



## 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.

<b>Performance Properties</b>	<p><b>Metalon ICI-003</b> produces, after printing and curing, conductive, metallic copper traces with electrical resistivities as low as 2.5x 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><b>Sample Conductivity</b></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><b>Thin film resistivity</b></td> <td style="text-align: center;">4.3 <math>\mu\Omega \cdot \text{cm}</math></td> <td style="text-align: center;">Micro-ohm-cm</td> </tr> <tr> <td><b>Thin film sheet resistance</b></td> <td style="text-align: center;">140 <math>\text{m}\Omega / \square</math></td> <td style="text-align: center;">Milliohm/square</td> </tr> <tr> <td><b>Bulk resistivity comparison</b></td> <td style="text-align: center;">2.6 x</td> <td style="text-align: center;"><math>\rho(\text{thin film}) / \rho(\text{bulk Cu})</math></td> </tr> </tbody> </table> <p><b>Sample Information</b></p> <p>Substrate<sup>1</sup>: 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	<b>Thin film resistivity</b>	4.3 $\mu\Omega \cdot \text{cm}$	Micro-ohm-cm	<b>Thin film sheet resistance</b>	140 $\text{m}\Omega / \square$	Milliohm/square	<b>Bulk resistivity comparison</b>	2.6 x	$\rho(\text{thin film}) / \rho(\text{bulk Cu})$
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<b>Physical Properties</b>	<p><b>General Description</b>..... Water-based, copper oxide (CuO) ink converted to Cu after PulseForge® curing</p> <p><b>Viscosity</b>..... 1 – 6.5 cP</p> <p><b>Specific Gravity</b>..... 1.12</p> <p><b>Flash Point</b>..... Non-flammable</p> <p><b>Particle Size</b>..... Malvern Instruments Zetasizer (dynamic light scattering method) Z-average = 85 – 115 nm</p> <p><b>CuO Content</b>..... 10 wt%</p>												
<b>Shipping and Packaging</b>	Standard sample order is 50 mL or multiples of 50 mL. Bulk packaging is also available.												

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

**www.novacentrix.com**  
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