

Product Description

Dycotec DM-CAI-4606 is a nanocarbon ink-jet printable ink that is used for general printed electronics applications such as sensors, heaters and solar cell. The ink offers good electrical conductivity at low curing temperatures (100°C). It can be used on Soda Lime Glass, ITO-glass, ITO-PET, PET, PI, PEEK and PEN substrates.

Product Benefits

- Good electrical conductivity (<2.5 kΩ/□/25μm, 150°C)
- Low temperature drying (100°C)
- Excellent adhesion on a wide range of substrates

Ink Preparation

Ultrasound treatment for 30-45 min (eg. 70 W, 40 kHz) is recommended before filling the print-head. A dedicated flushing solution, DM-CLN-3000, is recommended before filling, and for cleaning and priming of the print-head.

Properties of Uncured Ink

Test	Properties
Viscosity after mixing (Malvern Kinexus Ultra+, Cone and plate 1000s ⁻¹ , 25°C)	16 - 19 cP
Mean Particle size	<100 nm
Density	1.2-1.4 g/cm ³
Surface Tension	26 - 28 mN/m (Kibron AquaPi +, 25°C, Wilhelmy method)
Solids Content	4.9 - 5.2 % (vacuum oven, 80°C, 30 mins)

Ink Processing Conditions

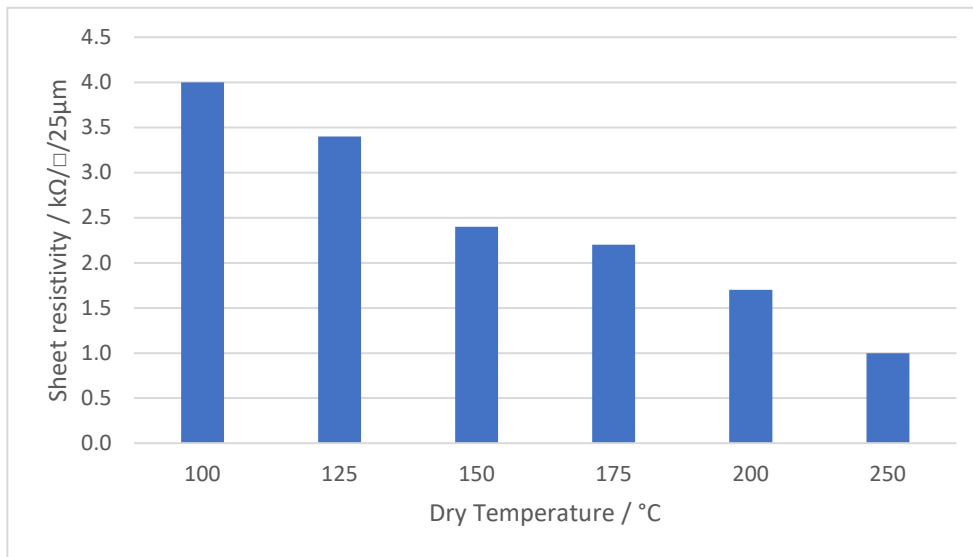
Parameter	Typical Properties
Substrate	Soda Lime Glass, ITO-glass, ITO-PET, PET, PI, PEEK, PEN
Deposition Method	Inkjet
Print-head Compatibility	Dimatix SE-128AA
Print-head Temperature	25 - 40°C
Substrate Temperature	25 - 80°C
Flushing Solution - Filling Print-head	Rinse the system with flushing solution, DM-CLN-3000 Fill the system with ink-jet ink
Flushing Solution - Print-head Clean	Purge all ink from system (tank, tubes and print-head) Rinse the system with flushing solution DM-CLN-3000

The ink can be dried immediately after printing in a temperature range from 100-250°C. Higher temperatures and/or longer times will result in lower sheet resistance. To optimise film formation, it is advisable to remove solvent from the layer by drying at 80°C for 10-15 mins before increasing temperature for drying in a convection or IR oven.

The above drying and curing conditions are guidelines. Time and temperature conditions may vary based on the customer's experience and application requirements as well as the customer's drying equipment, oven loading and actual oven temperatures.

Properties of Cured Ink

Test	Typical Properties
Sheet Resistance	4 k Ω /□/25 μ m (100°C), 2.4 k Ω /□/25 μ m (150°C)
Adhesion (ASTM D3350)	5B
Typical Dry Film Thickness	1-2 μ m depending on print deposition setup



Clean-Up

Equipment can be conditioned or cleaned using DM-CLN-3000.

Storage and Shelf-life

Containers should be stored in a fridge at a storage temperature between 4 -7°C with lids tightly sealed. The ink shelf-life for an unopened container is 6 months from manufacturing date. Dycotec Materials cannot assume responsibility for an ink that has not been stored in appropriate conditions or where the ink 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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