

SOL7300 Series



efficiency

Patent Pending

TOPCON PASTE



New Generation Silver Paste for TOPCon

- Specifically Designed for N-type cells with TOPCon on rear
- Excellent contact resistivity is achieved even when fired at lower temperatures
- Support ultra-thin poly layer

As the P-type cell is getting closer to its efficiency limit, PV industry generally turns its attention to the N-type cell with higher efficiency potential. In recent years, the N-type cell has demonstrated its advantages over the P-type cell in efficiency in many fields, especially in the N-type TOPCon (Tunnel Oxide Passivated Contact) cell. Heraeus has supported this effort for many years and continues to innovate through investments in R&D and has developed pastes with greater performance for N-type TOPCon cells.

The Heraeus SOL7300 is our newest paste for N-type TOPCon backside. The SOL7300 series paste has been developed based on our brand-new glass chemistry, combined with the latest breakthrough in organic vehicle system for fire through contact of TOPCon layers. SOL7300 enables lower firing temperatures to reduce the impact of metal induced recombination and maintain high cell Voc while also providing excellent contact resistance.

KEY BENEFITS

- Specifically Designed for N-type cells with TOPCon on rear
- Excellent contact resistivity is achieved even when fired at lower temperatures
- Very low metal induced recombination leading to higher VOC
- Support ultra-thin poly layer
- Higher green strength
- Lower firing temperature

LOW TEMPERATURE FIRING TOPCON PASTE

The SOL7300 pastes feature a unique glass chemistry which enables low firing temperatures. It is key to achieving very high VOC on the solar cell. Meanwhile, the contact properties of this paste are such that even when fired at lower temperatures, excellent specific contact resistivity is achieved. After low temperature firing the microstructure of the fired finger shows very little damage to the Poly Si layer leaving the thin tunnel oxide undisturbed.

The SOL7300 paste is perfectly tailored for screen printing on the rear side of the solar cell where shading is not a primary concern. By taking advantage of the rear side application, the paste is optimized for best contact properties while also ensuring that material usage is consistent with low cost solar cell manufacturing requirements.

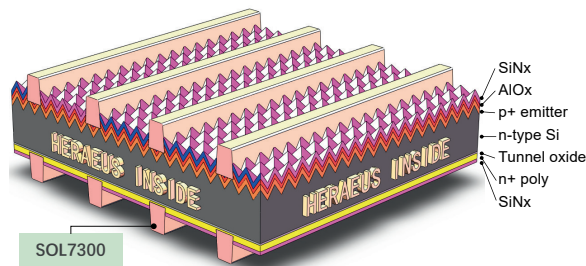


Fig1: SOL7300 used on n-type TOPCon backside

Test on TOPCon cells with thin Poly layer

Paste	V _{oc} (mV)	J _{sc} (mA/cm ²)	FF (%)	h (%)
Reference	-	-	-	-
SOL7300	+2.1	+0.04	+0.19	+0.19

Fig2: SOL7300 shows improved Voc and FF

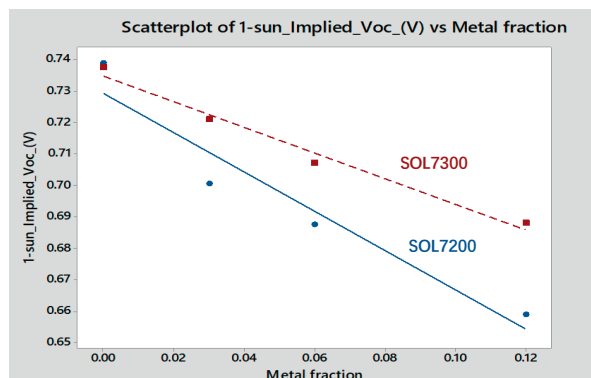


Fig3: SOL7300 always shows higher Voc at same metal fraction

TYPICAL PROPERTIES

Wafer types:

- N-Type TOPCon

Solid content: 91.00 ± 1.0 %

Fineness of Grind (FOG):

- 4th scratch: ≤ 12 μm
- 50 %: ≤ 8 μm

Viscosity:

CPE-51 spindle (Brookfield):

200 – 250 kcps @ 1 RPM, 25° C

RECOMMENDED PROCESSING GUIDELINES

Printing:

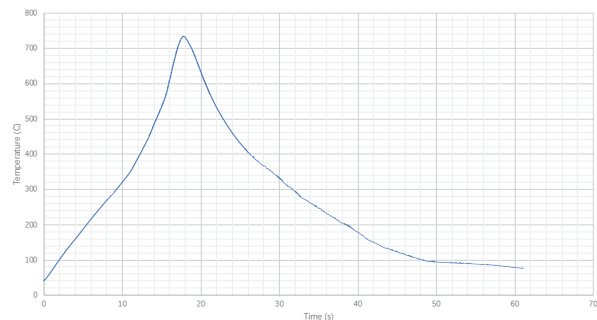
Single Print: 360/16 ≤ 30 μm opening; 430/13 ≤ 28 μm opening

Dual Print: 360/16 ≤ 30 μm opening; 430/13 ≤ 28 μm opening

EOM thickness: ≤ 15 μm EOM

Drying: Typically dried in an IR dryer with set points of 250 – 300°C in less than 30 seconds or 150 – 200°C for 10 minutes in circulated air oven.

Firing: A typical firing profile for N-type Topcon cell.



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.

*Contact your Application Engineering Team partner for individual advice.

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