



## Metalon® Conductive Inks for Printed Electronics

[www.novacentrix.com](http://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 thin film of metallic copper 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 printheads such as those used in Epson desktop printers.

<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 7.7x bulk Cu resistivity. ICI-002HV 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;">13 - 15 <math>\mu\Omega \cdot \text{cm}</math></td> <td style="text-align: center;">microOhms cm</td> </tr> <tr> <td><b>Thin film sheet resistance</b></td> <td style="text-align: center;">300 - 350 <math>\text{m}\Omega / \square</math></td> <td style="text-align: center;">milliOhms per square</td> </tr> <tr> <td><b>Bulk resistivity comparison</b></td> <td style="text-align: center;">7.7 - 9.0x</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® 1200, 1300, 3200, or 3300            Environment: Atmosphere - no special preparation</p>		ICI-003	Units	<b>Thin film resistivity</b>	13 - 15 $\mu\Omega \cdot \text{cm}$	microOhms cm	<b>Thin film sheet resistance</b>	300 - 350 $\text{m}\Omega / \square$	milliOhms per square	<b>Bulk resistivity comparison</b>	7.7 - 9.0x	$\rho(\text{thin film})/\rho(\text{bulk Cu})$
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<b>Physical Properties</b>	<p><b>General Description</b> ..... Water-based, copper oxide (CuO) ink which requires PulseForge® processing to be converted to Cu</p> <p><b>Flash Point</b> ..... Non-flammable</p> <p><b>CuO Content</b> ..... 10 wt. %</p> <p><b>Particle Size</b> ..... Z-average = 110 - 130 nm (dynamic light scattering)</p> <p><b>Viscosity</b> ..... 2 - 6 cP</p> <p><b>Surface tension</b> ..... 24 - 30 dynes / cm</p> <p><b>Specific Gravity</b> ..... 1.12</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, inkjet paper, or other substrates with an inkjet-receptive layer. Not currently recommended for use on the following substrates: polyimide, paper, or glass.

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**Contact us today to learn more.**

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