ESL ELECTROSCIENCE
CERAMIC TAPES & THICK-FILM MATERIALS
416 EAST CHURCH ROAD
KING OF PRUSSIA, PA 19406-2625, U.S.A
T: 610-272-8000
F: 610-272-6759
www.electroscience.com

CERMET SILVER CONDUCTOR 9912-K FL

Lead, Cadmium and Nickel-Free*
Excellent Fine-Line Capability

ESL 9912-K FL is a fine-line printing silver conductor having a wide range of applications, for example chip resistors, consumer hybrids, potentiometers and heaters. It exhibits excellent line resolution printing 75 micrometer wide lines. Due to the wide firing temperature range, this conductor may be processed onto a variety of substrates including glass, Porcelain Enamelled Steel (PES), alumina and special ceramics.

PASTE DATA

Rheology:	Thixotropic, screen-printable paste
Viscosity: (Brookfield RVT, 10rpm, ABZ Spindle, 25.5 ± 0.5 °C)	310 ± 20 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:	On alumina/beryllia/ceramics:	850 - 930°C in air
	On Porcelain Enamelled Steel (PES):	625°C in air
	Optimum (alumina):	850°C in air
	Optimum (beryllia):	930°C in air
	Time at peak:	10 min
Total Firing Cycle:		1 hour
Substrate for Calibration:		96% alumina
Thinner:		ESL 401

(Note: furnace air must be clean, dry and oil-free)

ESL Affiliates
ESL Europe (Agmet Ltd) • 8 Commercial Road • Reading • Berkshire • England • RG2 0QZ • Tel: +44 (0) 118 918 2400 • Fax: +44 (0) 118 986 7331 • Sales@ESLEurope.co.uk

ESL Nippon • Sukegawa Bldg. • 6th floor • 3-4 Yanagibashi 1-chome • Taito-ku • Tokyo 111, Japan • Tel: +81-3-3864-8521 • Fax: +81-3-3864-9270 • Sales@ESL-Nippon.co.jp

ESL China • Room #1707, Tower A, City Center of Shanghai • 100 Zunyi Road • Shanghai, China 200051 • Tel: +86-21-6237-0336 and 0337 • Fax: +86-21-6237-0338
ESLChina@eslshanghai.net

TYPICAL PROPERTIES

(measurement on alumina after firing at 850°C)

Fired Thickness: (measured on a 2 mm x 2 mm pad on 96% alumina)	12.5 ± 2.5 µm
Approximate Coverage:	100 - 125 cm²/g
Resistivity: (measured on a 100 mm x 0.25 mm conductor track at 12.5 µm fired thickness)	< 2.5 mΩ/□
Printing Resolution: (line/space)	0.075 mm / 0.075 mm
Solder Wettability: (RMA flux, 5 sec. dip, (62Sn/36Pb/2Ag, 220 °C)	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)	> 5 dips

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

Initial pull strength: (on most ceramic substrates)	> 7.0 kg
Aged 48 hours at 150°C:	> 6.0 kg

***Complies with RoHS, ELV, WEEE and CHIP 3 EC directives.**