

# CHEMTRONICS®

## Technical Data Sheet

**TDS # CW2200**

### CircuitWorks® Conductive Pen

#### PRODUCT DESCRIPTION

CircuitWorks® Conductive Pen makes instant highly conductive silver traces on circuit boards. CW2200 is used in prototype, rework, and repair of circuit boards by linking components, repairing defective traces, and making smooth jumpers. The silver traces dry in minutes and have excellent adhesion to most electronic materials. Engineers, repair technicians, and manufacturers will find that the CircuitWorks® Conductive Pen speeds project completion and cuts rework time.

- Single component system
- High electrical conductivity
- Fast drying
- Highly adherent to circuit boards
- Operating temperature to 400°F (205°C)

#### TYPICAL APPLICATIONS

CircuitWorks® Conductive Pen may be used for electronics applications including:

- Circuit Trace Repair
- Solderless Linking of Components
- EMI Shielding
- Solderable Terminations
- Quick Prototype Modifications

#### TYPICAL PRODUCT DATA AND PHYSICAL PROPERTIES

##### Composition

Material	Silver Filled Polymer
Silver Particle Size	10-15 microns
Color	Silver Gray
Setting Rate	<2mm/hr.

##### Properties

Conductivity	0.02-0.05 ohms/sq/mil 0.00005-0.000125 ohm cm
Max. Temperature	400°F (205°C)
Tack-Free Time @ 25°C	3 to 5 Minutes
Cure Time @ 25°C	20 to 30 Minutes
Solder Wetting	2 to 3 Seconds
Electrical Conductivity	Excellent
Adhesion	Excellent
Flexibility	Good
Chemical Resistance	Good

##### Shelflife

18 months

#### COMPATIBILITY

CircuitWorks® Conductive Pen material has excellent compatibility with materials used in printed circuit board fabrication. As with any chemical system, compatibility with the substrate must be determined on a non-critical area prior to use.

## USAGE INSTRUCTIONS

Read MSDS carefully prior to use.

**Cleaning:** For best adhesion, clean board with one of Chemtronics Electro-Wash<sup>®</sup> or Pow-R-Wash<sup>®</sup> solvents in order to remove any surface contamination which may prevent adequate material contact.

**Mixing:** Although this system has been formulated to resist hard-packing, it should be shaken vigorously for 30 seconds to insure the proper dispersion of the silver flakes. If pen has been allowed to sit idle for a long period of time, the mixing ball may seize in the barrel. To free the ball use force to tap the barrel end of the pen until the ball begins to move inside the pen.

**Application:** The conductive ink is dispensed through the CircuitWorks<sup>®</sup> Conductive Pen. Squeezing the pen body while pressing down on the surface will allow the material to flow, enabling the trace to be drawn. Practice with the pen before attempting detail work. The bulk form of this material may be applied by brushing, banding, or automatic dispensing equipment.

**Thinning:** The conductive ink has been optimized for the CircuitWorks<sup>®</sup> Conductive Pen and thinning is not normally necessary. However, Butyl Acetate may be added with thorough mixing to make slight adjustments for ease of application in the bulk form.

**Clean-up/Removal:** The conductive ink may be cleaned or removed using a strong organic solvent such as Chemtronics<sup>®</sup> Electro-Wash<sup>®</sup> PX.

**Curing:** Tack-free in 3 to 5 minutes at room temperature. Achieves electrical conductivity within 30 minutes. Heat cure for 5 minutes at 250 to 300°F (120 to 150°C) for maximum conductivity, durability and chemical resistance.

**Soldering:** Low temperature soldering is possible to the *heat-cured* silver conductive traces if done at 350°F (177°C) for <5 seconds.

## AVAILABILITY

CW2200STP 8.5 g (0.3 oz.), Standard Tip Pen

CW2200MTP 8.5g (0.3 oz.), Micro Tip Pen

## TECHNICAL & APPLICATION ASSISTANCE

Chemtronics<sup>®</sup> provides a technical hotline to answer your technical and application related questions. The toll free number is: **1-800-TECH-401**.

## NOTE:

This information is believed to be accurate. It is intended for professional end users having the skills to evaluate and use the data properly. ITW CHEMTRONICS<sup>®</sup> does not guarantee the accuracy of the data and assumes no liability in connection with damages incurred while using it.

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ITW CHEMTRONICS<sup>®</sup>

8125 COBB CENTER DRIVE

KENNESAW, GA 30152

1-770-424-4888

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