



# SS2 Copper Conditioner

## DESCRIPTION

SS2 Copper Conditioner is used in batch solder stripping applications to remove the intermetallic layer and provide a clean tarnish resistant copper surface. It is also used as a copper cleaner and conditioner prior to hot air leveling or other molten solder applications. SS2 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, SS2 is suitable for use prior to the solder mask applications.

### Benefits:

1. Long lifetime. Excellent stripping capacity.
2. Wide operating window.
3. Excellent copper finish

### Application:

SS2 Copper Conditioner is used as the second step of a two-part tin/solder strip system. SS1 is the first step which is used to remove the tin/lead coating down to the intermetallic. SS2 removes the tin/copper intermetallic leaving behind a bright copper surface. SS2 can also be used in a variety of pre-clean applications as a replacement to conventional microetches.

## OPERATING PARAMETERS

Make-Up	Dilute SS2 at 50% by volume with water
Temperature	Room temperature
Immersion Time	30 sec to 2 min in vertical batch mode
Process	Batch/dip tank
Agitation	Mechanical in batch mode
Ventilation	Advised
Tanks	Polypropylene, CPVC
Racks and Baskets	PVC coated
Heaters	Not necessary
Filtration	Not necessary



## PHYSICAL PROPERTIES

Specific gravity	1.09-1.11
Appearance	Brown liquid
pH	1-3
Odor	Neutral
Flash Point	>200F

## CONTROL PROCEDURES

Control the copper micro-etch depth between 10-40 micro-inches. When the etch time becomes excessive, replace the SS2 solution. A fresh SS2 bath at 50% by volume has an etch rate of about 10 microinches per min. When the etch rate drops to below about 3 microinches per minute, the solution should be replaced.

Copper level can also be used as a rough measure of bath life. The SS2 bath should be replaced when the copper content exceeds 6 grams per liter.

## ANALYSIS

### Micro-Etch Rate

1. Weigh a copper clad coupon to 4 decimal places.
2. Etch the coupon for 2 min in the SS2 solution.
3. Rinse and dry thoroughly.
4. Weigh the coupon again to 4 decimal places.
5. Calculation: Etch rate (microinches per min) = { (grams of Cu etched) x 3412 / (sq. inch area of coupon) }

### Copper Analysis

1. Pipet 5 mL of SS2 solution into a 100 mL volumetric flask.
2. Dilute to the mark with 10% HCl by volume, and mix well.
3. Pipet 1 mL of the dilute mixture into a 50 mL volumetric flask.
4. Dilute to the mark with 10% HCl by volume, and mix well.
5. Calibrate the AAS with copper standard solutions in the range of 1 – 10 ppm.
6. Analyze the 2nd dilute solution from step 4, for copper.
7. Calculation: Copper content (g/L) = (ppm Cu from AAS)

## SAFETY AND STORAGE

SS2 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. Reference our complete line of waste treatment products if additional help or information is desired.

## MISCELLANEOUS

SS2 comes in 5-gallon pails and 55-gallon drums. Consult MSDS sheet for additional information.