Florida CirTech
LEADERS IN PCB TECHNOLOGY

Product Data Sheet

PB-409 Power Bond Cleaner Solution

DESCRIPTION

PB-409 is a tri-acid cleaner concentrate. It is used to clean innerlayer copper surfaces by removing chromates and oxidation, as the first step of the Power Bond oxide replacement process. PB-409 leaves behind an active, bright surface, which will retard oxidation. It does not contain any ammoniated products, which could produce problems during waste treatment. PB-409 is based on sulfuric, nitric and phosphoric acids. It is much more “equipment-friendly” than halide based acid cleaners.

OPERATING PARAMETERS

Make-Up	10-15% by volume diluted with water
Temperature	70-90°F (20-32°C)
Immersion Time	1 to 2 minutes
Process	Batch Tank or Horizontal Spray
Agitation	Will speed cleaning action
Ventilation	Advised
Tanks	Polypropylene, Polyethylene
Racks/Baskets	Stainless Steel (316), Plastisol covered Steel
Heaters	Quartz, Teflon, Stainless Steel (316)

PHYSICAL PROPERTIES

Specific gravity	1.32-1.35
Appearance	Clear liquid
pH (1% solution)	<1
Odor	Acrid
Flash Point	>200F

CONTROL PROCEDURES

Replenishments can be made to PB-409 working solution. The concentration of the solution should be maintained between 10 and 15% by volume through analysis and additions of PB-409 concentrate. When the

copper concentration exceeds 3.0 g/L (3,000 ppm), the solution should be replaced. A method of analysis for both copper and PB-409 concentration follows.

ANALYSIS

PB-409 Concentration

1. Pipet 5 mL of the working solution into a titration flask.
2. Dilute to 50 - 75 mLs with de ionized water and add 3 to 4 drops of phenolphthalein indicator
3. Titrate with 1.0 N NaOH to a pink endpoint and record the volume titrated.
4. Calculation:

PB-409 concentration (% vol) = (mL NaOH) x (N NaOH) x 1.65

Maintain bath between 10 and 15% by volume of PB-409 through additions.

Copper Concentration

1. Pipet 10 mL of the bath into a titration flask and then add 50-75 mL of DI water.
2. Add approximately 10 mL of ammonia buffer and 5 mL 1.0 N sodium hydroxide.
(ammonia buffer: 68g ammonium chloride and 570mL of 29% ammonium hydroxide diluted to 1 liter)
3. Add 4 - 6 drops of PAN indicator (0.1% solution in ethanol)
4. Titrate with 0.05 M EDTA to a color change from blue to apple green.
5. Record the volume of EDTA used.
6. Calculation:

Copper content (g/L) = (mL EDTA) x (M EDTA) x 6.35

Maintain copper content below 3 grams/liter (3000 ppm) through replacement of part of the bath.

SAFETY AND STORAGE

PB-409 is an acidic solution containing sulfuric, nitric and phosphoric 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 PB-409 in its original container. Keep away from direct sunlight and temperature extremes. Protect from freezing.

WASTE TREATMENT

PB-409 contains a blend of acids and wetting agents. In the process of cleaning the imaged surface of copper clad material, copper will be removed and dissolved in solution. The spent working solution of PB-409 may be treated by pH adjusting the solution to a pH above 10 with dilute caustic soda. Allow the precipitate to settle. Filter the solution and adjust the final 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. Please ask a Florida CirTech sales rep. for more information regarding waste treatment of this chemistry and our complete line of waste treatment chemistry if additional help or information is desired.

MISCELLANEOUS

Available in 5-gallon pails and 55-gallon drums. Consult MSDS sheet for additional information.