

## Product Description

Dycotec DM-SIP-3108S is a nanosilver based screen printable paste that is used for fine line print resolution for use in printing thin-film solar cell electrodes. The paste is compatible with TCO-PET and TCO-glass based substrate systems.

## Product Benefits

- Low temperature sintering temperature
- Excellent contact resistance ( $<5 \text{ m}\Omega\cdot\text{cm}^2$ )
- Fine line print resolution (60  $\mu\text{m}$ )
- Excellent electrical conductivity ( $<4 \text{ m}\Omega/\square/25 \mu\text{m}$ ) at 150°C cure

## Paste Preparation

DM-SIP-3108S is a thermoplastic nanosilver based paste system. The paste should be gently stirred before use avoiding incorporation of air bubbles. Please ensure a plastic, non-metallic spatula is used for mixing. Once the paste has been removed from the container for printing, this may introduce contamination. Please do not replace the paste in the container.

## Properties of Uncured Paste

Test	Properties
Viscosity after mixing (Pa.s) (Cone and plate 50s <sup>-1</sup> , 20°C)	6 - 12
Thinner	For slight adjustments in viscosity, use DM-SIP-3108-DT
Coverage	140 cm <sup>2</sup> /g (10 $\mu\text{m}$ , 325SS)
Solids Content	76 - 81 %

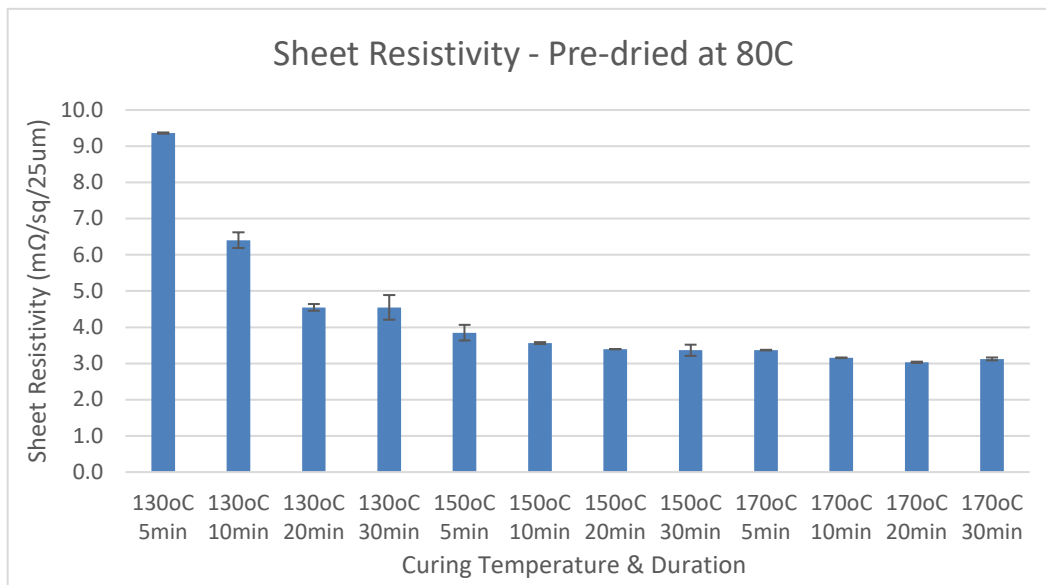
## Paste Processing Conditions

Parameter	Typical Properties
Printer Type	Flat bed screen printing for manual or automatic use
Substrate	TCO-PET, TCO-glass
Screen Residence Time	>2 hours
Screen	PME 165-27 or 325 mesh
Flood speed	70 mm/s
Print speed	70 mm/s
Squeegee type	80A Shore

The paste can be dried using either a convection oven or using IR heating. Typical drying parameters used are 130°C-170°C for 5-30 mins. Drying times may be reduced to achieve the optimum resistivity depending on manufacturing process set-up. Typical print thickness after drying is 4  $\mu\text{m}$  (PME 165-27) or 10  $\mu\text{m}$  (325 SS).

## Properties of Cured Paste

Test	Typical Properties
Sheet Resistance	<4 mΩ/□/25 μm at 150°C cure
Contact Resistivity	<5 mΩ.cm <sup>2</sup>
Adhesion	4B
Resolution (L/S)	<100 μm depending on print deposition set-up
Environmental Testing (85°C/85%RH)	No increase in sheet or contact resistance



## Clean-Up

Avoid drying of the pastes on screen. Equipment can be cleaned using PMA (Propylene glycol methyl ether acetate)

## Storage and shelf-life

Containers should be stored in a cool dry place (4-7°C) with lids tightly sealed. Paste has a shelf-life of up to 6 months. Avoid introduction of water into the paste. Dycotec Materials cannot assume responsibility for a paste that has not been stored in appropriate conditions or where the pastes have been contaminated following use.

## Safety and Handling

For safe use of this product, please review relevant material safety and datasheet (MSDS).

For more information, please contact:

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All information reported in the datasheet is for experimental work undertaken in our laboratories and illustrates typical values only. Processing conditions may vary depending on customers' experience and their application requirements and manufacturing process equipment set-up.

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