




Ag Paste

Targray, in partnership with Heraeus, offers a full line of front and back side silver pastes for crystalline solar cells. The HeraSol line of silver pastes is specially formulated to provide higher efficiencies and wider processing windows, resulting in better yields and higher output for cell manufacturers.

Front Side Ag Paste Properties:

- Capture higher efficiencies and wider processing window
- Achieve a higher aspect ratio
- Excellent fine line resolution
- Low contact resistance on lightly doped emitter
- Cd free
- Pb free available
- Applicable to a wide range of sheet emitter wafers

Back Side Ag Paste Properties:

- Increased adhesion
 - Co-firable with back Aluminum and front Silver pastes
 - Greater peak adhesion strength
 - Increased paste coverage with superior results provides a high quality, cost effective solution
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Metallization Pastes for Conventional c-Si Solar Cells

Pastes	SOL952	SOL953	SOL9235H(L)	SOL9273M	SOL9318	SOL230(x)***
Description	Front-side Ag conductive paste	Front-side Ag conductive paste for high sheet resistance emitter	Front-side Ag conductive paste	Front-side Ag conductive paste	Pb-Free front side Ag conductive paste	Back-side Ag paste for solderable busbar application
Sheet resistance applicable	≤ 70 ohms/sq.	≤ 80 ohms/sq, shallow emitter	≤ 70 ohms/sq.	≤ 80 ohms/sq, shallow emitter	≤ 70 ohms/sq.	
Glass frits	Cd free	Cd free	Cd free	Cd free	Cd free, Pb free	Cd free, Pb free
Viscosity*	180 – 240 kcps	180 – 240 kcps	320 – 360 kcps (280 – 320 kcps)	330 – 370 kcps	300 – 350 kcps	100 – 160 kcps
Solids content	84.0 ± 1%	84.5 ± 1%	89.5 ± 1%	89.5 ± 1%	89.0 ± 1%	71.5 ± 1%
Solderability	Sn62 / Pb36 / Ag2 or Sn96.5 / Ag3.0 / Cu0.5					
Wafer types	monocrystalline and multicrystalline silicon					
Wafer surface treatment	Textured	Textured	Textured	Textured	Textured	Textured/planar
Anti-reflection coating	SiNx:H	SiNx:H	SiNx:H	SiNx:H	SiNx:H	
Print screen	280 – 325 mesh S/S screen					
Screen emulsion thickness	15 – 25 µm	20 – 25 µm	20 – 25 µm	20 – 25 µm	20 – 25 µm	10 – 15 µm
Drying	150 °C for 10 minutes in circulated air oven or 250 – 300 °C for 20 seconds in belt dryer					
Firing	IR belt furnace, Spike Fire					
Peak firing temperature** (not setpoint temperature)	740 – 800 °C	740 – 800 °C	740 – 800 °C	740 – 800 °C	740 – 800 °C	725 – 825 °C
Printed thickness (after fired)	15 – 20 µm	15 – 25 µm	20 – 30 µm	20 – 30 µm	15 – 25 µm	5 – 12 µm
Thinner	RV – 354					RV – 507
Shelf lifetime	6 months					
Storage	5 – 25 °C. Do not refrigerate.					
Usage	Allow paste to come to room temperature prior to opening. Spatulate well before using					

*Brookfield HBT, SC4-14 Spindle in 6R Utility Cup @ 10 rpm

**Peak firing temperature measured with type-K, 20 gauge thermocouple on surface of wafer. Omega #KMQXL-020G-18

***SOL230(x): (M)-North America, (H)-Europe, (S)-Asia, (T)-Pb containing



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