

# CI-004

## Copper Inkjet Ink for Polyimide Substrates

*A nanocopper-based ink for printed electronics*

### Product Overview

CI-004 is a nanosized metallic copper formulation, dispersed in a polymeric matrix suitable for high resolution inkjet printing

CI-004 is formulated to provide excellent conductivity, flexibility and adhesion with polyimide.

This ink can be used in a variety of printing equipment and can deliver drop sizes as low as 4 picolitres.

### Processing



CI-004 printed on polyimide after a reducing formic acid/argon atmosphere processed @250°C 45 minutes

<b>Printing Equipment</b>	Industrial piezo inkjet print heads such as: Dimatix Sapphire, Konica Minolta KM512, Dimatix DMP2850-10 pl
<b>Line resolution</b>	As low as 50 $\mu\text{m}$ @ 900 DPI (Depending on deposition equipment and DPI)
<b>Line Thickness/Height</b> (sintered)	~ 500 nm (Depending on drop volume)
<b>Substrates</b>	Designed for polyimide although others can be used.
<b>Clean up solvent</b>	Acetone, isopropanol
<b>Surface Preparation</b>	Clean & dry, no grease or contaminants (Plasma treatment can also be used)
<b>Typical Drying Conditions</b>	Can be dried in standard convection ovens and vacuum ovens @ 60°C, 30–60 minutes  IR dryer @ 80°C, 15 minutes  Forced air convection @ 80°C, 5–10 minutes
<b>Typical Sintering Conditions</b>	Photonic sintering (Novacentrix PulseForge or Xenon Sinteron)  Laser – 808-1064 nm Formic acid reducing atmosphere @ 250°C for 45 minutes dwell time

## Applications

CI-004 ink is designed to be compatible with polyimide to fabricate electronic circuitry common in flexible printed circuit boards.

Applications include:

- LED lighting
- Microelectronics
- Membrane switches
- Sensors & Antennas

## General Use, Storage and Shelf Life

The product should be kept sealed in its container and stored at room temperature (<25°C). The shelf life of unopened containers is six months from date of shipment.

Before use, please ensure that the ink is mixed thoroughly for a few minutes taking care to avoid introducing air to the ink. Filter the ink ( $\leq 5 \mu\text{m}$  glass microfibre or nylon) prior to filling up the reservoir.

## Safety and Handling

For safety and handling information relating to the use of this product, please refer to the Safety Data Sheet (SDS).

## Technical Support

Intrinsiq works closely with its customers to ensure this product is optimized for their process. For more product information or technical support, please contact your local representative.

**Intrinsiq Materials Ltd**  
Building Y25, Cody Technology Park  
Ively Road, Farnborough  
Hampshire, GU14 0LX  
United Kingdom  
Sales Tel: +44 (0)1252 396 238  
+44 (0)7776 457 255

Email: [ianclark@intqm.com](mailto:ianclark@intqm.com)

## Typical Compositional properties

<b>Solids content</b> (Weight %)	20
<b>Viscosity [cP]</b> (Brookfield DVE @10 rpm, 20°C)	~30
<b>Surface Tension [mN/m]</b> (Static)	31
<b>Density [g/ml]</b>	1.15

## Typical Electrical & Physical Properties (Sintered)

<b>Bulk Resistivity</b> [mΩ/cm]	~12
<b>Adhesion</b> (ASTM D3359)	5B