

Metalon® Conductive Inks for Printed Electronics

www.novacentrix.com

Metalon® PFI-600 Conductive Silver Flexographic Ink

Product Description

PFI-600 is a water-based, silver nanoparticle flexographic ink which is designed to produce cured features with high electrical conductivity and excellent adhesion on a wide range of plastics and papers at print speeds as low as 10 m / min. This fast-curing ink has also been specifically formulated to produce cured films with good scratch and abrasion resistance, high pencil hardness, and low surface roughness. PFI-600 may be used in antenna, RFID, sensor, secure packaging, and flexible solar cell applications.

Key Benefits

- Fast curing at low temperatures enables roll-to-roll processing
- Suitable for print speeds between 10 and 30 m / min
- High electrical conductivity at thin cured film thicknesses for materials cost savings
- Good printability with features as small as 30 µm achievable
- Excellent adhesion on treated polyester, polyimide, polycarbonate, and polyurethane
- Good flexibility and crease resistance
- Good scratch and abrasion resistance
- Cured films with pencil hardness values as high as 8H achievable on various plastics
- Good water and alcohol resistance
- Minimal volatile organic compounds (VOCs)
- Easy clean-up with a solution of particle-free detergent and water

Typical Ink Properties

| | |
|--|---|
| Silver content (wt. %) | 60 (± 2) |
| Density (wet) | 2.1 - 2.3 g / mL |
| Viscosity @ 10 s ⁻¹ | 500 - 1200 cP |
| Viscosity @ 1000 s ⁻¹ | 150 - 450 cP |
| pH | 5.90 to 5.94 |
| Volume resistivity ¹ | 4.5 to 5.0 µΩcm |
| Sheet resistance at 1 mil ¹ | 1.8 to 2.0 mΩ / square |
| Printed sheet resistance | 50 to 250 mΩ / square (anilox-dependent) |
| Wet ink coverage per kg | 90 to 1000 m ² (for 13.5 to 1.2 BCM) |
| Shelf life with refrigeration | > 8 months (unopened container) |

¹The theoretical wet ink thickness for all prints was 51 µm. All prints were cured in a convection oven at 140°C (except on polycarbonate).

Some recommended Flexographic Print Plates / Cliches for different applications

- Miraclon's Kodak Flexcel NXH
- Dupont™ Cyrel® DFQ
- Dupont™ Cyrel® DPR
- Dupont™ Cyrel® Esko Pixel+
- Asahi Kasei's AFP™-TOP



Metalon® Conductive Inks for Printed Electronics

www.novacentrix.com

Metalon® PFI-600 Conductive Silver Flexographic Ink

Some recommended On-press Curing Tools

- PulseForge® tools (<https://pulseforge.com/>)
- Near-IR (infrared) heaters
- Forced-air drying ovens

General On-press Requirements to achieve consistent printing and Clean-up Solution Composition

- On-press ink pH adjustment
- Applied “spot” humidification between anilox and print plate cylinder
- Clean-up solution is 1 part per volume of a particle-free detergent and 19 to 20 parts per volume of deionized water

For more information about this ink, please contact us at info@novacentrix.com