

NanoSlic® Gold Stencil vs. Electroformed (E-Fab)

This technical brief evaluates two different stencil printing technologies at a major OEM in North America. The objective is to determine the solder paste transfer efficiency differences between our NanoSlic® Gold coated stencil and an electroformed stencil. We are also exploring how well these technologies achieve acceptable paste volume and paste release at industry low Area Ratios (0.40 – 0.65). Not only are we comparing process windows, but we want to establish a clear understanding of the total value in terms of Quality, Cost & Delivery.

EVALUATION SPECIFICATIONS

Stencil Properties	Electroformed (E-Fab)	NanoSlic® Gold
Stencil Thickness	5 mils	
PCB	Test Vehicle - 10 Boards	
Aperture Design	1 to 1 (pad to aperture)	
Aperture Shape	Square & Circle (120 pads / PCB, 1200 data points)	
Area Ratio	0.40 - 0.60 for both Square & Circle aperture shapes	
Solder Paste	SAC305, Lead Free, Type 3	
Printer	MPM	
Inspection	Koh Young	
Print Parameters	Electroformed (E-Fab)	NanoSlic® Gold
Squeegee Length	300 mm	
Print Pressure	7 kgs	
Print Speed	30 mm/s	
Separation Speed	1 mm/s	
Separation Distance	3 mm	
Cleaning Frequency	Every Print (Wet/Vac/Dry/Vac)	

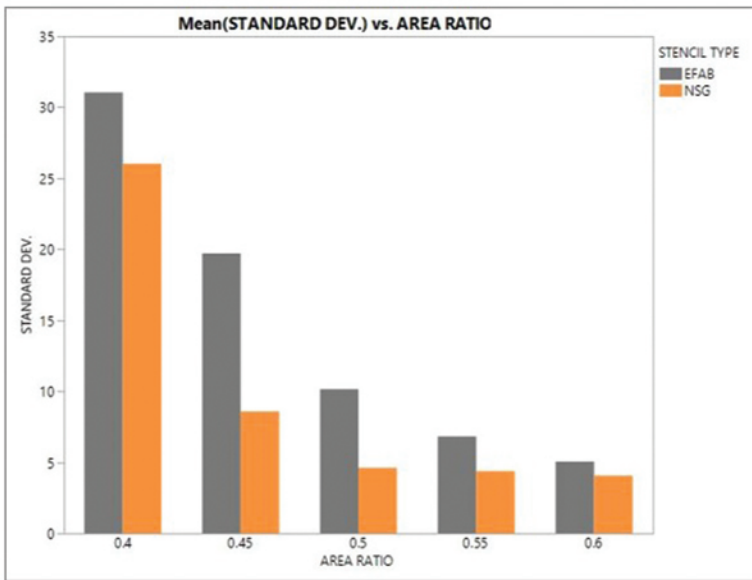
* NanoSlic® Gold Stencil evaluated is our laser cut Stainless Steel foil coated with NanoSlic® using our proprietary application process

* Electroformed Stencil evaluated is from an undisclosed competitor

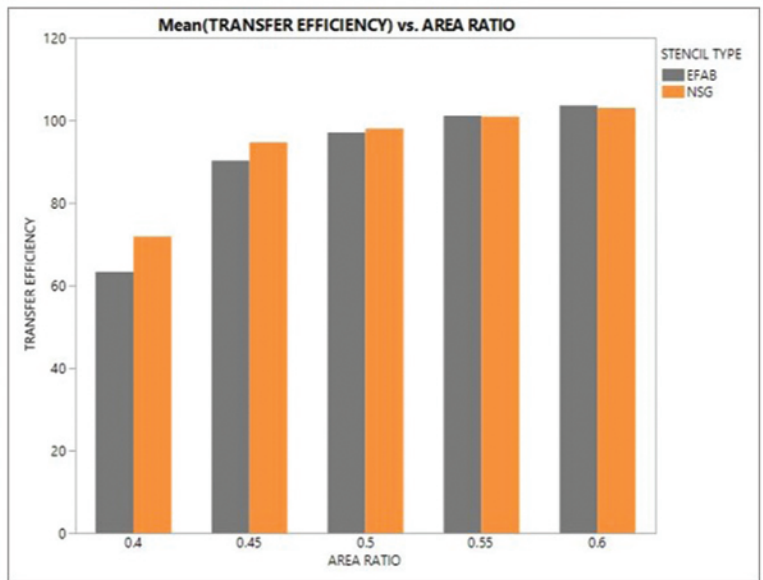
Technical Brief

RESULTS

As the process window narrows; Standard Deviation is significantly lower when using a NanoSlic® Gold Stencil vs an E-Fab Stencil



As the process window narrows; transfer efficiency improves when using a NanoSlic® Gold Stencil vs an E-Fab Stencil



CONCLUSIONS

Criteria	E-Fab	NS Gold	Remarks
Consistency		✓	NanoSlic® Gold Stencils have lower (better) Standard Deviation than E-Fab
Transfer Efficiency		✓	NanoSlic® Gold Stencils have better solder paste transfer efficiency (Mean Paste Volume) than E-Fab
Process Window		✓	NanoSlic® Gold Stencils can print acceptable volumes at lower area ratios (0.45)
Cost		✓	NanoSlic® Gold Stencils have a lower production cost than E-Fab
Lead Time		✓	NanoSlic® Gold Stencils are produced faster than E-Fab

NanoSlic® Gold Stencils are much easier to manufacture and offer more printing benefits than E-Fab Stencils at a lower cost and faster lead time.

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