

# SOL9642A/9642B Series

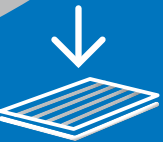


DP Packages  
> +0.1 %  
Eta gain

*efficiency*

Patent Pending

FRONT-SIDE DOUBLE-PRINT PASTE



## Front-side Double-Print Paste Package

- Evolutionally upgraded double-print packages
- High efficiency with all advantages from SOL9641A/9641B platforms
- Double-print, Dual-print packages available

Double-printing for Ultra finger line (DP-UFL) is a technique many c-Si PV cell manufacturers support for improving cell efficiency. Conceptually, double printing gives them the ability to print very narrow line widths without compromising line quality by printing finger lines on top of each other. This can be technically challenging for both cell manufacturer and metallization paste supplier.

Collaborating with customers, Heraeus Photovoltaic has developed SOL9642A and SOL9642B double-print front-side silver paste packages. The SOL9642A package has been formulated based on our unique patent-pending glass chemistry, combined with the upgraded organic vehicle system for DP-UFL and great adhesion on multi/mono/Black-Silicon wafers; while SOL9642B package has the state-of-art paste formulation with perfectly balanced metallization contact and passivation damage.

### KEY BENEFITS

- Outstanding efficiency gain through improved Double-print ultra-fine-line (DP-UFL)
- “Zero” EL defect in mass production
- SOL9642A double-print package  
Excellent adhesion, compatible with black silicon wafer and PERC
- SOL9642B double-print package  
Excellent contact and low firing temperature, perfect for mono PERC
- A+A, A+A', A+B printing packages available for higher Fill-Factor and Voc

## GREAT ADHESION OF SOL9642A

The SOL9642A features a unique glass chemistry. This key ingredient, exclusively developed and manufactured by Heraeus. Such unique glass chemistry was optimized to get the best silver sintering that provides great adhesion and reliability on different wafer substrates (Figure 1).

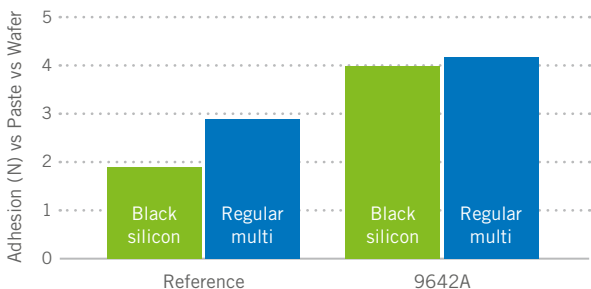
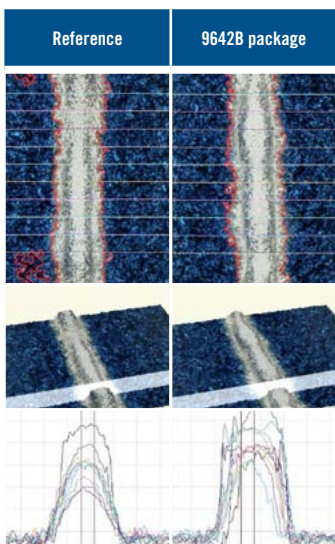


Figure 1: SOL9642A has great adhesion

Figure 2: SOL9642B has > 0.5 aspect ratio



## OUTSTANDING EFF. GAIN FROM SOL9642B

Combined with DP-UFL (Figure 2), superior metallization contact, SOL9642B package has achieved >+0.1% Efficiency gain in customer mass production.

DP Paste		Reference	9642B package	
I-V	Eff	[%]	21.0	21.1
	Voc	[mV]	670	672
	Isc	[mA]	9.460	9.440
	FF	[%]	80.8	81.1
	Rs	[mΩ]	1.6	1.49
	Rsh	[Ω]	1,732	1,600

## TYPICAL PROPERTIES

### Wafer types:

- Multicrystalline, including Black-Silicon cell
- Monocrystalline

### Recommended finger opening:

Double Print: 22 – 45 μm  
Can be optimized based on customer case

**Solid content:** 91.00 ± 1.0%

### Fineness of Grind (FOG):

- 4th scratch: ≤ 10 μm
- 50%: ≤ 5 μm

### Viscosity:

CPE-51 spindle (Brookfield):  
100–180 kcps at 1 RPM, 25°C

## RECOMMEND PROCESSING GUIDING PRINTING

**Printing:** Screen parameter recommendations with stainless steel screen:

≥ 22–45 μm opening:

- calendared 360 mesh, 16 μm or
- calendared 430 mesh, 13 μm or
- calendared 325 mesh, 16 μm
- EOM thickness: 12–20 μm

**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:

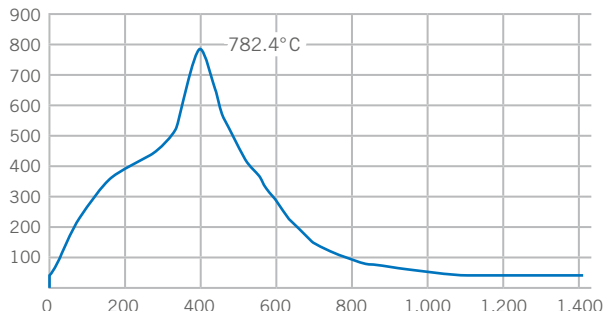


Figure 3: A typical firing profile for Mono ULDE PERC cell

### Storage:

Store in a dry location at 5°C–25°C.  
Stir well before using.

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