



# TECHNICAL BULLETIN

## AC-177

### Accelerator Solution

#### I. Description

AC-177 is a non-fluoride post-catalyst solution designed to accelerate the electroless copper coverage on catalyzed material. It has been designed to dissolve the hydroxide tin complex produced in the rinse steps following activator CT-164. AC-177 will remove excess tin hydroxide from the copper surface thereby aiding in the adhesion of electroless copper to the copper foil.

Used prior to the electroless copper, AC-177 will help prevent the accidental drag in of catalyst into the electroless copper bath, and help increase its stability.

#### II. Operating Conditions

Make-Up	10% by volume in water
Temperature	65 to 90°F (18 to 32° C)
Immersion Time	2 to 4 minutes
Process	Batch Tank
Agitation	Will speed activity
Ventilation	Advised
Tanks	Polypropylene, Polyethylene
Racks/Baskets	Stainless Steel, Plastisol covered steel
Heaters	Quartz, Stainless Steel, Teflon Coils, Titanium

#### III. Physical Properties

Specific gravity	1.15 – 1.18
Appearance	Clear liquid
pH	< 1.0
Odor	Acidic

#### IV. Control Procedures

Replenishment additions can be made based on workload processed. An addition of 36 mls. of AC-177 concentrate should be made to the process tank for every 100 sq. feet processed. This amount will vary depending on the condition of the work processed. The preferred method of analysis is a simple bench analysis. An active AC-177 bath should be maintained between 8% to 10%. Additions can be made up to 2 times the concentration of the original working solution, or when the copper concentration exceeds two grams per liter in concentration.

#### V. Analysis

##### Reagents and Equipment

1.0 N Sodium Hydroxide

Cresol Red Indicator Solution  
250 ml. Erlenmeyer Flask  
50 ml. buret  
10 ml. pipet

#### Procedure

1. Pipet 10 mL of the working solution into the Erlenmeyer Flask.
2. Add 50 – 75 mL DI water.
3. Add 2 drops of Cresol Red indicator solution.
4. While stirring the solution, titrate with 1.0 N sodium hydroxide to a violet colored endpoint.
5. Calculation:

$$\text{AC-177 content (\%vol)} = (\text{ml. NaOH}) \times (\text{Normality of NaOH}) \times 1.67$$

Maintain the AC-177 content between 8 - 10% by volume.

## **VI. Safety and Storage**

AC-177 is an acidic, solution. It contains organic surface conditioners and inorganic acids. Avoid breathing vapors. Use in a well-ventilated area. When handling concentrate or working 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 AC-177 in its original container. Keep away from direct sunlight and temperature extremes. Protect from freezing.

## **VII. Waste Treatment**

AC-177 contains acid and organic surface conditioners. In the process of removing excess tin hydroxides from the copper clad material, some copper may be removed and dissolved in solution. The spent working solution of AC-177 contains dissolved tin, palladium and copper salts. It may be treated by pH adjusting the solution to a pH above 12 with dilute caustic soda, allowing the precipitate to settle. Filter the solution. Then lower the pH 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.

## **VIII. Miscellaneous**

This product is available in 5 gallon pails and 55 gallon drums

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