



ESL ELECTROSCIENCE

CERAMIC TAPES &
THICK-FILM MATERIALS

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HIGH K CAPACITOR DIELECTRICS 4200-C Series

Low Temperature Firing Capacitors with K Values Ranging From 2,000 To 12,000

ESL 4200-C Series is a blendable series of low-temperature firing, screen-printable, high capacitance density pastes that provide dielectric constants in the range of 2,000 to 12,000. These materials are compatible with a wide range of ESL conductors, but best results are obtained when the dielectrics are terminated with specially developed silver or gold based conductors (see recommended conductors on second page). Optimum properties are achieved when the capacitors are overglazed to provide hermeticity.

PASTE DATA:

Rheology:	Thixotropic, screen-printable pastes
Viscosity: (Brookfield RVT, ABZ Spindle, 10 rpm, 25.5 ± 0.5 °C)	210 ± 30 Pa.s
Colour:	yellow-tan
Shelf Life: (at 4°C)	6 months

PROCESSING

Screen Mesh/Emulsion:	200 / 37.5 µm
Leveling Time:	10-15 minutes
Drying at 125°C:	10-15 minutes
Firing Temperature Range:	850°C-930°C
Optimum:	900°C
Time at Peak:	10 minutes
Total Firing Cycle:	60 minutes
Substrate for Calibration:	96% alumina
Thinner:	ESL 401
Screen Cleaner:	acetone, isopropanol, and polar organic solvents

ESL Europe (KOP) 4200-C Series 0604-G

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See Caution and Disclaimer on other side.

TYPICAL PROPERTIES

(Properties based on measurements of 1 mm x 1 mm test capacitors.)

Fired Thickness:	<u>4202-C</u>	<u>4212-C</u>
	40 - 55 μm	35 - 50 μm

Dielectric Constant (k) at 1kHz:
(Fired at 900°C, 9516 conductor, measured at 25°C)

	<u>Nominal Value</u>	<u>Capacitance Density</u>
4202-C	2,000 \pm 300	500 pf/mm ²
4212-C	12,000 \pm 1500	3,200 pf/mm ²
Dissipation Factor at 1 kHz: (25°C)		\leq 3.0%
Insulation Resistance at 100 VDC: (as fired)		\geq 10 ⁹ Ω
Insulation Resistance at 100 VDC: (overglazed with 2 layers of G-481)		\geq 10 ¹⁰ Ω
Breakdown Voltage: (VDC/25 μm , 25°C in air, as fired)		\geq 100
Breakdown Voltage: (VDC/25 μm , 25°C in air, overglazed with 2 layers of ESL G-481)		\geq 200
Recommended Conductors:		ESL 9916, 9516, 8816
Overglazes: (2 layers separately fired)		ESL G-481

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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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