Voltera Flexible Conductive Ink (1000383)

Description

The second generation flexible conductive ink allows for higher conductivity, better printing resolution, improved bending performance, and more robust soldering - all the ingredients required to print your own flexible circuits.

Compatible with PET, polyimide, and other flexible polymer substrates.

Application Notes

Printing and Curing

Apply adhesive-backed polyimide to a rigid substrate and print as normal.

For best curing results, follow recommendation in Table 4.

For curing on the V-One, flip and cure as normal using the automatic bake cycle. Carefully peel once cool-down temperature reaches 50°C.

Cure immediately – any delay may affect flexibility.

Soldering

Use SMD291 flux. For best results, burnish before soldering for 20[s] with supplied abrasive burnishing pad.

180°C – excellent solderability and rework.

Recommended Substrates

- PET (polyethylene terephthalate) – 5 [mil]/125 [µm]
- Polyimide – 5 [mil]/125 [µm]

Design recommendations

For circuit board applications with the standard 250µm nozzle, consider these design recommendations:

- Minimum IC pin-to-pin pitch: 0.65 [mm]
- Minimum 2-terminal package: 0402 (imperial)
- Minimum tracewidth: 8 mil/200 [µm] (recommend 10mil)

Safety and Handling

See MSDS for safety, handling, and disposal information.

Table 1: Physical & Electrical Properties (Post-cure)

Test	Value
Sheet Resistance: (45 µm film thickness)	3.29 [mΩ/sq]
Resistivity (4-point-probe):	1.36×10^{-7} [Ω. m]
Typical cured film thickness:	$40 - 70$ [um]
Film shrinkage, post-cure:	Not measured
*Bend radius at fracture:	< 0.7 [mm]
Joint strength (lbs force):	Not measured
Adhesion (cross-hatch tape test):	No transfer

*Test fracture on 5mil PET

Table 2: Composition Properties

Test	Value
Viscosity recovery ratio: *1° Cone and plate, 25°C*	Not measured
Recovery viscosity [Pa. s]: *1° Cone and plate, 25°C*	Not measured
Viscosity target [Pa. s]: *1° Cone and plate, 25°C*	Not measured
Density:	2.9 [g/mL]
Clean-up solvent:	Isopropyl Alcohol (99%)

Table 3: Printing Properties

Test	Value
Trace spread after print:	$< 20\%$
Recommended Nozzle ID:	$150 - 225$ [µm]
Typical Line Width:	6-10 [mil] 150-250 [um]
** Typical Print Height:	$50 - 80$ [µm]
** Typical Feedrate:	$300 - 500$ [mm/min]
** Typical Kick:	0.35 [mm]

**** V-One specific settings**

Table 4: Processing Parameters

Test	Value
Curing:	30 [min], 210°C
Compatible solder:	$SnBiAg_1$ $SnBiAg_{0.4}$
Typical shelf life:	12 months, unopened
Storage:	$4 - 10$°C, sealed container.