TAMURA Lead-free Solder Paste TLF-204-171AK

Product Description

TAMURA lead-free solder paste TLF-204-171AK has been developed to meet the special requirements of demanding printing processes. The paste offers excellent printing properties, avoiding both cold slump and hot slump and thus formation of unwanted solder bridges.
Due to an improved activation of the flux, TLF-204-171AK minimizes head-in-pillow errors. At the same time, its good activation leads to good wetting on the usual metallic surfaces. Wetting and solder ball test as well as contour stability meet the highest requirements.
TLF-204-171AK is a no clean solder paste; the residues can remain on the solder joints without causing problems regarding corrosion or electromigration.

- Improved BGA Head-in-Pillow resistance
- Eliminate cold slump
- Excellent wettability is attained at fine pattern of CSP
- Superior reliability is provided by no washing
- Stable printability with little change in viscosity during continuous printing
- Good tackiness for a long time
- J-STD-004 flux classification: ROL0

Reliability specifications

Data for Sn96.5Ag3.0Cu0.5, metal content 88.5 %, powder type T4 (20 – 38 µm | 400 – 635 mesh size), spherical morphology

Reliability	
Type	ROL0
Chlorine Content (JIS Z 3197)	0.0 %
Tackiness	> 1.0 N
SIR (JIS Z 3197, IPC-B-25A Test board)	$> 1 \cdot 10^9$ Ω
Insulation resistance test	$> 1 \cdot 10^9$ Ω / None
Copper mirror test (JIS Z 3197)	Pass
Water solution resistance test (JIS Z 3197)	$> 1 \cdot 10^4$ Ω·cm
Slump Test*	Less than 0.2 mm
Solder Ball Test*	Seldom
Solder spread test (JIS Z 3197)	More than 75%

*Internal test method

Classification

The solder paste TLF-204-171AK is completely free from halides and halogens and classified as ROL0 per J-STD-004.

Hüttenstraße 1 · D-38871 Ilsenburg
Phone +49 (0)39452 4879-11 · Fax: -66
info@tamura-elsold.de

Cleaning

TAMURA solder paste TLF-204-171AK is a no clean paste. The residues don't have to be removed. If for cosmetic reasons cleaning is required, the residues may be removed with any commercially available cleaning agent.

Packing

The standard of the packing unit of this product is jars of 500 g.

Storage and Shelf Life

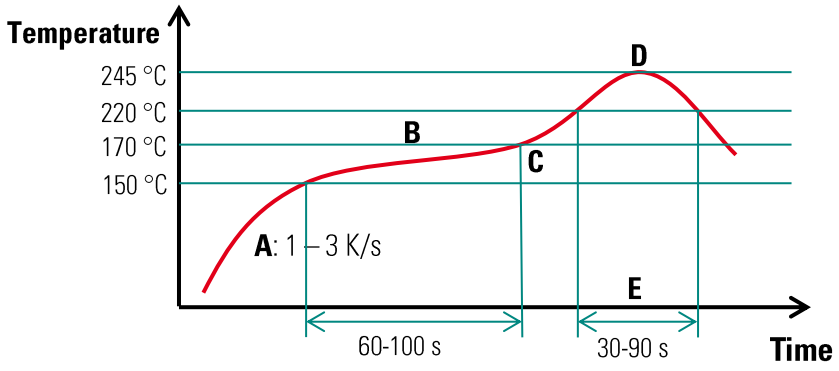
The quality guarantee period shall be 180 days after manufacture if the products are stored in sealed containers at temperature below 10 °C. The material should be allowed to reach room temperature by itself before opening containers to avoid condensation of moisture on the cold material.

Conditions for Printing

Metal mask:	Laser machined, manufactured by additive
Squeegee:	Metal, Urethane (hardness 80 to 90 degrees)
Squeegee angle:	60°
Squeegee speed:	60 – 100 mm/s
Printing pressure:	15 – 100 N

Recommended Reflow Profile

We recommend the following temperature profile for air reflow:



- Preheat

Set the temperature rising speed A at a rate of 1 – 3 °C per second. Rapid temperature raising in preheat zone tends to cause solder balls.
It will be appropriate if preheat time B were set in the range from 60 to 100 seconds. If preheat is insufficient, rather large solder balls tend to be caused. Conversely, if it is excessive, fine balls and large balls are caused in clusters.
Preheat ending temperature C would be appropriate if it were set in the range from 150 to 190 °C. If the temperature is too low, non-melting tends to be caused often after reflow.

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- Heating

If the temperature rise is too fast, it may cause excessive slump of the solder paste. Set the peak temperature D in the range from 235 to 255 °C.
Adjust the melting time the time at over 220 °C E will be from 30 to 90 seconds.

- Cooling

Careful about slow cooling as it may cause the positional shift of parts and decline in joining strength at times.

Perform adequate test in advance as the reflow temperature profile will vary according to the condition of parts and boards and the specifications of the reflow furnace.