



Metalon® Conductive Inks for Printed Electronics

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Metalon® ICI-002HV Nanocopper Ink - Aqueous dispersion

ICI-002HV 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 conductive traces on porous low-temperature substrates. ICI-002HV is specially formulated for compatibility and stability with higher-loading inkjet systems such as those from Xaar and Dimatix. A printing waveform for Dimatix DMP heads is available.

Performance Properties	<p>Metalon ICI-002HV produces, after printing and curing, conductive, metallic copper traces with electrical resistivities as low as 4.5x 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-002HV are not conductive prior to processing with PulseForge® tools.</p> <p>Sample Conductivity</p> <table border="1"> <thead> <tr> <th></th> <th>ICI-002HV</th> <th>Units</th> </tr> </thead> <tbody> <tr> <td>Thin film resistivity</td> <td>7.5 - 10.8 $\mu\Omega \cdot \text{cm}$</td> <td>microOhms cm</td> </tr> <tr> <td>Thin film sheet resistance</td> <td>175 - 250 $\text{m}\Omega / \square$</td> <td>milliOhms per square</td> </tr> <tr> <td>Bulk resistivity comparison</td> <td>4.5 - 6.5x</td> <td>$\rho(\text{thin film})/\rho(\text{bulk Cu})$</td> </tr> </tbody> </table> <p>Sample Information</p> <p>Substrate¹: Novele™ IJ-220 (a coated PET) Printer: Dimatix Materials Printer (DMP-2800 Series) Post-Process Tool: PulseForge® 1200, 1300, 3200, or 3300 Environment: Atmosphere - no special preparation</p>		ICI-002HV	Units	Thin film resistivity	7.5 - 10.8 $\mu\Omega \cdot \text{cm}$	microOhms cm	Thin film sheet resistance	175 - 250 $\text{m}\Omega / \square$	milliOhms per square	Bulk resistivity comparison	4.5 - 6.5x	$\rho(\text{thin film})/\rho(\text{bulk Cu})$
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Physical Properties	<p>General Description Water-based, copper oxide (CuO) ink which requires PulseForge® processing to be converted to Cu</p> <p>Flash Point.....Non-flammable</p> <p>CuO Content16 wt. %</p> <p>Particle SizeZ-average = 110 - 130 nm (dynamic light scattering)</p> <p>Viscosity9 - 15 cP</p> <p>Surface tension28 - 32 dynes / cm</p> <p>Specific Gravity1.21</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, 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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