ESL ELECTROSCIENCE
CERAMIC TAPES & THICK-FILM MATERIALS
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CERMET SILVER CONDUCTOR

590
590-G

ESL 590 and 590-G are silver conductors offering versatility and superior performance in many applications. These low-cost compositions may be selected for use as solar cell electrodes, AC and DC plasma displays, shielding, conductive wiring, solder seal metallisation for axial components, termination for monolithic capacitors and capacitor electrodes. 590 and 590-G exhibit excellent adhesion, high-conductivity and electro-platability as well as having very low firing temperature characteristics. Suitable substrates include silicon wafers, various ceramics, porcelain enamelled steel and especially soda-lime and other glasses. The conductive coatings are compatible with various glossy and matte finish dielectrics.

PASTE DATA

Rheology:			Thixotropic, screen-printable paste
Viscosity: (Brookfield RVT, 10rpm, ABZ Spindle, 25.5 ± 0.5 °C)		590	250 ± 25 Pa.s
		590-G	250 ± 25 Pa.s
Bonding Mechanism:			Fitted
Shelf Life (20 - 25 °C):			6 months

PROCESSING

Screen Mesh, Emulsion:			325 S/S, 20 µm
Levelling Time (at 20°C):			5 - 10 min
Drying Time (at 125°C):			10 - 15 min
Firing Temperature Range:			450 - 700°C in air
	Optimum:	590	580°C
		590-G	525°C
	Time at peak:		10 min
Rate of Ascent/Descent:			50 - 60°C/min
Substrate for Calibration:			Glass
Thinner:			ESL 401 or 404

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TYPICAL PROPERTIES

Fired Thickness: (measured on a 2 mm x 2 mm pad on 96% alumina)		12.5 ± 2.5µm
Approximate Coverage:		130 cm²/g
Resistivity:		2 - 5 mΩ/□
Printing Resolution: (line/space)		0.125 mm / 0.125 mm
Solder Wettability: (RMA Flux, 5 sec. dip, 62Sn/36Pb/2Ag, 220°C)		90 - 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)		
	590	> 3 dips
	590-G	> 5 dips

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

Initial pull strength:	590	2.0 kg
Initial pull strength:	590-G	1.5 kg