

Product Description

Dycotec DM-CAP-4512S is a thermoplastic carbon paste for flat-bed screen printing. The paste allows fast drying at low temperature (100-120°C for 10 mins) with a sheet resistance of $<30 \Omega/\square/25\mu\text{m}$. The paste can be used for production of heater, sensor, automotive, keyboard and graphic overlay applications. It also used as protective overcoat for silver conductive printed layers.

Product Benefits

- Good flexibility
- Low temperature drying
- Compatibility with low temperature substrates such as PET
- Able to withstand high temperature use eg heaters
- Excellent durability and hardness for use as silver conductive paste overlayer

Paste Preparation

Gently stir before use. Avoid rapid stirring to prevent air entrapment during the stirring process. Once the paste has been removed from the container for printing, this may introduce contamination. Please do not replace the paste in the original container and keep the lids tightly sealed with the inner cap after paste transfer to minimise solvent evaporation.

Properties of the Uncured Paste

Test	Typical Properties
Viscosity (Pa.S) (Kinexus Ultra+, Cone & plate, 50s ⁻¹ , 25°C)	15 - 30 Pa.s
Thinner	This should normally not be required. If necessary, use DM-CAP-4512-DT for slight adjustments in viscosity.
Coverage	150 cm ² /g at 9-12 μm dried print thickness
Density	1.2 - 1.3 g/mL
Solids Loading	46 - 48% (130°C, 30 mins, vacuum oven)

Paste Processing Conditions

Parameter	Typical Properties
Substrate	PET, printed silver paste (DM-SIP-3060S)
Deposition Method	Flat-bed screen printing
Screen	PET, 255 mesh/inch, 57 μm aperture, 40 μm wire diameter
Print Method	Flood/print
Squeegee hardness	80 Durometer Shore A
Squeegee angle	60°
Squeegee pressure	8 - 11 Kg at a squeegee length of 22.2 cm
Print gap	1.5 mm
Print/flood speed	100 mm/s
Number of strokes	1
Screen Residence Time	>2.5 hours
Print Resolution	250 μm

Print structures should be processed at 100-120°C in a convection oven for 10 mins. Approximate cured thickness of 10 μm

Properties of the Cured Paste

Test	Properties
HALT Durability Tests	No resistance change after 1000 hrs tests at 85°C/85% RH
Sheet Resistance	<30 $\Omega/\square/25\mu\text{m}$ (120°C)
Adhesion	5B
Pencil hardness scale	2B
Flexibility (ASTM F1683, 5 cycles)	No resistance change (40mm diam. tube) >250 μm width

Clean-Up

Equipment can be cleaned using alcohols such as iso-propanol or acetone.

Storage and Shelf-life

Containers should be stored in a fridge (4 – 8°C) with lids tightly sealed. 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. The shelf-life of the paste is 6 months.

Safety and Handling

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

For more information, please contact:

Dycotec Materials Ltd
Unit 6, Stanier Road
Porte Marsh Industrial Estate
Calne, Wiltshire, SN119PX, UK
Email: Info@dycotecmaterials.com
Tel: +44 (0)1793 422598
www.dycotecmaterials.com

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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