



TROUBLE SHOOTING GUIDE

FOR COLGLEAM Sn BATHS

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<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
Overall dullness	Low Brightener	Add 0.1 - 0.5% Sn Brightener
	High bath temperature above 100° F (36° C)	Keep the bath temperature at 70° - 75° F (20° - 24° C)
	Chloride contamination above 100 ppm	Cut bath to lower chloride level below 100 ppm
LCD dullness	High tin metal	Keep the tin metal at 1.6 - 2.2 opg (12 - 16.5 g/l)
	High bath temperature above 90° F (32° C)	Keep the bath temperature at 70° - 75° F (20° - 24° C)
	Metallic contamination (over 10 ppm of Copper, Lead or Cadmium)	Treat the bath with 1 lb. tin dust/1,000 gal. of bath (0.12 kg/1,000 liters) to remove 10 ppm of metallic contaminant
	Low Make-Up	Add 0.5 - 1.0% Sn Make-Up
	Low Sulfuric Acid	Increase the Sulfuric Acid to 10% by volume
Blistering	Copper contamination over 10 ppm	Treat the bath with 1 lb. tin dust/1,000 gal. of bath (0.12 kg/1,000 liters) to remove 10 ppm of copper
	Low bath temperature below 60° F (15° C)	Keep the bath temperature at 70° - 75° F (20° - 24° C)
	Poor cleaning	Charge-up or change the cleaners

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
Pitting	High brightener	Add 0.5 - 1.0% Sn Make-Up Stop all additions of Sn Brightener and use Sn Adjuster at a rate of 10,000 - 20,000 ampere-hours per gallon until the excess brightener is depleted Carbon treat with 1 - 2 lbs/1,000 gal. (0.12 - 0.24 kg/1,000 liters) Remove excess brightener by adding 5% - 10% Tin Clarifier to the bath. Allow the precipitated solids to settle and decant the clear solution
Roughness or grainy deposit	Plating at excessively high current densities	Lower current
	Poor bath agitation	Increase agitation
	Poor filtration	Use 1 to 5 micron filter
	High current density burning	
	Low Sulfuric Acid	Increase the Sulfuric Acid to 10% by volume
	Low tin metal	Keep the tin metal at 1.6 - 2.2 opg (12 - 16.5 g/l)
	Low bath temperature	Keep the bath temperature at 70° - 75° F (20° - 24° C)
Staining	Poor rinsing	Increase the flow rate on rinse tanks to 2 gallons (7.5 liters) per minute
	Organic film setting-up on the parts after plate	Use a 2 - 4 oz/gal (15 - 30 g/l) caustic dip and rinse after plate Use a 2 - 4 oz/gal (15 - 30 g/l) citric acid dip and rinse after plate
Low bath efficiency/ Slow plating	Low tin metal	Keep the tin metal at 1.6 - 2.2 opg (12 - 16.5 g/l)
	Low bath temperature	Keep the bath temperature at 70° - 75° F (20° - 24° C)
	Low Sulfuric Acid	Keep the Sulfuric Acid at 10% by volume

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
Little or no coverage in LCD	High tin metal	Keep the tin metal at 1.6 - 2.2 opg (12 - 16.5 g/l)
	High bath temperature	Keep the bath temperature at 70° - 75° F (20° - 24° C)
Tin metal climbs	Too much anode area	Reduce the tin anode area by 10% - 40%
	Too high cathode current density	Reduce current
Poor solderability	Poor rinsing	Increase the flow rate on rinse tanks to 2 gallons (7.5 g/l) per minute
	Nickel contamination	Dummy or cut bath
	High brightener	Stop all additions of Sn Brightener and use Sn Adjuster at a rate of 10,000 - 20,000 ampere-hours per gallon until the excess brightener is depleted
		Carbon treat with 1 - 2 lbs/1,000 gal. (0.12 - 0.24 kg/1,000 liters)
		Remove excess brightener by adding 5 - 10% Tin Clarifier to the bath. Allow the precipitated solids to settle and decant the clear solution
		Nickel strike parts before tin plating
	Substrate migration through tin deposit	
	Improper solder temperature	Adjust solder temperature to optimum
	Chloride contamination	Cut bath to lower chloride below 100 ppm.

GLOSSARY OF TERMS

BATH EFFICIENCY	The speed at which tin is electrodeposited on a part. This is based on a 100% theoretical rate of 2.214 grams per ampere hour. Bright acid tin plating baths typically operate at a 50% - 90% rate which electrodeposits 1.1 - 2.0 grams of tin per ampere hour.
BLISTERING	Electrodeposit lifts off the surface of the substrate in the form of bubbles.
CARBON	Activated carbon powder.
ELECTROCLEANER	Alkaline cleaner used with anodic current on parts for surface agitation. Used at 140° - 190° F (60° - 88° C) after the soak cleaner.
G/L	Grams per liter. Multiply by 0.134 to convert to ounces per gallon (opg).
HCD	High current density. The highest current on a part is generally on the edge of the part or the area of the part closest to the anode. In a rack plating bath it is at the bottom edge and ends of the rack.
HCD BURNING	Coarse, dark deposit in the high current density area.
LCD	Low current density. The lowest current density is generally in the recessed area of the part or the area of the part that is farthest from the anode. In a rack plating bath it is at the top and middle area of the rack.
OPG	Ounces per gallon. Multiply by 7.5 to convert to grams per liter (g/l).
PICKLE	The acid dip tank after the alkaline cleaners that is used to dissolve rust and oxide scale. It is usually a 10 - 30% solution of sulfuric acid.
PITTING	A small hollow or concave blemish on the surface of the electroplated surface.
SOAK CLEANER	Alkaline cleaner used to remove oils prior to electrocleaning, pickling and electroplating. Soak cleaners are operated at 150° - 200° F (65° - 93° C).
SOLDERABILITY	The ability to solder. This is typically of a lead tin alloy used when melted to join two metal parts.