Multicore® LF328™

Low-Voiding Lead-Free Solder Paste

Multicore® LF328™ Solder Paste is a halide-free, no clean, Pb-free solder paste which has a broad process window for printing, reflow, and humidity resistance. Multicore® LF328™ Solder Paste has been formulated to give low voiding in BGA/CSP joints and a high tack force to resist component movement during high speed placement and long printer abandon times. It also provides excellent solderability over a wide range of reflow profiles in air and nitrogen and across a wide range of surface finishes including Ni/Au, Immersion Sn, Immersion Ag, and OSP Copper.

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Features and Benefits

- **Excellent print process capability for 0.5 mm and 0.4 mm pitch CSP**
- **Long abandon time capability (>75 minutes on 0.4 mm CSP)**
- **Allows fast print speed with low print pressure**
- **Humidity resistance – excellent coalescence after 8 hours exposure to 27°C / 80% RH.**
- **Colorless residues for easy post-reflow inspection**
- **Ultra-low voiding**
- **Halide-free flux classification: ROLO to ANSI/J-STD-004**

Printing

Multicore® LF328™ Solder Paste is available for stencil printing down to 0.4 mm (0.016") pitch BGA devices, with type 4 (DAP) powder. Printing at speeds between 25 mm/s (1.0"/s) and 150 mm/s (6"/s) can be achieved using laser cut, electropolished, or electroformed stencils and metal squeegees (preferably at a 60 degree angle). Excellent first prints have been achieved on 0.4 mm (0.016") pitch CSP pads after printer abandon time of 75 minutes, without requiring a knead cycle.

Cleaning

Multicore® LF328™ Solder Paste is a no-clean flux and designed to be left on the PCB in many applications since it does not pose a hazard to long term reliability. However, should there be a specific requirement for residue removal, this may be achieved using conventional cleaning processes based on solvents, such as Multicore® MCF800™, or suitable saponifying agents. For stencil cleaning and cleaning board misprints, Multicore® SC-01™ Solvent Cleaner is recommended.

Packaging

Multicore® LF328™ Solder Paste is supplied in:

- **500 g plastic jars with an air seal insert**
- **600 g Semco cartridges**

Other packaging types may be available on request; please contact your local technical service helpdesk for assistance.

Shelf Life

Provided that Multicore® LF328™ Solder Paste is stored in the original tightly sealed container at 0-10°C, a minimum shelf life of 6 months can be expected. Air shipment is recommended to minimize the time that containers are exposed to higher temperatures.

Properties	Multicore® LF328™			
Alloys	96SC (95.5Sn 3.8Ag 0.7Cu, 217°C) 97SC (96.5Sn 3.0Ag 0.5Cu, 217°C)			
Powder Particle Size, µm	20-45		20-38	
Multicore® Powder Size Coding	AGS		DAP	
IPC Equivalent	Type 3		Type 4	
Metal Loading (% weight)	88	88.5	88	88.5
Slump, J-STD-005, mm[4]	IPC A21 Pattern			
RT (15 minutes) (25°C)				
0.33 x 2.03 mm pads	0.06			
0.63 x 2.03 mm pads	0.33			
150°C (15 minutes)				
0.33 x 2.03 mm pads	0.20			
0.63 x 2.03 mm pads	0.33			
Viscosity measured at 25°C (Typical)				
Brookfield, cP[1]	440,000	526,000	490,000	530,000
Malcom 10rpm, P[2]	880	953	920	1020
Thixotropic Index (TI)[3]	0.55	0.56	0.54	0.54
Tack[5]				
Initial tack force, gmm^{-2}	1.8		2.4	
Useful open time, hours	>24		>24	

[1] *Measured at 25°C, TF spindle at 5 rpm after 2 minutes*
[2] *Measured at 25°C, and a shear rate of 6s-1*
[3] *TI = log (viscosity at 1.8s-1/viscosity at 18s-1)*
[4] *Slump data (AGS 88% only) is expressed as the minimum spacing between pads of the size shown that does not allow bridging*
[5] *Tack data is derived from comparative laboratory tests and does not necessarily relate directly to a particular user's conditions*

The formulation meets the requirements of the Telcordia (formerly known as Bellcore) GR-78-CORE and ANSI/J-STD-004 for a type ROLO classification.

Test	Specification	Results
Copper Plate Corrosion	ANSI/J-STD-004	Pass
Copper Mirror Corrosion	ANSI/J-STD-004	Pass
Chlorides & Bromides	ANSI/J-STD-004	Pass
Surface Insulation Resistance (without cleaning)	ANSI/J-STD-004 Telcordia GR-78-Core JIS-Z-3284	Pass Pass Pass
Flux Activity Classification (without cleaning)	ANSI/J-STD-004	ROLO

Across the Board, Around the Globe.

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