



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

ESL Europe 590, 590-G 9303-B

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See Caution and Disclaimer on other side.

TYPICAL PROPERTIES

Fired Thickness: 12.5 ± 2.5µm
(measured on a 2 mm x 2 mm pad on 96% alumina)

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

ESL Europe 590, 590-G 9303-B

CAUTION: Proper industrial safety precautions should be exercised in using these products. Use with adequate ventilation. Avoid prolonged contact with skin or inhalation of any vapours emitted during use or heating of these compositions. The use of safety eye goggles, gloves or hand protection creams is recommended. Wash hands or skin thoroughly with soap and water after using these products. Do not eat or smoke in areas where these materials are used. Refer to appropriate MSDS sheet.

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