



# SS3 Copper Cleaner

## DESCRIPTION

SS3 Copper Conditioner is used in a horizontal or vertical pre-cleaning line providing a clean tarnish resistant copper surface. SS3 quickly removes surface tarnish with a controlled micro-etch and leaves the copper surface solderable for days without any mechanical or other chemical steps. In addition, SS3 is suitable for use prior to the solder mask applications to prevent tarnish from appearing on the copper surface.

### Benefits:

1. Long lifetime. Excellent cleaning capacity.
2. Wide operating window.
3. Excellent copper finish.
4. Can be used both horizontal and vertical

### Application:

SS3 Copper Conditioner is a hot air leveling pre-cleaner and can remove solder mask residues and copper oxides while providing a clean tarnish resistant copper surface. SS3 quickly removes surface tarnish with a controlled micro-etch and leaves the copper surface solderable for days without any mechanical or other chemical steps.

## OPERATING PARAMETERS

Make-Up	Mix 50% to 100% by volume with water
Temperature	70 – 100F
Process	Horizontal or Vertical
Ventilation	Advised
Tanks	Polypropylene, CPVC
Racks and Baskets	PVC coated
Heaters	Heat will increase the etch rate
Filtration	Not necessary



## PHYSICAL PROPERTIES

Specific gravity	1.02-1.06
Appearance	Brown liquid
pH	0.0-1.0
Odor	Neutral
Flash Point	>200F

## CONTROL PROCEDURES

Under standard conditions, the copper micro-etch depth should be controlled between 10-40 micro-inches. This can be adjusted through temperature or concentration of the SS3. Refer to the chart below.

Strength of SS3	Etch rate* / min	Etch rate* / min	Etch rate* / min
	70F	85F	100F
50% volume	20 - 30	30 - 40	40 - 50
100% volume	30 - 40	50 - 60	90 - 100

\*all etch rates are in microinches of copper per minute

## ANALYSIS

### Procedure:

- Step 1: Measure the coupon size in square inches
- Step 2: Weight the coupon before micro-etching.
- Step 3: Micro-etch for a set time.
- Step 4: Weigh the coupon and get the net grams of Cu etched.
- Step 5: Plug into the formula to get the micro-inches of copper etched. Note for a double sided coupon

Calculation:

$$\text{Copper Etched (microinches)} = \{(\text{grams of Cu Etched}) \times 6848 / (\text{sq. inch of coupon})\}$$

## SAFETY AND STORAGE

SS3 is acidic and should be handled with care. Avoid open flames. Do not store in direct sunlight, high temperature or below freezing.

## WASTE TREATMENT

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