LM ELMNT® ST/SL

Conducting Ink - High/Low Viscosity For Screen Printing

PRODUCT DESCRIPTION

ELMNT inks are a line of stretchable conductive inks for wearable and flexible electronic applications. ELMNT.ST and ELMNT.SL are high and low viscosity screen printing ink versions of the ELMNT family and both are applicable to a range of mesh count screens (80 to 400 tpi). ELMNT has high conductivity and consistent resistance under strain making it ideal for data transmission, joule heating, and RF applications on textiles.

PRODUCT BENEFITS

- Low hysteresis
- Stretchable with consistent conductivity
- Room temperature processing
- Compatible with polyurethane (TPU) for wearable electronic processing
- Metallic bulk conductivity similar to aluminum

RECOMMENDED PROCESSING

Flood and press ELMNT.ST and ELMNT.SL through a screen onto a stretchable substrate using a squeegee. Target a trace thickness of 0.15 - 0.20 mm. See compatibility list for appropriate substrates. Once deposited, allow traces to dry for 20 minutes in ambient air or bake at 80°C for 10 minutes.

ELMNT.ST & ELMNT.SL require no heat to cure but have high resistance until activated. Activation is best done by peeling the substrate at an angle of 15° from the backing layer. Additionally, activation of printed inks can be done by subjecting prints to 100% strain along the longest axis to achieve maximum conductivity, or carefully with compression rollers.

We recommend testing your processing parameters to ensure that adequate conductivity is achieved without damaging traces.

CAUTIONS ⚠

- ELMNT inks contain Gallium (Ga) which is corrosive to some metals such as Aluminum (Al). Check compatibility prior to use.
- ELMNT is a liquid metal and never fully hardens. Proper encapsulation will ensure traces are not damaged.
- ELMNT does not adhere well to silicone.
- Store at room temperature. Do not freeze.

TEST	TYPICAL PROPERTIES	
Ink Formulation	**ELMNT ST**	**ELMNT SL**
Viscosity @ 200 1/s	3000 cP	2000 cP
Conductivity	2000 S/cm	
Sheet Resistance	0.04 Ω/sq	
Resistance after strain R/R0 at 100% strain R/R0 150% strain	 < 1.50 < 1.75	
Resistivity change with 10k cycles from 0-100% strain	< 5%	
Metal Content	86 wt% (51 vol %)	
Density	3.65 g/mL	
Shelf Life at 20 °C	> 180 days	
Theoretical coverage (100µm film)	27.3 cm^2/g	

COMPATIBILITY	
Substrate compatibility	TPUs, polyurethane resins, acrylics, SEBS
Known metal compatibility	18-8, 16Cr, Ti, W, Ni, V, Ta Stainless steel (300)
Solvent compatibility	Aliphatic and aromatic alcohols, glycol ethers, aliphatic esters
Screen mesh	Stainless steel, 80-400 threads per inch

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