



ESL ELECTROSCIENCE

CERAMIC TAPES &
THICK-FILM MATERIALS

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SOLAR CELL ALUMINUM PASTE

2591-E

Cadmium-Free, Low-Lead Photovoltaic Material

ESL 2591-E is an aluminum paste designed for the back-surface metallization of single crystal and polycrystalline silicon solar cells. The 2591-E is a fritted back electrode material containing a cadmium-free, low-lead glass to provide excellent adhesion.

The 2591-E is not solderable, but may be co-fired with ESL 9925 Series back-surface silver materials to provide solderable pads.

The recommended materials to be used in conjunction with 2591-E are 9925 Series back-surface silver and 9980 Series front-surface silver metallizations.

PASTE DATA

RHEOLOGY:	Thixotropic, screen printable paste
VISCOSITY: (Brookfield HBT, CP-51 Spindle, Shear Rate 9.6 sec^{-1} , $25.0 \pm 0.5^\circ\text{C}$)	40±20 Pa·s
SHELF LIFE: (25°C)	6 months

PROCESSING

SCREEN MESH/EMULSION:	150-200/15-25 μm
LEVELING TIME: (25°C)	5-10 minutes
DRYING AT 125°C:	10-15 minutes
FURNACE SET POINT:	840-910°C
TIME ABOVE 600°C:	typically 5-8 seconds
THINNER:	ESL 452

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ESL Affiliates

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See Caution and Disclaimer on other side.

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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 vapors 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.

DISCLAIMER: The product information and recommendations contained herein are based on data obtained by tests we believe to be accurate, but the accuracy and completeness thereof is not guaranteed. No warranty is expressed or implied regarding the accuracy of these data, the results obtained from the use hereof, or that any such use will not infringe any patent. Electro-Science assumes no liability for any injury, loss, or damage, direct or consequential arising out of its use by others. This information is furnished upon the condition that the person receiving it shall make their own tests to determine the suitability thereof for their particular use, before using it. User assumes all risk and liability whatsoever in connection with their intended use. Electro-Science's only obligation shall be to replace such quantity of the product proved defective.
