

## Product Description

DM-CAP-4101S is a single part screen printable thermoset carbon paste that is resistant to solvents such as MEK (Methyl Ethyl Ketone). It offers exceptional levels of hardness(5H) and electrical conductivity(<math>50\Omega/\text{sqr}/25\mu\text{m}</math>). Typical applications include; polymer thick film circuitry, potentiometers, membrane switches and printed resistors.

## Product Benefits

- Excellent hardness (2H)
- Excellent resistance to solvents including MEK (Methyl Ethyl Ketone)
- Excellent conductivity (<math>50\Omega/\text{sqr}/25\mu\text{m}</math> at 200°C cure)
- Single part system with excellent printability
- Paste systems at variable sheet resistance available: 100, 1000 and 10,000  $\Omega/\text{sqr}/25\mu\text{m}$

## Paste Preparation

The paste is a single part system. 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 put used paste back into the original container.

## Properties of Uncured Paste

Test	Properties
Viscosity (Malvern, cone-plate 50s <sup>-1</sup> , 25°C)	10-20 Pa.s
Thinner	This should normally not be required. If necessary, use DM-CAP-4101S-DT for slight adjustments in viscosity.
Coverage	95 cm <sup>2</sup> /g for 25 $\mu\text{m}$ thickness
Density	1.05 g/mL
Solids Loading	54% - 58%
Colour	Black

## Paste Processing Conditions

Parameter	Typical Properties
Substrate	Glass, FR4, Polyimide
Screen	180 mesh count / inch Stainless Steel, 12 $\mu\text{m}$ emulsion
Squeegee hardness	80 Durometer Shore A
Print Mode	Flood/Print
Print Speed	200 mm/s
Squeegee pressure	8 kg over 22cm
Print gap	1.2 mm
Cured thickness	30 - 36 $\mu\text{m}$

Guideline curing parameters are 200°C- for 120 mins in a well ventilated convection oven.

## Properties of Cured Paste

Test	Typical Properties
Sheet Resistance (ASTM D257)	<50 $\Omega/\square/25\mu\text{m}$ (200°C cure, 30 mins)
Adhesion (ASTM D3359)	5B
Pencil hardness (ASTM D3363)	2H
MEK Resistance (ASTM D4752)	No paste removed, clean wipe
Surface Roughness, $R_a$ (based on ASTM D7127)	<1 $\mu\text{m}$

## Clean-Up

Equipment can be cleaned using alcohols such as IPA or benzyl alcohol.

## Storage and shelf-life

Containers should be stored in the fridge (4 – 8°C) with lids tightly sealed. The paste shelf-life for an unopened container is 6 months from date of shipment. Please ensure the material has time to reach room temperature before use. The material should not be stored at temperature below 0°C. 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 and safety 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. More detailed information can be obtained via [info@dycotecmaterials.com](mailto:info@dycotecmaterials.com).

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