

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

Printing Equipment	Industrial piezo inkjet print heads such as: Dimatix Sapphire, Konica Minolta KM512, Dimatix DMP2850-10 pl
Line resolution	As low as 50 μm @ 900 DPI (Depending on deposition equipment and DPI)
Line Thickness/Height (sintered)	~ 500 nm (Depending on drop volume)
Substrates	Designed for polyimide although others can be used.
Clean up solvent	Acetone, isopropanol
Surface Preparation	Clean & dry, no grease or contaminants (Plasma treatment can also be used)
Typical Drying Conditions	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
Typical Sintering Conditions	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 us.

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Typical Compositional properties

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

Typical Electrical & Physical Properties (Sintered)

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