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# CERMET SILVER/PALLADIUM CONDUCTOR 9697-G

**RoHS Compliant***

ESL 9697-G is a low-cost, high-conductivity silver/palladium exhibiting excellent fine line printing characteristics, solderability and adhesion. Used as a via fill material, with 4913 dielectric, it stabilises via resistance and integrity on re-firing, and best results are obtained when it is also used as the buried layer conductor.

Multilayer systems using 9697-G as a buried conductor and via fill material with various top conductors are described in a technical paper entitled "Low Ohmic Contact Between Conductors And Via Fills In MCM-C Technology", available on request.

## 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 |



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## 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 cm²/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)

**62Sn/36Pb/2Ag**

| | |
|---|---|
| Initial pull strength: | ≥ 7 kg |
| Aged 48 hours at 150°C: | ≥ 5 kg |

**95.5Sn/3.8Ag/0.7Cu**

| | |
|---|---|
| Initial pull strength: | ≥ 8 kg |
| Aged 48 hours at 150°C: | ≥ 6 kg |



***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.