ESL ELECTROSCIENCE
CERAMIC TAPES & THICK-FILM MATERIALS
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COPPER CONDUCTOR 2312-A-3

Conductor Designed for Thick Printing

ESL 2312-A-3 is a copper paste especially designed for thick printing. These thick copper conductor traces will handle higher currents than the normal thick film traces. Using an 80 mesh screen with a 115 micrometers thick emulsion, a fired film thickness of approximately 70 micrometers can be achieved with one print; two prints fired separately will yield a fired film thickness of approximately 160 micrometers. The third layer can be attained using a 165 mesh screen (30 micrometers emulsion) in order to provide a smooth surface, and will give a total thickness of approximately 175-185 micrometers. The desired fired film thickness will be determined by the screen mesh and emulsion thickness used.

This material can be fired at 900°C to 980°C in nitrogen. Optimum performance can be achieved by firing at 980°C.

PASTE DATA

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

PROCESSING

Screen Mesh, Emulsion:		80 S/S, 115 µm 165 S/S, 30 µm
Levelling Time (at 20 °C):		5 - 10 min
Drying Time (at 125 °C):		10 - 15 min
Firing Temperature Range:		900 - 980°C
	Optimum:	980 °C
	Time at peak:	10 - 12 min
	Atmosphere:	Nitrogen
Substrate for Calibration:		96% alumina
Thinner:		ESL 401

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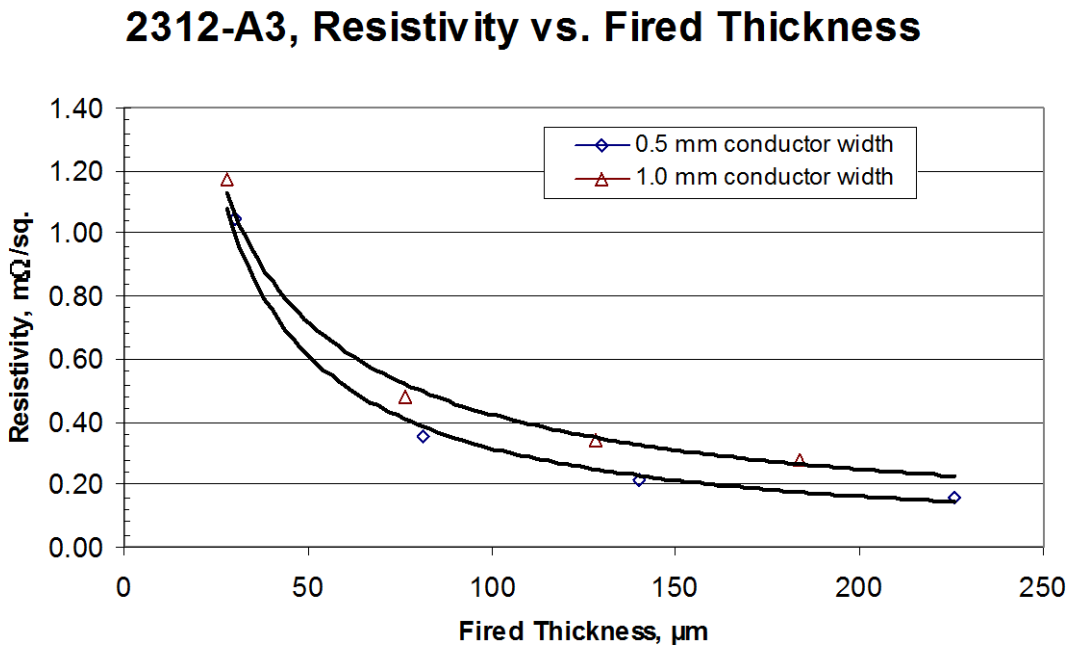
TYPICAL PROPERTIES

Based on RTC IR firing in nitrogen, belt speed of 90 mm/minute

Firing Temperature:	980°C
Fired Thickness, One Layer:	70 - 75 µm
Fired Thickness, Two Layers:	150 - 160 µm
Fired Thickness, Three Layers:	175 -185 µm
Resistivity: (25 µm fired thickness, achieved with 325 mesh/25 µm emulsion screen)	⩽ 1.5 mΩ/sq.
Approximate Coverage:	180 cm² / g
Solderability: (63 Sn/37 Pb solder, 250°C)	Good
Solder Leach Resistance: (No. of 10 sec. dips to double resistance of 0.25 mm wide x 100 mm long conductor, 63 Sn/37 Pb solder, 250°C)	≥ 4
Adhesion: (2 mm x 2 mm pads, 180 µm fired thickness, pull test)	
Initial:	≥ 6.6 kg
100 Hours at 150°C:	≥ 7.1 kg
Aluminium Wire Bond: (300 µm Al wire)	≥ 520g



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