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Ag-IJ10 Nanosilver Ink

ANI's Ag-IJ10 is a silver nanoparticle ink that can be thermally sintered to high conductivity at low temperature. Additional photosintering can further lower the resistivity. The low processing temperatures (100-150°C) allow for applications in printed electronics using low cost flexible polymer substrates such as PET. The small sizes of the nanoparticles and uniform dispersion in Ag-IJ10 make it suitable for printing using inkjet technologies.

Typical properties

Part number	Ag-IJ10
Particle Size	3-10 nm
Resistivity	10-50 $\mu\Omega\text{-cm}^*$
Solid Content	45 wt%
Viscosity	4-5 cP**
Surface Tension	28-35 mN/m
Solvent	Organic

* Dependent on sintering temperature and time- higher temperature and longer sintering time results in lower resistivity and better adhesion to the substrate.

** Measured at 100rpm and 25°C with Brookfield VLDV-II+PRO/ULA viscometer



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Application Notes: Ag-IJ10 Nanosilver Ink

Description

ANI's Ag-IJ10 is a silver nanoparticle ink suitable for drop on demand printing highly conductive lines and patterns for applications in the printed electronics industry. Ag-IJ10 ink can be thermally sintered at low temperatures on PET and polyimide substrates.

Storage and Shelf Life

Ag-IJ10 ink should be stored in a tightly sealed, leak-proof container at 3-10°C. Storage in freezers is not recommended. Ag-IJ10 may be stored for up to 3 months.

Safety and Handling

When working with Ag-IJ10 ink, use adequate ventilation and wear appropriate protective gear. Ag-IJ10 can cause eye and skin irritation. The following precautions should be taken when handling Ag-IJ10 ink:

- Read the Material Safety Data Sheet (MSDS)
- Avoid prolonged breathing of vapor
- Use appropriate safety equipment such as gloves and eye protection
- Wash hands thoroughly after handling
- Keep the ink container closed when not in use to prevent drying and spilling

Pre-processing

- The Ag-IJ10 ink requires ultrasonic agitation for 10 minutes in ice cold water.
- After sonication, the ink should be filtered by using a 0.45 micrometer pore size glass fiber filter before filling ink cartridge.

Printing

- Printing has been demonstrated using inkjet and wire rod drawdown. Conditions will vary based on technique and substrate.

Drying

- Printed ink can be air dried at room temperature for 30 min, or dried at 100°C for 10 min in ambient atmosphere.

Sintering

- Ag-IJ10 will reach the minimum resistivity after 30 min at 150°C
- Curing the printed sample in convection oven is recommended

Clean-up

- Follow appropriate cleaning procedures for equipment used to dispense Ag-IJ10 ink. Excess ink can be removed with ethanol, IPA, or acetone.

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Processing Procedures