

# PROPERTIES AND TECHNICAL NOTES

## SPI Supplies Carbon Conductive Paint

### Physical Properties (as supplied suspension):

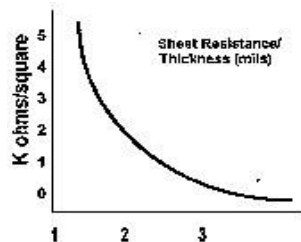
Pigment:	graphite
Color:	black
Binder/thickener:	cellulosic resin
Carrier:	isopropanol
Diluent:	SPI Carbon Paint Thinner or isopropanol
Consistency:	liquid
Density:	7.4 lbs/gal (0.888 kg/l)
Weight % solids:	20%
Volume % solids:	14%
Flash point:	52° F/ 11°C
Coverage:	225 ft <sup>2</sup> /gal @ 1 mil (5.524 m <sup>2</sup> /l)
VOC:	710 g/l (5.9 lb/gal)
Shelf Life:	See below

### Typical Properties (Cured Coating):

Color:	matte black
Coefficient of friction:	0.15 (static)
Service temperature:	150° F/ 65°C
Sheet resistance:	1.2 K ohms/sq @ 1 mil (25µm) dry film thickness

### Electrical Properties of Cured Coating

The electrical properties of the final cured coating can be controlled by changing the film thickness as shown below:



## **Method of Use:**

### **Surface Preparation:**

Substrates to be coated must be clean and dry. A solvent wipe with air dry is usually sufficient for smooth surfaces. For porous surfaces, use the same procedure follow by heating to drive off entrapped contaminants, solvents or moisture.

### **Mixing and Application:**

SPI Supplies Carbon Paint is supplied in concentrated form. It is thixotropic in nature and will gel upon standing. Preparation involves thorough agitation of the concentrate, then dilution with isopropanol or with [SPI Supplies Thinner for Carbon Conductive Paint](#).

The product can be applied by brush, dip, roller or spray.

Always agitate thoroughly just prior to use.

A coating thickness of 1 mil (25  $\mu\text{m}$ ) is best built up by the application of five separate coats at 0.2 mil (5  $\mu\text{m}$ ) thickness by spray application. Dilution of 1 part by volume of product with 3 parts by volume of thinner is necessary to obtain an adherent coating of this thickness.

For small production work and prototypes, a suction cup gun may be used, providing the carbon paint is thoroughly mixed before spray application. For immediate production runs or a lot of small parts, propeller-type attachments should be used on the suction gun to ensure coating uniformity. Full production is best handled with propeller-agitated pressure pot systems as this provides the best in application efficiency.

To reduce overspray, use the minimum atomization pressure required for adequate coverage.

### **Curing:**

The coating air dries to the touch in 5 minutes and is ready to use in 30 minutes. Following the air dry, bake for 5 minutes at 167° F/ 75°C to achieve optimum coating qualities in a shorter curing time.

### **Shelf Life:**

SPI Supplies Carbon Conductive Paint is designed for use in electron microscopy applications. For such use, the product has demonstrated that its use is indefinite. A bottle which has dried out can be re-suspended (see below) with no loss in properties as far as we are able to determine.

For applications other than electron microscopy, the user will need to determine specific shelf life.

## **Re-suspending SPI Supplies Carbon Conductive Paint:**

If the carbon paint should dry out, it can be re-suspended with our [SPI Supplies Thinner for Carbon Conductive Paint](#) followed by an ultrasonic bath treatment. SPI Supplies Carbon Conductive Paint products have an essentially infinite shelf life in the sealed unopened state.

**Revision Date:** 1/19 EER