



ESL ELECTROSCIENCE

CERAMIC TAPES &
THICK-FILM MATERIALS

416 EAST CHURCH ROAD
KING OF PRUSSIA, PA 19406-2625, U.S.A

T: 610-272-8000
F: 610-272-6759

www.electroscience.com

SOLAR CELL SILVER PASTE

9987

Cadmium-Free, Low-Lead Photovoltaic Material

ESL 9987 is a cadmium-free, low-lead silver paste developed for use as a front-side metallization in photovoltaic applications. The 9987 provides high efficiency and high fill factor on single crystal and polycrystalline silicon solar cells. ESL 9987 can be processed on solar cells using a fire-through process with silicon nitride or titanium dioxide anti-reflection coating.

The recommended materials to be used in conjunction with the 9987 are 9920 Series back-surface silver and 2590 Series back-surface aluminium metallisations.

PASTE DATA

Rheology: Thixotropic screen-printable paste

Viscosity:
(Brookfield HBT, Shear rate 9.6 sec^{-1} ,
CP-51 Spindle, $25.0 \pm 0.2 \text{ }^{\circ}\text{C}$) 120 \pm 30 Pa.s

Shelf Life (20 - 25 $^{\circ}\text{C}$): 6 months

PROCESSING

Screen Mesh, Emulsion: 200 - 325 S/S, 15 - 30 μm

Levelling Time (at 20 $^{\circ}\text{C}$): 5 - 10 min

Drying Time (at 125 $^{\circ}\text{C}$): 10 - 15 min

Furnace Set Point: 840 - 910 $^{\circ}\text{C}$
Time above 600 $^{\circ}\text{C}$: typically 5 - 8 sec

Thinner: ESL 401

ESL Europe (KOP) 9987 0805-A

ESL Affiliates

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

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

ESL China • Room #1707, Tower A, City Center of Shanghai • 100 Zunyi Road • Shanghai, China 200051 • Tel: +86-21-6237-0336 and 0337 • Fax: +86-21-6237-0338
ESLChina@eslshanghai.net

See Caution and Disclaimer on page 2.

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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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