



ESL ELECTROSCIENCE

CERAMIC TAPES &
THICK-FILM MATERIALS

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CERMET SILVER/PALLADIUM CONDUCTOR

9695

Cadmium Free

ESL 9695 is a low-cost, high-conductivity silver/palladium conductor for use on alumina. It is also used as a termination for 29XXX series resistors over 4924 dielectric in **Heaters on Steel® (HOS)**. It has a wide-firing temperature range and can also be used on Porcelain Enamelled Steel (PES). This conductor exhibits excellent solderability and adhesion and may be used as a termination for all ESL 850°C-firing resistor systems, as well as many other commercially available systems.

9695 is commonly used for ground plane and buried conductor layers in multilayer hybrid circuits as a substitute for higher palladium content conductors to improve conductivity and lower cost. A typical system consists of 9695, 4905-CH dielectric and 9633-B as the top conductor for excellent solder leach resistance. A potentiometer grade, 9695-P is also available.

PASTE DATA

Rheology:	Thixotropic, screen-printable paste
Viscosity: (Brookfield RVT, 10rpm, ABZ Spindle, 25.5 ± 0.5 °C)	225 ± 25 Pa.s
Bonding Mechanism:	Mixed-bonded
Shelf Life (20 - 25 °C):	6 months

PROCESSING

Screen Mesh, Emulsion:	325 S/S, 20 µm
Levelling Time (at 20°C):	5 - 10 min
Drying Time (at 125°C):	10 - 15 min
Firing Temperature Range:	625 - 930°C in air
	Optimum on PES: 625°C
	Optimum on alumina: 850°C
	Time at peak: 10 min
Total Firing Cycle:	1 hour
Substrate for Calibration:	96% alumina
Thinner:	ESL 401

ESL Europe 9695 0407-H

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See Caution and Disclaimer on other side.

TYPICAL PROPERTIES

Fired Thickness: (measured on a 2 mm x 2 mm pad on 96% alumina)	12.5 ± 2.5 µm
Approximate Coverage:	90 - 100 cm ² /g
Resistivity: (measured on a 100 mm x 0.25 mm conductor track at 12.5 µm fired thickness)	3 - 6 mΩ/□
Printing Resolution: (line/space)	0.125 mm / 0.125 mm
Solder Wettability: (RMA flux, 5 sec. dip, 62Sn/36Pb/2Ag at 220°C)	95 - 100%
Solderability after overglaze: (500°C, 5 min., 62Sn/36Pb/2Ag)	90 - 100%
Solder Leach: (No. of 10 sec. dips to double lowest resistance of 100 mm x 0.25 mm conductor, 62Sn/36Pb/2Ag at 220°C)	≥ 3 dips
Adhesion: (90° Pull, 2 mm x 2 mm pads, 62Sn/36Pb/2Ag)	Initial pull strength: ≥ 6.4 kg Aged 48 hours at 150°C: ≥ 4.0 kg

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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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