ESL ELECTROSCIENCE
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CAPACITOR DIELECTRIC 4100 Series

Capacitor Dielectric Pastes with Dielectric Constants Between 20 and 300

ESL 4100 Series is a group of thick film dielectrics developed for firing at 930°C to 980°C and exhibits the excellent properties as shown below. The hermetic nature of this capacitor dielectric series provides excellent performance on moisture testing. Laser trimming of capacitors made with these pastes can be performed for adjustment of value, with subsequent overglazing. Chip capacitors, capacitor arrays, delay lines, RC networks, etc., of superior quality can be made at significant cost saving over discreet monolithic chip capacitors. These materials meet the characteristics of X7R.

PASTE DATA

Rheology:		Thixotropic, screen-printable paste
Viscosity: (Brookfield RVT, 10 rpm, ABZ spindle, 25.5 ± 0.5 °C)	4113	250 ± 50 Pa.s
	4113-H	250 ± 50 Pa.s
	4114	250 ± 50 Pa.s
	4115	250 ± 50 Pa.s
	4117	350 ± 50 Pa.s
Colour:		Yellow - Green
Shelf Life (20 - 25 °C):		6 months

PROCESSING

Screen Mesh, Emulsion:		200 - 325, 37.5 µm
Levelling Time (at 20°C):		5 - 10 min
Drying Time (at 125°C):		10 - 15 min
Firing Temperature Range:		930 - 980°C (in air)
	Optimum:	980°C
	Time at peak:	10 - 15 min
Substrate for Calibration:		96% alumina
Thinner:		ESL 401

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TYPICAL PROPERTIES

	4113	4113-H	4114	4115	4117
Fired Thickness: (µm)	38 - 50	38 - 50	38 - 50	38 - 50	38 - 50
Dielectric Constant: (1 kHz, 25°C), K	90 -130	120 - 160	40 - 60	15 - 25	270 - 330
Dissipation Factor: (1 kHz, 25°C), %	≤ 0.50	≤ 1.00	≤ 1.00	≤ 1.00	≤ 1.50
Insulation Resistance: (100 V DC), Ω	≥ 10^{10}	≥ 10^{10}	≥ 10^{10}	≥ 10^{10}	≥ 10^{10}
Breakdown Voltage: (25°C in air), V/25 µm	≥ 300	≥ 300	≥ 600	≥ 1000	≥ 500
Finish:	Matte	Matte	Matte	Matte	Matte
ESL Conductor:	9635-B	9638	9635-B	9635-B	9638