



ESL ELECTROSCIENCE

CERAMIC TAPES &
THICK-FILM MATERIALS

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CERMET SILVER CONDUCTOR

9912-A

Lead and Cadmium-free*

ESL 9912-A is a mixed-bonded silver conductor particularly developed for a wide range of applications, for example chip resistors, consumer hybrids, potentiometers and heater elements. Due to the wide firing temperature range, this conductor may be processed on a variety of substrates including glass, Porcelain Enamelled Steel (PES), alumina and beryllia. 9912-A is suitable for terminating resistors used in potentiometers and heaters. This conductor may be protected with ESL 4904 overglaze to prevent electrolytic silver migration.

PASTE DATA

Rheology:	Thixotropic, screen-printable paste
Viscosity: (Brookfield RVT, 10rpm, ABZ Spindle, 25.5 ± 0.5 °C)	150 ± 25 Pa.s
Bonding Mechanism:	Mixed-bonded
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:	Alumina 850 - 930 °C in air Beryllia 850 - 930 °C in air PES (Porcelain Enamelled Steel): 625 °C in air Optimum (Alumina): 850 °C Optimum (Beryllia): 930 °C Time at peak: 10 min
Total Firing Cycle:	1 hour
Substrate for Calibration:	96% alumina
Thinner:	ESL 401
Lead Content:	<1000 ppm

ESL Europe 9912-A 0308-C

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See Caution and Disclaimer on other side.

TYPICAL PROPERTIES

Fired Thickness: (measured on a 2 mm x 2 mm pad on 96% alumina)	9 - 14 µm
Approximate Coverage:	100 - 125 cm ² / g
Resistivity: (measured on a 100 mm x 0.25 mm conductor track)	< 2.0 mΩ/□
Printing Resolution: (line/space)	0.200 mm / 0.200 mm
Solder Wettability: (RMA Flux, 5 sec. dip) 62Sn/36Pb/2Ag (220 ± 5 °C)	100 %
Solder Leach: (No. of 10 second dips to double minimum resistance of 100 mm x 0.25 mm conductor, 62Sn/36Pb/2Ag, 220 °C)	>5 dips
Adhesion: (90° pull, 2 mm x 2 mm pads, 62Sn/36Pb/2Ag)	
	Initial pull strength: >6.4 kg
	Aged 48 hours at 150 °C: >6.4 kg

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*None of the six substances referred to in the RoHS Directive (2002/95/EC) are used in the formulation of this product.

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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