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SOLAR CELL SILVER PASTE 9987-A

Cadmium-Free, Low-Lead Photovoltaic Material

ESL 9987-A is a cadmium-free, low-lead silver paste developed for use as a front-side metallization in photovoltaic applications. The 9987-A provides high efficiency and high fill factor on single crystal and polycrystalline silicon solar cells. ESL 9987-A can be processed on solar cells, using a fire-through process, with silicon nitride or titanium dioxide anti-reflection coating. The 9987-A is designed for an emitter sheet resistivity of 40-65 ohms/square.

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

PASTE DATA

RHEOLOGY:	Thixotropic, screen printable paste
VISCOSITY: (Brookfield HBT, CP-51 Spindle, Shear Rate 9.6 sec^{-1}, 25.0±0.2°C)	120±30 Pa·s
SHELF LIFE: (25°C)	6 months

PROCESSING

SCREEN MESH/EMULSION:	280-325/15-30 μm
LEVELING TIME: (25°C)	5-10 minutes
DRYING SET POINT:	200-300°C
DRYING TIME:	≤ 3-4 seconds
FURNACE SET POINT:	840-910°C
TIME ABOVE 600°C:	typically 5-8 seconds
THINNER:	ESL 401

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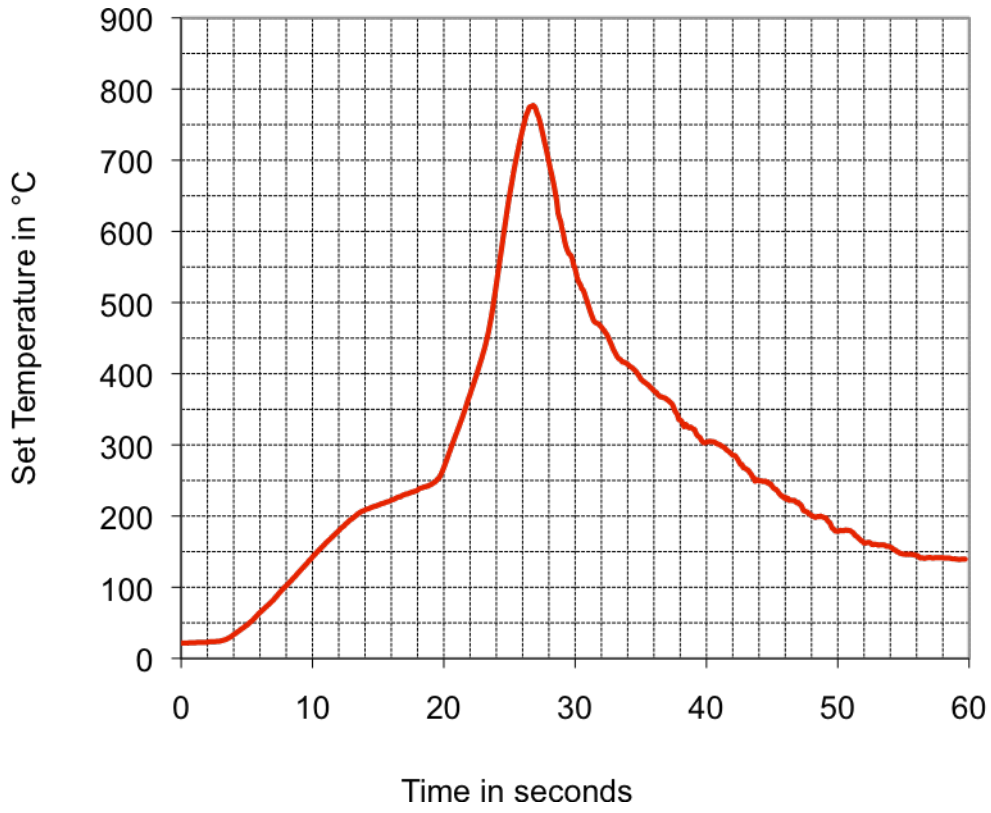
See Caution and Disclaimer on other side.

TYPICAL PROPERTIES

FIRED THICKNESS:	12-18 µm
RESISTIVITY (at 25 µm thickness)**:**	≤ 2.0 mΩ/sq.
PRINTING RESOLUTION (Line):	100 µm - 125 µm
SOLDERABILITY (tin-silver solder):	excellent

TYPICAL FIRING PROFILE



Furnace: SierraTherm-5 zone IR with 25 cm peak firing zone

Belt speed: 470 cm/min.

Measured using Datapaq Q18 & type K thermocouple, exposed bead, 1mm sheath

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