



## ESL ELECTROSCIENCE

CERAMIC TAPES &  
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# CERMET SILVER/PALLADIUM CONDUCTOR 9695-G

## Lead, Cadmium & Nickel-Free\*

ESL 9695-G 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 and 4986 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.

The 9695-G 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-G, 4917 dielectric and 9633-G as the top conductor for excellent solder leach resistance.

## PASTE DATA

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

## PROCESSING

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

ESL Europe 9695-G 0501-A

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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<sup>2</sup>/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%
95.5/Sn/3.8Ag/0.7Cu at 250°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	≥ 5 dips
95.5Sn/3.8Ag/0.7Cu at 250°C	≥ 2 dips

**Adhesion:**  
(90° Pull, 2 mm x 2 mm pads)

<b>62Sn/36Pb/2Ag</b>	
Initial pull strength:	≥ 7 kg
Aged 48 hours at 150°C:	≥ 5 kg
<b>95.5Sn/3.8Ag/0.7Cu</b>	
Initial pull strength:	≥ 8 kg
Aged 48 hours at 150°C:	≥ 6 kg

ESL Europe 9695-G 0501-A

\*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 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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