



PD-140C Pre-Dip Crystals

DESCRIPTION

PD-140C is an acidic crystal compound that is used to make up a working **PD-140** solution. It is an important part of the activation of printed circuit boards. **PD-140** is supplied either in a dry or liquid form. It is designed to be used prior to the CT-164 activator. It protects the activator solution from contamination and normality imbalance. **PD-140** contains a special blend of acidic compounds that help it increase the coating's deposit energy. It pre-conditions the epoxy fiberglass allowing for the proper absorption of the catalyst solution. **PD-140C** is supplied as dry salt crystals, which allow for easy make up of the working solution.

OPERATING PARAMETERS

Make-Up	For Pre-dip bath used prior to CT-164, Acidify de-ionized water with 1% C.P Grade HCl and add PD-140C, dry crystals at 120 grams per liter or 1.0 pounds per gallon For CT-164 bath make-up. Acidify de-ionized water with 1% C.P. Grade HCl and add PD-140C, dry crystals at 220 grams per liter or 1.8 pounds per gallon
Temperature	60 to 90°F (16 to 33°C)
Immersion Time	1 to 2 minutes
Process	Batch Tank
Agitation	Mechanical work bar, do not use air
Ventilation	Advised
Tanks	Polypropylene, PVC, Polyethylene
Racks/Baskets	Low 300 series stainless steel
Heaters	Quartz, Teflon Coils

PHYSICAL PROPERTIES

Specific gravity	N/A
Appearance	White free flowing crystals
pH (1% solution)	N/A
Odor	Very mild
Flash Point	Non-Flammable



CONTROL PROCEDURES

Replenishments should be made to **PD-140** based on analysis. The solution level should be maintained with additions of fresh **PD-140** solution or additions of dry **PD-140C** crystals. Additions of **PD-140** concentrate can be made to the working solution based on specific gravity measurements. The pH of the solution should be maintained below 1.0. The solution should be discarded when the copper concentration exceeds 1000 ppm.

ANALYSIS

Specific Gravity	Activity	PD-140C addition
1.070	100%	none
1.060	80%	24 grams per liter
1.045	60%	48 grams per liter
1.030	40%	72 grams per liter

Failure to maintain the specific gravity above 60% will cause an imbalance of activity and possible activation problems. The solution should be replaced when the activity drops below 50%.

pH Analysis

The pH of the working solution should be maintained and adjusted below 1.0 with the additions of Concentrated Hydrochloric acid.

Normality Analysis

1. Pipet 25 ml of working solution into a flask and dilute to 100 to 150 ml with de-ionized water.
2. Add 1 to 2 drops of Phenolphthalein indicator.
3. Titrate with 0.1 N NaOH and record volume titrated.
4. Calculation:

$$\text{Acid normality (N)} = (\text{ml NaOH}) \times (\text{N NaOH}) \times 0.04$$

Maintain the normality between 0.05 N and 0.15 N. To raise the normality by 0.01, add 1.78 ml of concentrated HCl per gallon of bath.

Copper Concentration

Copper concentration can be determined by Atomic Absorption. Discard when copper levels exceed 1000 ppm.

SAFETY AND STORAGE

PD-140C is an acidic blend of inorganic salts. Avoid breathing vapors. Use in a well-ventilated area. When handling solution, wear protective clothing, gloves and chemical safety goggles. In case of skin contact, remove contaminated clothing and flush affected area with plenty of cold water. In case of eye contact, flush immediately with plenty of cold water and seek medical attention immediately.

Store **PD-140C** in its original container. Keep away from direct sunlight and temperature extremes. Store away from alkaline materials.

WASTE TREATMENT

PD-140 solution contains inorganic salts and a strong acid. The working solution of **PD-140** is considered a corrosive acid solution. It may contain some copper. This copper may be removed from the solution by pH adjusting the solution to above 9 with dilute caustic soda. This will form a copper precipitate. Allow the precipitate to settle. Filter the solution and then make a final pH adjustment of the solution to between 6 and

8 with dilute sulfuric acid before sending the spent solution to the sewer. Consult with local officials for further waste disposal regulations. Please ask a Florida CirTech technical sales rep. for more information regarding waste treatment of this chemistry and our complete line of waste treatment line if additional help or information is desired.

MISCELLANEOUS

Available in 50 lb. pails. Consult the MSDS for additional information.