Heraeus

SOL9622 Series

efficiency

Patent Pending

FRONT-SIDE PASTE

Series of front-side metallization pastes

- **For single-printing application on standard BSF cells**
- **For double-printing application on standard BSF cells**

The SOL9622 Series has been specifically formulated for single and double printing application on c-Si solar cells. The paste is designed to make excellent contact on high efficiency n^+ wafer surfaces as well as in advanced cell designs. SOL9622 Series fires through SiNx:H and/or SiOx anti-reflective coatings during the firing process and provides very low contact resistance along with high aspect ratio and finer opening lines.

SOL9622A is the best A+A solution thanks to its higher fill factor, whereas SOL9622B performs outstandingly as A+B solution due to its higher Voc.

KEY BENEFITS

- Very low contact resistance
- For higher aspect ratio and finer line openings
- SOL9622A: A+A solution for higher fillfactor
- SOL9622B: A+B solution for higher Voc

IMPROVED ELECTRICAL PERFORMANCE

The SOL9622 Series has been specifically formulated for single and double printing with ultra fine line printing capabilities. Table 1 shows the double printing parameters used in comparing the SOL9621 Series to our SOL9622 Series. Note the narrower line width, greater aspect ratio and reduction in silver paste consumption. Figure 1 shows the improved line quality.

Paste	SOL9621H+ SOL9621H	SOL9621M+ SOL9621M	SOL9622+ SOL9622
Screen	360x16-100FL-12/15EOM-36/30 µm		
Laydown 1	60.00	60.33	61.67
Laydown 2	66.67	61.67	63.33
Desposit	126.7	122.0	125.0
rDesposit	0.0 %	-4.7 %	-1.7 %
Height Mean	19.80	20.89	19.99
Widht Mean	64.12	60.98	58.98
Aspect Ratio	0.309	0.342	0.339

Table 1. The SOL9622 Series demonstrates improved finger line geometry relative to the successful SOL921 Series.

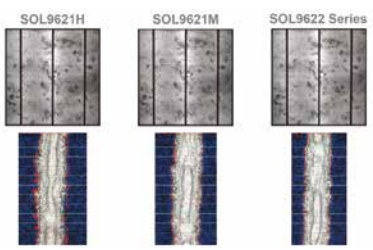


Figure 1. The SOL9622 Series demonstrates narrower line printability than our SOL9621 Series.

The advanced formulation of the SOL9622 Series demonstrates significantly lower resistances and higher efficiency than our highly successful SOL9621 Series (see Figures 1 and 2).

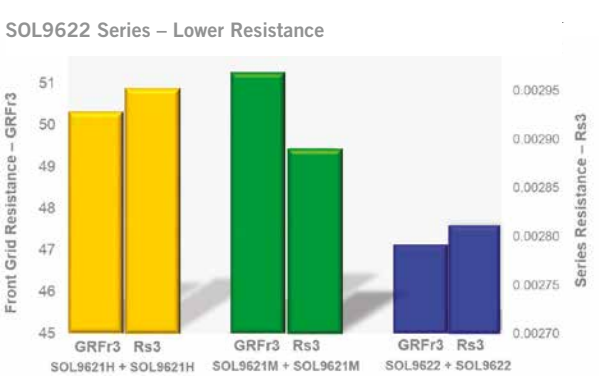


Figure 1. The SOL9622 Series demonstrates narrower line printability than our SOL9621 Series.

TYPICAL PROPERTIES

Viscosity:
HBT Cone and Plate Viscometer (Brookfield)
- 160–260 kcps
- CPE-51 spindle, @ 1 RPM, 25°C

Solid content: 90.90 ± 1.0 %
Fineness of Grind (FOG):
- 4th scratch: 10 µm
- 50 %: 5 µm

RECOMMENDED PROCESSING GUIDELINES PRINTING

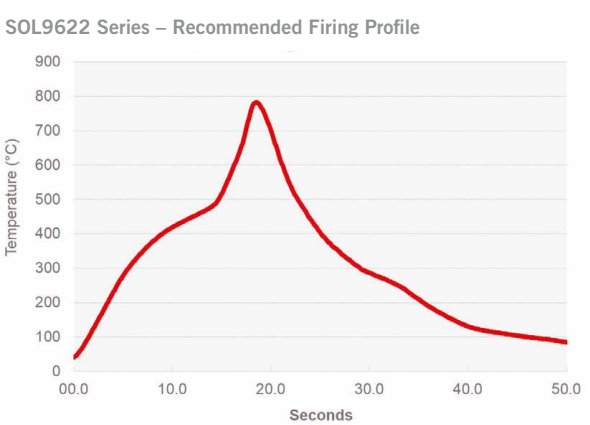
Finger Line Opening	Screen Parameter Recommendations
≥ 45 µm	400/18 µm mesh
≥ 30 µm	Ultra calendared 360/16 µm or 325/16 µm mesh

Note: EOM thickness: 12-16 µm

Printing: ≥ 200 mm/min printing speed

Drying: Typically dried in an IR belt dryer with set points of 250–300°C in less than 20 seconds.
Firing: IR furnace with actual wafer;
Peak Temperature of approx. 740–800°C.

Firing:



Note: The above firing profile is a standardized recommendation. For a profile optimized to your process, please contact your Heraeus Technical Service representative.

Storage:
DO NOT REFRIGERATE.
Store in a dry location at 5°C–25°C. Allow paste to come to room temperature prior to opening. Spatulate well before using.

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