



Metalon® Conductive Inks for Printed Electronics

www.novacentrix.com

Metalon® ICI-003

Nanocopper Ink – Aqueous dispersion

ICI-003 is an aqueous, copper oxide-based ink which is transformed post-printing into a metallic copper thin film after it is processed with PulseForge® tools. It is designed to produce very flexible, conductive traces on porous, low-temperature substrates such as Novele™ (a coated PET). ICI-003 is specially formulated for compatibility and stability with piezoelectric inkjet printing methods.

Performance Properties	<p>Metalon ICI-003 produces, after printing and curing, conductive, metallic copper traces with electrical resistivities as low as 2.5× bulk Cu resistivity. ICI-003 MUST be processed with PulseForge® tools from NovaCentrix® to attain the stated resistivity values. Thermal curing is not applicable. Printed traces of ICI-003 are not conductive prior to processing with PulseForge® tools.</p> <p>Sample Conductivity</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">ICI-003</th> <th style="text-align: center;">Units</th> </tr> </thead> <tbody> <tr> <td>Thin film resistivity</td> <td style="text-align: center;">4.3 μΩ·cm</td> <td style="text-align: center;">Micro-ohm-cm</td> </tr> <tr> <td>Thin film sheet resistance</td> <td style="text-align: center;">140 mΩ / □</td> <td style="text-align: center;">Milliohm/square</td> </tr> <tr> <td>Bulk resistivity comparison</td> <td style="text-align: center;">2.6 ×</td> <td style="text-align: center;">ρ(thin film)/ρ(bulk Cu)</td> </tr> </tbody> </table> <p>Sample Information</p> <p>Substrate¹: Novele™ IJ-220 (a coated PET) Printer: Low-cost consumer inkjet printer, single pass Post-Process Tool: PulseForge® 3200 or 3300 in 6" configuration Environment: Atmosphere – no special preparation</p>		ICI-003	Units	Thin film resistivity	4.3 μΩ·cm	Micro-ohm-cm	Thin film sheet resistance	140 mΩ / □	Milliohm/square	Bulk resistivity comparison	2.6 ×	ρ(thin film)/ρ(bulk Cu)
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Physical Properties	<p>General Description Water-based, copper oxide (CuO) ink converted to Cu after PulseForge® curing</p> <p>Viscosity 1 – 6.5 cP</p> <p>Specific Gravity 1.12</p> <p>Flash Point..... Non-flammable</p> <p>Particle Size Malvern Instruments Zetasizer (dynamic light scattering method) Z-average = 85 – 115 nm</p> <p>CuO Content..... 10 wt%</p>												
Shipping and Packaging	Standard sample order is 50 mL or multiples of 50 mL. Bulk packaging is also available.												

¹recommended for use on the following substrates: Novele™ IJ-220, paper
 not currently recommended for use on the following substrates: uncoated PET, glass, ITO

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