219 °C	86 – 87 %	86 %
Sn98.5Ag1Cu0.5	T3 (25 – 45 µm)	217 – 223 °C	87 – 89 %	85 – 87 %

Solder paste AP-20 is also available with micro-alloyed solder powder Sn96.5Ag3Cu0.5 MA T4

Cleaning

ELSOLD solder paste AP-20 is a no clean paste and leaves only very few, light, slightly milky residues which can remain on the solder joint without causing any electro-migration problems. If for cosmetic reasons cleaning should be required the residues may be removed by isopropanol or by any commercially available cleaning agent.

Packing

Jars: 250 g and 500 g Cassettes: DEK PRO-FLOW™ Cassettes
Cartridges: 600 g and 1200 g (SEMCO) Syringes: 10 cc and 30 cc

Technical Product Information

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Storage and Shelf Life

Jars: up to 6 months

Syringes: up to 3 months

Cartridges: up to 6 months

Store in un-opened original containers under dry condition at 20 ± 5 °C. The material should be allowed to reach room temperature by itself before opening containers to avoid condensation of moisture on the cold material.

Print Parameters

Squeegee: Stainless steel

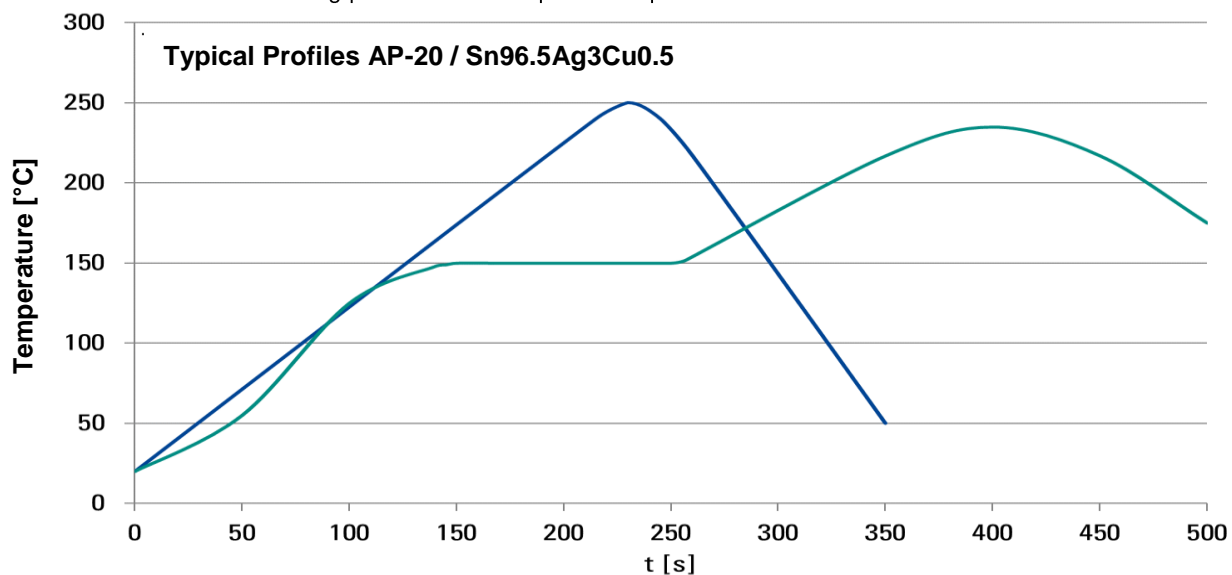
Squeegee speed: 25 – 150 mm/s

Squeegee pressure: 150 – 300 g / cm length

Stencil: Stainless steel

Reflow Profile for Sn96.5Ag3Cu0.5

ELSOLD solder paste AP-20 yields good results for a wide range of temperature profiles. A linear profile is recommended as the starting point for further process optimisation.



RoHS Conformity

ELSOLD solder paste AP-20 complies with ROHS Directive 2002/95/EC.

Norms

The paste meets the requirements of international norms J-STD-005 and DIN EN 61190-1-2, as well as DIN 32513-1.

The information contained herein is based on technical data that we believe to be reliable and is intended for use by persons having technical skill at their own risk. Users of our products should make their own tests to determine the suitability of each product for their particular process. TAMURA ELSOLD will assume no liability for results obtained or damages incurred through the application of the data presented.