

Product Description

Dycotec Materials DM-INS-2501 is a screen printable insulator coating that is used in stretchable applications such as wearable devices, sensors and medical devices. The paste can be applied to elastomeric and textile substrates. The paste is cured at temperatures between 80-140°C. The paste can be used for multilayer or cross over structures.

Product Benefits

- Low temperature sintering temperature (80-140°C)
- Stretchable
- Compatible with a wide variety of substrates

Paste Preparation

DM-INS-2501 is a single part paste system. Once the paste has been removed from the container for printing, this may introduce contamination. Please do not replace the paste in the container. The paste should be gently stirred before use avoiding incorporation of air bubbles. Avoid paste drying on screen, use flood-print-flood process to avoid drying.

Properties of the Uncured Paste

Test	Properties
Viscosity after mixing (Pa.s) (Cone and plate 50s ⁻¹ , 20°C)	3 - 6
Density (g/cm ³)	~1.41
Thinner	For slight adjustments in viscosity, use DM-INS-2501-DT
Solids Content	48-52 %
pH	>8

Paste Processing Conditions

Parameter	Typical Properties
Substrate	TPU, Textiles, PET
Screen	180 SS, 53 µm EOM
Print speed	70 mm/s
Squeegee type	70-80A Shore
Surface Area Coverage	204 cm ² /g at 10 µm thickness
Print Method	Print and Flood to avoid premature blockage
Minimum Print Feature*	500 µm
Screen Residence Time	~30 mins

*Smaller apertures may lead to blockage

Do not leave paste unprinted for >3 mins, as this will cause the paste to dry in the mesh and start to cause blockages. Blocked areas can be re-opened by repeatedly printing on top of a printed substrate. If the paste is visually thickened after 20-30 mins of print time, remove used paste and replenish with fresh pastes. Print 2 wet layers for best results, especially if over printing with a stretchable silver paste such as DM-SIP-2001. Do not use flood-print process sequence as this will cause premature blockage of the screen.

The paste can be dried using either a convection oven or IR heating. Typical drying parameters used are 80°C-140°C for 20-30 mins. Drying times may be reduced to achieve the optimum resistivity depending on manufacturing process set-up.

Properties of the Cured Paste

Test	Properties
Adhesion	5B (depending on substrate)
Mechanical hardness	2B-5B – depending on curing temperature
Shore A Hardness	56
Damp Heat Test (85/85)	1000 hrs
Stretchability	~50%
Colour	White
Typical Print Thickness	14-17 μm
Dielectric Constant (ASTM D150)	3.4 at 1 KHz
Breakdown Voltage (ASTM D149)	>12 kV/mm
Surface Resistivity (ASTM D257)	>1 x 10 ¹¹ Ω/\square
Volume Resistivity (ASTM D257)	>1 x 10 ¹⁰ $\Omega\cdot\text{cm}$

Conductive Layers

Please contact Dycotec Materials regarding suitable stretchable conductive layers for your application.

Clean-Up

For cleaning, wipe off excess paste while still wet and clean immediately with acetone using a trigger spray through the mesh, never let paste dry out fully in the mesh. Finally wipe with water then IPA.

Storage and Shelf-life

For optimum results, the containers should be stored in a cool dry place with lids tightly sealed. The paste shelf-life for an unopened container is 6 months from date of shipment. Avoid introduction of contaminants 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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