



CopPair Technical Data Sheet (TDS)

Two-Part Conductive Copper Ink for Printed Electronics

Product Description

PrintCB *CopPair* is a high conductivity, two-part, copper ink used for printing of circuitry and traces in printed electronics by means of screen-printing or micro-dispensing.

Product Benefits

- Excellent screen-printing properties
- Sinters in air using standard curing equipment (forced-air, IR etc.)
- Fit for printing on various plastic substrates (Treated or Untreated PET, PEN, Epoxy, Paper, Glass, Aluminum etc.)

Preparation: shake the ActiveX solvent well before opening. Then, add its full volume to the MetalX powder, close the lead and shake well. Using a spatula start mixing in increasing speed till a uniform smooth paste is obtained. Let the ink rest 5 minutes - the ink is then ready for use. Watch ink preparation video [here](#).

For small sample preparation, mix 1 gram of ActiveX with every 4.5 grams of MetalX.

- **Pot life:** once mixed, the ink should be within 48 hours
- **Screen printing:** using PE or SS screens, mesh 125 or lower
- **Curing process in forced-air conveyor/box oven:** 5 minutes at 150°C *

*Please note, the CopPair process is triggered by temperature, follow the curing profile above for optimal performance. Curing at lower temperatures harms the ink's performance.

- **Resistivity:** 25-30 mΩ/□/mil
- **Average particle size:** 5 microns
- **Typical layer thickness for a single pass:** 10-15 microns

Composition properties:

- **Viscosity:** 7,000-10,000cP
- **Thinner:** not required
- **Solids content:** >80%
- **Storage and shelf life:** container should be stored, tightly sealed, in a dry environment. Shelf life is approximately 6 months.

Recommended Screen properties:

- **Mesh:** 125 or smaller
- **Emulsion:** solvent & water-resistant systems are recommended.
- **Clean-up:** course clean the screen using water and some detergent, then fine clean using a solvent (MEK, Acyl Acetate etc.).

Application Notes

Substrates

CI-003 Copper Ink is compatible for printing on a wide variety of films such as the following:

- Treated PETs such as Du Pont Milenex 453, Autostat CT or similar
- Untreated PET and Mylar
- High gloss label papers (application in development)

Films should be heat stabilized.

Adhesion

Tested using 3M 610 Scotch tape (cross hatch testing)

- Treated PETs: 4B
- Untreated PET: 4B
- Paper: no transfer

Environmental Testing

Changes in electrical properties:

- Dry heat (+85°C, 10 days): **<+15%**
- Humidity (+40°C, 95% RH, 10 days): **<+20%**
- Thermal shock (-40°C to +150°C, 30 min per cycle, 1000 cycles): **<+15%**

Flexibility

CopPair is a semi-flexible ink, fit for low-curvature, one-time fixing applications.

Optimal flexibility is obtained on 50 micron thick films.

Testing procedure: 1 mm wide line printed on a film is wrapped/unwrapped twice (720°) around an **8mm radius** cylinder. Changes in resistance are recorded after **10 cycles**.

	Film Thickness: 50 microns	Film Thickness: 100 microns	Film Thickness: 150 microns
Untreated PET	<20%	<40%	60%-80%
Treated PET	<20%	<40%	60%-80%

Soldering of Components

Once cured, components can be bonded to the ink using low-temperature (typically bismuth-tin) solder pastes and then reflowed, similar to SMT processing (wire soldering isn't recommended). To maintain good mechanical strength, adhesive-based bonding the component to the surface is highly recommended.

For further information please contact: info@printcb.com