



Electric Paint®

Technical Data Sheet

PRODUCT DESCRIPTION

Electric Paint is a nontoxic, water based, water soluble, electrically conductive paint. It can be used in circuits as a painted resistor element, a capacitive electrode or can function as a conductor in designs that can tolerate high resistivity. It is intended for applications with circuits using low DC voltages at low currents. **Electric Paint** adheres to a wide variety of substrates and can be applied using screen printing equipment. Its major benefits include low cost, solubility in water and good screen life. It is black in colour and can be over-painted with any material compatible with a water-based paint.

ADVANTAGES / PRODUCT BENEFITS

- High sheet resistance
- Nontoxic
- Water-soluble
- Can be used to create capacitive touch and proximity sensors
- Can be used as a potentiometer or resistive circuit element
- Compatible with many standard printing processes
- Low cost

TYPICAL PROPERTIES

Colour /	Black
Viscosity /	Highly viscous and shear sensitive (thixotropic)
Density /	1.16 g/ml
Sheet Resistance /	55Ω/sq at 50 micron film thickness
Vehicle /	Water-based
Drying Temperature /	Electric Paint should be allowed to dry at room temperature for 5 – 15 minutes. Drying time can be reduced by placing Electric Paint under a warm lamp or other low intensity heat source.

See below summary table of typical properties.

PROCESSING AND HANDLING

Screen Printing Equipment /	Manual
Screen Types /	Polyester, stainless steel (43T – 90T gauge mesh)
Typical Cure Conditions /	Room temperature (24°C) for 15 minutes
Typical Circuit Line Width /	0.5 – 10mm (43T-mesh stainless steel screen)
Clean-up Solvent /	Warm water and soap
Sheet Resistance /	Approximately 32Ω/sq when using a brush or manual screen printing
Shelf Life /	6 months after opening
Storage /	Electric Paint should be stored, tightly sealed in a clean, stable environment at room temperature. Composition should be thoroughly mixed prior to use.

See below graph to predict resistance using manual screen printing.



TYPICAL PROPERTIES TABLE

TABLE 1 TYPICAL PHYSICAL PROPERTIES	
TEST	PROPERTIES
Sheet Resistance at 50 micron film thickness (Ω/sq)	55
Density (g/ml)	1.16

TABLE 2 COMPOSITION PROPERTIES	
Viscosity	Thixotropic
Thinner	Water

Table 1 and 2 show anticipated physical properties for **Electric Paint** based on specific controlled experiments in our labs when applied highly accurately. For more realistic values for application of the paint with brushes and screen printing see the below graph and equation. Further notes on working with **Electric Paint** can be found in **Application Notes**.

PROCESSING GRAPH AND EQUATION

When processed using manual screen printing one can expect a sheet resistance of approximately $32\Omega/\text{sq}$. The below graph illustrates how resistance changes with line shape and a simple equation can be applied to roughly predict surface resistance:

$$\text{Resistance} = 19.77(\text{length}/\text{width}) + 12$$

