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°C±0.5°C) 210±30 Pa-s

COLOR: 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

4200-C Series 0604-G
SUBSTRATE FOR CALIBRATION: 96% alumina
THINNER: ESL 401
SCREEN CLEANER: acetone, isopropanol, and polar organic solvents

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

FIRED THICKNESS:
<table>
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<th>4202-C</th>
<th>4212-C</th>
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<td>40-55 µm</td>
<td>35-50 µm</td>
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DIELECTRIC CONSTANT (k) AT 1kHz:
(Fired at 900°C, 9516 conductor, measured at 25°C)

<table>
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<tr>
<th>Nominal Value</th>
<th>Capacitance Density</th>
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<tr>
<td>4202-C</td>
<td>2,000±300</td>
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<tr>
<td>4212-C</td>
<td>12,000±1500</td>
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DISSIPATION FACTOR AT 1 kHz: (25°C) ≤ 3.0%

INSULATION RESISTANCE AT 100 VDC:
(as fired) ≥ 10⁹ Ω
(overglazed with 2 layers of G-481) ≥ 10¹⁰ Ω

BREAKDOWN VOLTAGE:
(VDC/25 µm, 25°C in air, as fired) ≥ 100
(VDC/25 µm, 25°C in air, overglazed with 2 layers of G-481) ≥ 200

RECOMMENDED CONDUCTORS:
9916, 9516, 8816

OVERGLAZES: (2 layers separately fired) G-481

4200-C Series 0604-G

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 vapors 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.

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