COLUMBIA® CHEMICAL
Your Global Plating Partner

1000 Western Drive
Brunswick, OH 44212
PHONE: 330/225-3200
FAX: 330/225-1499
www.columbiachemical.com

COLGLEAM SN

TECHNICAL DATA
02-17-2020

COLGLEAN Sn

BRIGHT ACID TIN PLATING PROCESS

COLGLEAM Sn	is a stable leveling, bright acid tin plating process that produces brilliant tin electrodeposits exhibiting excellent solderability.
COLGLEAM Sn	baths operate over a wide concentration permitting highly economical deposition from baths with low tin metal content.
COLGLEAM Sn	baths are maintained with only one brightener additive, eliminating the need to juggle and balance brighteners.
COLGLEAM Sn	additives are bath stable and are consumed on an ampere-hour basis.
COLGLEAM Sn	process is extremely simple to control, requiring only a fraction of the lab and analysis time needed by competitive systems.

OPERATING PARAMETERS

	OPTIMUM	WORKING RANGE
Tin Metal:	1.8 oz./gal.	0.5 - 2.5 oz./gal.
Sulfuric Acid:	10% by volume	8 - 12% by volume
COLGLEAM Sn MAKEUP:	2% by volume	
COLGLEAM Sn BRIGHTENER:	0.75% by volume	
Temperature:	70° F	60 - 90° F
Average Anode Current Dens.:	10 amps/sq. ft.	1 -30 amps/sq. ft.
Average Cathode Current Dens.:	15 amps/sq. ft.	5 - 30 amps/sq. ft.
Agitation: Cathode Rod: (not required for barrel plating)	10 ft./min.	3 to 25 ft./min.
Voltage:	6 volts low ripple DC	
Cooling Coils:	Teflon or Teflon coated copper preferred	

Filtration:	Continuous, through polypropylene fiber wound cartridges
Anodes:	99.99% pure tin slabs
Anode Hooks:	Monel or titanium, plastisol coated
Anode Bags:	Not normally required
Plating Tank:	Steel lined with polyethylene, polypropylene, PVC neoprene, or acid res. fiberglass

SOLUTION MAKEUP

	100 GALLONS	100 LITERS
Stannous Sulfate	24 pounds	3.0 Kg.
Sulfuric Acid C.P.	10 gallons	10 liters
COLGLEAM Sn MAKEUP	2 gallons	2 liters
COLGLEAM Sn BRIGHTENER	3 quarts	750 mL

1. Using protective clothing, gloves, eye shields, etc., cautiously add the required amount of sulfuric acid to the plating tank which contains approximately half the final volume of cold water. Stir continuously during addition. Do not allow solution temperature to exceed 150°F. during mixing. If a new tank is used for makeup, it should be leached with 5% sulfuric acid for at least 24 hours prior to use.

2. In a separate container prepare a slurry of stannous sulfate in cold water and slowly add this to the above sulfuric acid mixture with continuous stirring.

3. Fill the tank with cold water to a few inches of final operating level.

4. Continue mixing and allow tank to cool to approximately 75° to 80° F.

5. Dilute the required amounts of COLGLEAM Sn MAKEUP and COLGLEAM Sn BRIGHTENER with approximately equal amounts of water and add to the bath in the above order slowly with good mixing.

6. Fill the tank to final operating level. No dummying or working in period is required.

MAINTENANCE ADDITIONS

Maintenance and control of the COLGLEAM Sn process is extremely simple. The only additive normally required is the COLGLEAM Sn BRIGHTENER which should be added on the following ampere-hour basis:

1 gallon per 10,000 ampere hours or 380 cc/1,000 ampere hours

Dilute the COLGLEAM Sn BRIGHTENER with an equal part water before adding; mix well during addition.

Maintenance additions should be made on a routine basis, preferably twice per shift. Periodic checks of the COLGLEAM Sn BRIGHTENER content may be made by Hull cells tests, but observation of the

work being plated will usually indicate brightener level. Tin metal and sulfuric acid contents should be analyzed on a regular basis depending upon bath use and drag out, and should be maintained within recommended limits.

ANALYTICAL PROCEDURE

ANALYSIS FOR STANNOUS SULFATE

1. Pipette 5 mL tin plating solution into a 500 mL Erlenmeyer flask.
2. Add 100 mL Deionized Water.
3. Add 50 mL Concentrated HCI.
4. Add about ½ gram Sodium Bicarbonate slowly, to dispel air.
5. Add 1 cc Starch Indicator Solution.
6. Titrate with 0.1N Potassium Iodate to a blue color which persists for 30 seconds.

FACTOR: (mL 0.1N Iodate titrated) · 0.287 = oz./gal. Stannous Sulfate

FACTOR: (mL 0.1N Iodate titrated) · 0.158 = oz./gal. Tin Metal

ANALYSIS FOR SULFURIC ACID

1. Pipette 5 mL tin plating solution into a 250 mL Erlenmeyer flask.
2. Add 50 mL of 4% Ammonium Oxalate Solution.
3. Add 5 mL Methyl Red Indicator.
4. Titrate with 1.0N NaOH to color change from red to yellow.

FACTOR: (mL 1.0N NaOH titrated) · 0.53 = % by volume H2SO4

HELPFUL HINTS

COLGLEAM Sn baths are compatible with most existing bright acid tin systems and simple slide-in conversions are generally possible. Since however, the impetus for conversion is often problems in the existing system, we strongly recommend that a gallon sample of existing bright tin bath be sent to the Columbia Chemical service lab for testing and recommendations whenever possible.

HANDLING & STORAGE

Columbia Chemical recommends referring to the specific product Safety Data Sheets for safety, handling, and storage precautions.

NON-WARRANTY

The data contained in this bulletin is believed by Columbia Chemical Corp. to be accurate, true, and complete. Since, however, final methods of use of this product are in the hands of the customer and beyond our control, we cannot guarantee that the customer will obtain the results described in this bulletin, nor can we assume responsibility of the use of this product by the customer in any process which may infringe the patents of third parties.