

# Conductive and functional inks compatible with Signis inks and AgeNT films



| Ink Type | Manufacturer               | Part#                   | Resistivity<br>$\Omega/\square$ @<br>25 $\mu$ m | Drying  | Substrate       | General | Heater<br>Bus | High Flex<br>stretch | IME | Antenna<br>contacts | Comments   |
|----------|----------------------------|-------------------------|---|---|-----------------|---------|---------------|----------------------|-----|---------------------|--|
| Silver   | Henkel                     | Loctite<br>ECI-1010 E&C | 0.007   | Tunnel dry 120°C for 3 mins +<br>IR                         | PET, PC         | ✓✓      | ✓✓            | ✓✓                   | ✓   | ✓✓                  | Heater Bus bars, circuits  |
| Silver   | Henkel                     | EDAG 479SS or<br>PF410  | <0.020  | 15 minutes @ 93°C   | PET, PC         | ✓✓      | ✓✓            |                      |     | ✓✓                  | High flexibility, High tempr.<br>operation max. 200°C                |
| Silver   | Henkel                     | Loctite<br>ECI-1006 E&C | 0.030   | 10 minutes @ 130°C  | PET, PC         | ✓✓      |               |                      |     | ✓✓                  | Fine trace and gap printing  |
| Silver   | Henkel                     | Loctite<br>ECI-1011 E&C | <0.005  | Tunnel dry & 140°C for 20<br>mins                           | PET             |         | ✓✓            | ✓                    |     |                     | Sintering ink  |
| Silver   | ACI                        | RD0117C                 | <0.004  | Tunnel dry 140C / 3 mins &<br>140°C for 40 mins             | PET, PC         | ✓✓      | ✓✓✓           | ✓                    |     | ✓✓                  | Highest conductivity bus<br>bars, sintering ink                      |
| Silver   | Sun Chemical               | CXT-0894                | <0.013  | Tunnel dry 120°C for 3 mins +<br>120-140C for 30 mins (IME) | PET, PC         |         |               |                      | ✓✓  |                     |  |
| Silver   | Sun Chemical               | CXT-0887                | <0.035  | Tunnel dry 120°C for 3 mins +<br>100C for 30 mins (IME)     | PET, PC         |         |               | ✓✓*                  | ✓✓* |                     | * AgeNT-1 (and VC102 /<br>VC200)                                     |
| Silver   | Sun Chemical               | AST6202                 | 0.004 - 0.007                                   | Tunnel dry 120°C<br>3 mins - 5 mins (IR as well)            | PET, PC         | ✓✓      | ✓✓            |                      |     | ✓✓                  | Lower solids silver  |
| Silver   | Creative<br>Materials Inc. | 127-07 MD               | 0.050 to<br>0.010                               | 125°C cure  | PET, PC         |         | ✓✓            |                      |     | ✓✓                  | Creative Materials -<br>Thermoset                                    |
| Silver   | DuPont                     | 9169                    | ≤0.018  | 120°C drying  | PET, PC         | ✓✓      |               |                      |     | ✓✓                  | Good adhesion / contact<br>resistance                                |
| Silver   | DuPont                     | 5028                    | ≤0.012  | 130°-140°C dry  | PET, PC         | ✓✓      | ✓✓            |                      |     | ✓✓                  | Higher silver content, higher<br>operating temp. (110C)              |
| Silver   | DuPont                     | PE819                   | 0.010 - 0.012                                   | 120°-140°C drying   | PET, PC         | ✓✓      | ✓✓            |                      |     | ✓✓                  | Best DuPont general purpose<br>(80% silver) - scaled up              |
| Silver   | DuPont                     | PE828                   | <0.025  | 60°-100°C   | PET, PC         | ✓       |               |                      |     |                     | Ultra-low temp, low Tg resin   |
| Silver   | DuPont                     | ME102                   | <0.020  | 120°C drying  |                 |         |               | ✓✓                   | ✓✓  |                     | IME applications   |
| Silver   | DuPont                     | ME614                   | <0.025  | 120°C drying  | PET, PC,<br>TPU |         |               | ✓✓✓                  | ✓✓✓ |                     | IME applications, high<br>elongation / formable / laser<br>ablatable |

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|---------------------------------------|--------------|--------------------------|---|--|-----------|---------|---------------|-------------------------|-----|--|
| Carbon Ink                            | DuPont       | 7102                     | 20 -30  | 120°C drying   | PET, PC   | ✓✓      | ✓✓            |                         |     | Overcoat over silver   |
| Dielectric /<br>Encapsulant           | DuPont       | 5036                     |   | 120°C drying   | PET, PC   | ✓✓      |               |                         |     | General purpose PE819 / 5036   |
| Encapsulant                           | DuPont       | ME780                    |   | 120°C drying   | PET, PC   |         |               | ✓✓✓                     | ✓✓✓ | Scratch resistant, IME<br>Constructions<br>ME614 / ME780 (ME102 / ME780)   |
| Dielectric /<br>Encapsulant           | Henkel       | LOCTITE NCI 9001<br>E&C  |   | 130°C drying   | PET       | ✓✓      |               |                         |     | Highly Transparent   |
| Encapsulant<br>Tie coat               | Sun Chemical | CXT-0890-TC              |   | Tunnel dry 120°C for 3-5 mins<br>+ 100C for 2-3hours (IME)   | PET, PC   |         |               | ✓✓*                     | ✓✓* | * AgeNT-1 (and VC102 / VC200)  |
| Encapsulant<br>Tie coat               | Sun Chemical | CXT0384 /<br>CXT-0890-TC |   | 1. Print CXT0384 / dry 80°C<br>2. Print CXT-0890-TC / dry<br>120°C for 3-5 mins + 100C for<br>2-3hours (IME) | PET, PC   |         |               | ✓✓                      | ✓✓  |  |
| Encapsulant<br>Tie coat<br>For AgeNT1 | Proell       | Noriphan N2K             |   | Tunnel dry 80°-100°C<br>Batch bake 2-3 hours   | PET, PC   |         |               | ✓✓                      | ✓✓  | <b>2 layers</b> of Noriphan N2K 093 with<br>3-4% H001 hardener and 15%<br>M206 thinner   |
| Encapsulant<br>Tie coat<br>For AgeNT1 | Proell       | Noriphan XWR +<br>HTR-N  |   | Tunnel dry 80°-100°C<br>Batch oven bake 2-3 hours  | PET, CP   |         |               | ✓✓                      | ✓✓  | <b>1.</b> Noriphan XWR Part# L68250<br>with 10% H 004 hardener + 10%<br>M206 thinner on top of the VC102<br>carbon nanotube ink<br><b>2.</b> Noriphan HTR-N 093 +15%<br>thinner M201 on top of XWR layer |

## Laminated Adhesives / Optically Clear Adhesives

| Manufacturer / Part#            | Thickness                      | Application  |
|---------------------------------|--------------------------------|--|
| 3M 8146-                        | 2 or 4 mils<br>50 or 100 $\mu$ | Used for close loop feedback heaters which operate at less than 85°C |
| Adhesives Research<br>ARC 93495 | 40 or 150<br>microns           | Used for heaters operating more than 85°C                            |