



ESL ELECTRO-SCIENCE

CERAMIC TAPES &
THICK-FILM MATERIALS

416 EAST CHURCH ROAD
KING OF PRUSSIA, PA 19406-2625 USA

T: 610.272.8000
F: 610.272.6759

www.electroscience.com

MULTILAYER DIELECTRIC COMPOSITION

4911

For High Frequency, Low-Loss Applications

Cadmium, Lead and Nickel-Free*

ESL 4911 is a multilayer dielectric that fires to a dense, blue, low dielectric constant film with a TCE match to 96% alumina.

PASTE DATA

RHEOLOGY:	Thixotropic, screen printable paste
VISCOSITY: (Brookfield RVT, ABZ Spindle, 10 rpm, 25.5°C±0.5°C)	300±30 Pa·s
COLOR:	blue
SHELF LIFE: (25°C)	6 months

PROCESSING

LEVELING TIME:	5-10 minutes
DRYING AT 125°C:	10-15 minutes
SCREEN MESH/EMULSION:	200 or 325/37.5 µm
FIRING OPTIMUM:	850°C
TIME AT PEAK:	10-12 minutes
TOTAL CYCLE:	48 minutes
RATE OF ASCENT/DESCENT:	60°C-100°C/minute
SUBSTRATE FOR CALIBRATION:	96% alumina
THINNER:	ESL 401

4911 0602-D

ESL Affiliates

ESL China • Rm#1707, Tower A • City Center of Shanghai • 100 Zunyi Road • Shanghai, China 200051 Tel: (011-86)-21-62370336 • Fax: (011-86)-21-62370338 • eslchina@eslshanghai.net

ESL Europe • 8 Commercial Road • Reading, Berkshire, England RG2 0QZ • Tel: (011-44)-118-918-2400 • Fax: (011-44)-118-986-7331 • Sales@ESLEurope.co.uk

ESL Nippon • Sukegawa Bldg • 6th floor • 3-4 Yanagibashi 1-chome • Taito-ku • Tokyo 111, Japan • Tel: (011-81)-3-3864-8521 • Fax: (011-81)-3-3864-9270 • Sales@ESL-Nippon.co.jp

See Caution and Disclaimer on other side.

TYPICAL PROPERTIES

FIRED THICKNESS:	40-50 μm
DIELECTRIC CONSTANT (K): (Using 8884 gold terminations, at 25°C. 10% higher using 9912-F Silver) (1 kHz & 1 MHz)	4.2±0.3
DISSIPATION FACTOR: (1 kHz & 1 MHz)	≤ 0.5%
INSULATION RESISTANCE AT 100 V DC:	≥ 10 ¹¹ Ω
PRESSURE COOKER TEST: (IR after 15 minutes at 2 atmospheres pressure)	≥ 10 ¹¹ Ω
LEAKAGE CURRENT: (In 1M NaCl solution/10 VDC bias/5 minutes)	≤ 1μA/cm ²
BREAKDOWN VOLTAGE:	≥ 1000 V/25 μm
WARPAGE: (0.4 mm thick layer on 12.7 mm square x 0.64 mm 96% alumina substrate)	≤ 0.001 mm/mm
CONDUCTOR COMPATIBILITY:	ESL 8884 and 9912-F

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Complies with RoHS, ELV, WEEE and CHIP 3 EC directives.

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. Refer to appropriate MSDS sheet.

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