

Micromax™ PE510

Electronic Inks and Pastes

Copper Conductor

Micromax™ PE510 Copper Conductor is used as an alternative to pure silver conductor inks to produce low-voltage circuitry on a wide range of substrates for Printed Electronic and RFID/Antenna applications. Micromax™ PE510 is designed to be processed using photonic-curing equipment and optimized curing profiles available from a number of manufacturers.

Product benefits

- High conductivity
- High-speed curing process
- Additive process RFID/antennas vs etched Cu
- Long lamp life for photonic systems

Product information

Solvent or thinner	Micromax™ 3610
Density	3.2 g/cm ³
Solid content	76 - 80 ^[1] %
[1]: 150°C	

Rheological properties

Viscosity	10 - 40 ^[2] Pa.s
[2]: Brookfield 0.5xRVT, #14 spindle, 10 rpm, 25°C	

Application technique

Mask mesh	325 - 400 ^[3]
Drying time	2 - 10 min
Drying temperature	80 °C
Theoretical coverage	180 ^[4] cm ² /g
Recommended film thickness, dried	6 - 10 µm
[3]: Screen Types: Stainless steel	
[4]: at 10µm, in the case of at 6µm, 250 cm ² /g	

Typical mechanical properties

Adhesion, cross hatch	4B ^[5] class
[5]: Slight Haze 4. ASTM D3359-78, w/3M Scotch Tape 600.	

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Electrical properties

Surface resistivity $\leq 35^{[6]}$ mOhm per square

[6]: at 25.4μm, @ 9μm w/Substrate /Typical Photonic Curing Profiles FR4 Epoxy

Storage and stability

Shelf life $6^{[7]}$ months

[7]: in unopened containers, from date of shipment, at temperature <25°C

Additional information

How to use

Photonic processing and substrates

- Micromax™ PE510 has good electrical and physical performance on several types of substrates, using the latest photonic curing equipment. The performance of Micromax™ PE510 will vary according to substrate type and thickness, and the customized lamp energy output and pulse profiles as recommended by equipment manufacturers.

Processing

- **Substrates**
 - Low-loss epoxy-type; FR4
 - Polyimide; PVC for smart cards
 - Glass; polyester film
- **Screen types**
 - 400-325 wire/inch stainless steel mesh
 - 156-130 thread/cm polyester mesh
- **Printing**
 - Automatic reel-to-reel
 - Semi-automatic flat-bed
 - Rotary screen/ cylinder screen
- **Thinning**
 - Thinning with Micromax™ 3610 may be desired in some cases depending on printing requirements.
- **Clean-up solvent**
 - Ethylene diacetate
- **Drying**
 - Dry at 80°C oven for 2-10 minutes in a well-ventilated oven. Apply sufficient photonic energy under desired pulse profile to obtain best balance of resistivity and physical performance.
- **Encapsulant**
 - Micromax™ 5036

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Properties

Typical Physical & Composition Properties

Test	Properties
Abrasion Resistance, Pencil Hardness (ASTM D3363-74) [H]	1

Information in this datasheet shows anticipated typical physical properties for Micromax™ PE510 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

Storage and shelf life

Containers should be stored, tightly sealed, in a clean, stable environment at room temperature (<25°C). Shelf life of material in unopened containers is six months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

Safety and handling

For safety and handling information pertaining to this product, read Safety Data Sheet (SDS).