



PD-155

Pre-Dip Activator Solution for OMEGA II

DESCRIPTION

PD-155 is an important part of the **OMEGA II Direct Metallization™** plating process. The working solution is made up from a liquid concentrate. It is used prior to the **CT-160** activators. It protects the activator solution from contamination and normality imbalance. **PD-155** contains a special blend of acidic and organic 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.

OPERATING PARAMETERS

Make-Up	50% PD-155 diluted with DI water (see section IV. Control Procedures for more details)
Temperature	60°F to 90°F (16°C 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

Appearance	Clear liquid
Specific gravity	1.14-1.18
pH	<1

CONTROL PROCEDURES

PD-155 liquid is used to make up the pre-dip prior to **CT-160** at 50% strength. **PD-155** liquid can also be used to make up the **CT-160** bath. See the **CT-160** technical bulletin for details.



Replenishments can be made to **PD-155** working solution. The solution level should be maintained with additions of fresh **PD-155** concentrate solution. Additions of **PD-155** 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.

MAINTENANCE

<u>Specific Gravity</u>	<u>PD-155 Concentration</u>	<u>PD-155 Addition</u>
1.09	60%	None
1.07	50%	None
1.06	40%	100 ml/l
1.045	30%	200 ml/l
1.03	20%	300 ml/l

Failure to maintain the specific gravity above 30% will cause an imbalance of activity and possible activation problems. The solution should be replaced when the activity drops below 30%.

ANALYSIS

NORMALITY ANALYSIS

PROCEDURE

1. Pipette 25 ml of working solution into a flask and dilute to 75-100 ml with DI water.
2. Add 1 to 2 drops of Phenolphthalein indicator.
3. Titrate with 0.1 N NaOH and record volume titrated.
4. Calculation:

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

Maintain the acid normality of the working solution between 0.08 and 0.15 N. To raise the normality by 0.01, add 1.78 ml of C.P. Grade hydrochloric acid per gallon of **PD-155** working solution.

COPPER CONCENTRATION

Discard when copper levels exceed 1000 ppm.

SAFETY AND STORAGE

PD-155 is an acidic blend of inorganic salts and mineral acids. 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-155** in its original container. Keep away from direct sunlight and temperature extremes. Store away from alkaline materials.

WASTE TREATMENT

PD-155 contains inorganic salts and mineral acids. The working solution of **PD-155** 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.

MISCELLANEOUS

PD-155 is available in 55 gallon drums and 5 gallon pails