

## PC-5012 Pattern Cleaner

### DESCRIPTION

**PC-5012** is a highly concentrated, acidic, liquid concentrate. It is used to clean copper clad laminate prior to the pattern plating process. It contains a concentrated blend of acids and surfactants developed and designed to remove and dissolve surface films normally found during pattern plating. It contains no ammonia, chelators or solvents. **PC-5012** does not contain alkyl phenol type surfactants.

**PC-5012** will remove light oils, fingerprints, adhesion promoter residues and light copper oxides from imaged panels, leaving an active, bright surface for electroplating. **PC-5012** is designed to be easily rinsed from copper surfaces and is formulated not to attack electroless copper or properly developed photo resists.

### OPERATING PARAMETERS

Make-Up	5% to 10% <b>PC-5012</b> diluted with water
Temperature	110°F to 130°F 43°C to 54°C
Immersion Time	2 to 4 minutes
Process	Batch Tank
Agitation	Will speed cleaning action
Ventilation	Advised
Tanks	Polypropylene, Polyethylene
Racks/Baskets	Plastisol Covered Steel
Heaters	Quartz, Teflon Coils

### PHYSICAL PROPERTIES

Specific gravity	1.35 - 1.38
Appearance	Clear- to Light Amber liquid
pH	<1.0
Odor	None
Flash Point	>200F

## CONTROL PROCEDURES

Replenishments can be made to **PC-5012** working solution. When the total volume of additions equals the initial make-up concentration, the solution should then be replaced.

## ANALYSIS

### PC-5012 CONCENTRATION

#### REAGENTS AND EQUIPMENT NEEDED

1.0 Normal Sodium Hydroxide Solution  
Methyl Orange Indicator Solution  
10 ml pipet  
250 ml Erlenmeyer Flask

#### PROCEDURE

1. Pipet 10 ml of the working solution into a 250-ml Erlenmeyer flask.
2. Dilute with 100 ml of de-ionized water.
3. Add 3 to 4 drops of methyl orange indicator
4. Titrate with 1.0 Normal sodium hydroxide to a yellow endpoint, record volume titrated.
5. Calculation:

$$\text{PC-5012 (\% by vol.)} = (\text{ml NaOH}) \times (\text{N NaOH}) \times 1.7$$

## SAFETY AND STORAGE

**PC-5012** is an acidic solution containing 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 **PC-5012** in its original container. Keep away from direct sunlight and temperature extremes. Protect from freezing.

## WASTE TREATMENT

**PC-5012** contains inorganic acids. In the process of cleaning the imaged surface of copper clad material, some copper may be removed and dissolved in solution. The spent working solution of **PC-5012** may be treated by pH adjusting the solution to above 10 with dilute caustic soda. Allow the precipitate to settle, filter the solution, and pH adjust it 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

Available in 5-gallon pails and 55 gallon drums.