ESL ELECTROSCIENCE
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CERMET SILVER CONDUCTOR 9990

ESL 9990 silver conductor has been designed to give excellent adhesion properties when printed and fired on a variety of substrates including beryllia, ferrite and 99.5% alumina. This is achieved by means of a reactive bonding mechanism (MICRO-LOK®) which does not require glass frit and gives an excellent solder leach resistance compared with standard silver conductors.

PASTE DATA

Rheology:	Thixotropic, screen-printable paste
Viscosity: (Brookfield RVT, 10rpm, ABZ Spindle, 25.5 ± 0.5 °C)	225 ± 25 Pa.s
Bonding Mechanism:	Fritless, MICRO-LOK®
Shelf Life (20 - 25 °C):	6 months

PROCESSING

Screen Mesh, Emulsion:		325 S/S, 25 µm
Levelling Time (at 20°C):		5 - 10 min
Drying Time (at 125°C):		10 - 15 min
Firing Temperature Range:		850 - 950°C in air
	Optimum:	930°C
	Time at peak:	10 min
Rate of Ascent/Descent:		50 - 60°C/min
Substrate for Calibration:		96% alumina
Thinner:		ESL 401

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TYPICAL PROPERTIES

Fired Thickness: 11.0 ± 1.0 µm
(measured on a 2 mm x 2 mm pad on 96% alumina)

Approximate Coverage: 100 - 125 cm^2/g

Resistivity:
(measured on a 100 mm x 0.25 mm conductor track) 1.5 - 2.5 mΩ/□

Printing Resolution:
(line/space) 0.125 mm / 0.125 mm

Solder Wettability:
(RMA Flux, 5 sec. dip)

62Sn/36Pb/2Ag	(2205°C)	100%
10Sn/88Pb/2Ag	(3255°C)	
95Sn/5Ag	(2605°C)	
63Sn/37Pb	(2505°C)	

Solderability After Overglaze:
(500°C, 5 min, 62Sn/36Pb/2Ag) 100%

Solder Leach:
(No. of 10 sec. dips to double lowest resistance of 100 mm x 0.25 mm conductor)

62Sn/36Pb/2Ag	(220°C)	> 6 dips
63Sn/37Pb	(250°C)	

Adhesion:
(90° pull, 2 mm x 2 mm pads, 62Sn/36Pb/2Ag)

Initial pull strength:	7 - 11 kg
Aged 48 hours at 150°C:	6 - 9 kg

Ultrasonic Al Wire Bond:
(25µm wire) 7 - 10 g

Thermosonic Au Wire Bond:
(25µm wire) 6 - 10 g