



ESL ELECTROSCIENCE

CERAMIC TAPES &
THICK-FILM MATERIALS

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MULTILAYER DIELECTRIC COMPOSITION

4913-I

RoHS Compliant*

ESL 4913-I is a cadmium, lead and nickel-free non-porous multilayer dielectric for use on alumina substrates. This dielectric may be used with selected silver or gold-based conductors or combinations of these metals.

PASTE DATA

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|--|-------------------------------------|
| Rheology: | Thixotropic, screen-printable paste |
| Viscosity: (Brookfield RVT, 10 rpm, ABZ spindle, 25.5 ± 0.5 °C) | 450 ± 30 Pa.s |
| Colour: | Blue |
| Shelf Life (20 - 25 °C): | 6 months |

PROCESSING

| | |
|-----------------------------------|--|
| Screen Mesh, Emulsion: | 200 or 325 S/S, 37 µm |
| Levelling Time (at 20°C): | 5 - 10 min |
| Drying Time (at 125°C): | 10 - 15 min |
| Firing Temperature Range: | Optimum: 850°C Time at peak: 10 min |
| Total Firing Cycle: | 1 hour |
| Substrate for Calibration: | 96% alumina |
| Thinner: | ESL 401 |

ESL Europe 4913-I 0805-A

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See Caution and Disclaimer on other side.

TYPICAL PROPERTIES

| | |
|--|---------------------------------------|
| Fired Thickness: (at least 2 layers between conductors on 96% alumina) | 30 - 50 μm |
| Dielectric Constant (K) at 1 MHz: (at 25°C) | 6 - 10 |
| Dissipation Factor at 1 MHz: (at 25°C) | < 0.4% |
| Insulation Resistance: (at 100V DC) | $>1 \times 10^{11} \Omega$ |
| Breakdown Voltage: (at 25°C in air) | $>1250 \text{ V DC} / 35 \mu\text{m}$ |

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*None of the six substances referred to in the RoHS Directive (2002/95/EC) are used in the formulation of this product.

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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