

# ACCU-LABS INC.

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**A2LA Accredited ISO/IEC 17025:2005 Certificate # 2558.01**

## TinStar 210-HSB High Speed Bright Tin Process

### **General Description:**

Accu-Labs TinStar 210 bright acid tin process produces uniform bright tin deposits over a wide current density range, at extremely flexible operating parameters. The process offers high conductivity with excellent plate distribution for high speed/reel to reel applications. This process surpasses all military specifications for salt spray and solderability.

### **Features:**

- Easy to Use – Dual component system. Less inventory of chemistry required.
- Versatile – May be operated within a wider range of concentrations and current densities.
- Stable – No extra addition required after extended shutdown.
- Minimal to moderate foaming.

### **Chemicals used:**

Stannous Sulfate 54.6%

Reagent or Technical Grade Sulfuric Acid S.G. 1.84

TinStar 210-HSB Starter (Makeup and Replenish)

TinStar 210-HSB Brightener (Replenish Only)

### **Solution Make-Up:**

<b>Material</b>	<b>Quantity</b>
DI Water	750 ml/liter
Sulfuric Acid	70 ml/liter
Stannous Sulfate	74 grams/liter
210 HSB-Starter	40 ml/liter
DI Water	Balance to liter

## **OPERATING GUIDELINES**

Tin Metal	40 g/l Optimum 30-60 g/l Range
Sulfuric Acid	7% Optimum 5-10% Range by volume
210-HSB Starter	Per Hull Cell
210-HSB Brightener	Per Hull Cell
Temperature	70°F Optimum 55-85°Range
Current Density	15-300 ASF
Anode to Cathode Ratio	1:1
Agitation	Moderate- Filter Pump & Strip Movement
Filtration	1-10 Micron Recommended

### **New Solution Makeup:**

1. Fill tank ½ full with room temperature DI water.
2. Add the required amount of sulfuric, slowly stirring to avoid localized heat eruptions. Use caution as exothermic reaction may occur.
3. Add the required amount of stannous sulfate.
4. Let cool to room temperature.
5. Add the required amount of TinStar 210-HSB Starter.
6. Bring the bath volume to final operating level with cold DI water.

### **Solution Control:**

TinStar 210-HSB Brightener is best controlled by use of a conventional plating test, such as the Hull Cell. The Hull Cell will determine the amount of the additive needed to bring the bath to optimum operating level, provided that all other constituents are within proper chemical composition range. The process panels will monitor the production work and keep it cosmetically acceptable. TinStar 210-HSB Brightener is required to keep the electrolyte functioning properly. The additive should be replenished at a rate of 250 mls for every 1000 ampere-hours. Replenishment of 210-HSB Starter is consumed by drag-out and should be replenished based on hull cell results.

**NOTE:** This replenishment recommendation is a guideline only; certain applications may require further optimization depending on the condition of equipment i.e. loss due to drag-out.

A sample should be sent to ACCULABS periodically to serve as a check against one's own analysis.

## **Equipment:**

### **Tank:**

Solutions should be contained in PVC, polypropylene, Hastaloy C or Monel tanks. Acid resistant fiberglass tanks are not suitable because of possibility of grain refiners dissolving tank resins.

### **Anodes:**

Anodes should be 99.99% pure tin. Extruded rather than cast anodes are preferred. Anode baskets and hooks should be fabricated from zirconium. Monel or titanium hooks, if used, should be coated with plastisol or equivalent. Inert anodes can also be used utilizing liquid addition agents of metal components. During down time anodes should be removed from process tank [Anode Bags]: Anode bags are not generally required except in instances of extreme roughness. When used, leach bags of polypropylene in a 5-10% v/v solution of sulfuric acid for at least twenty-four hours.

### **Temperature:**

Maintaining the temperature of the solution within the recommended operating range of 60-80° F must be provided for optimum performance. Coils, plates, or a heat exchanger that are fabricated from Teflon or Karbate. Cooling is the main requirement; but in some instances, a heating provision may also be required. A bypass in the cooling system or coils to permit steam entry is an effective method of providing heat.

### **Filtration:**

To avoid roughness and for purification procedures a filter is recommended. Continuous filtration through a 1-10-micron filter is recommended. The filter should be capable of 2-3 turnovers per hour. Filter cartridges should be made of polypropylene or Dynel.

## **Handling Considerations:**

Wear eye protection and personal protective gear when working with or handling this product. Consult MSDS prior to using this product.

## **Disclaimer:**

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