



TIN PLATE SA

Bright Acid Tin

INTRODUCTION

Tin Plate SA is single additive, sulphuric acid based bright tin plating process, suitable for technical and decorative applications. Tin Plate SA can be used for rack and barrel plating.

BENEFITS

- Fully bright, levelled deposits.
- Excellent solderability.
- High ductility.
- Wide current density range - excellent bright throwing power.
- Low tendency to Sn^{4+} formation.

SOLUTION MAKE -UP

Sulphuric acid, SG 1.84	100ml/L
Stannous Sulphate	38.0g/L
Tin Plate SA	27.0ml/L

1. Clean the process tank with water and leach the tank with warm sulphuric acid (5%) overnight pumping through all filters, pumps and pipework. Pump out acid and rinse thoroughly with water.
2. $\frac{3}{4}$ fill the tank with cold deionised water.
3. Add carefully, with slow stirring, sulphuric acid.
4. Add Stannous Sulphate to the warm solution and stir to dissolve.
5. Allow the solution to cool to room temperature, then add the Tin Plate SA additive.
6. Top up with deionised water and stir thoroughly.



OPERATING DATA

	Optimum	Range
Stannous sulphate (g/L)	38.0	18 - 45
Sulphuric acid (ml/L)	100	90 - 110
Temperature (°C)	21	16 - 27
Cathode current density (A/dm ²)	2 1	0.5 – 4.0 (Rack) 0.5 – 3.0 (Barrel)
Agitation	Cathode movement 1 – 3m/min or barrel rotation	Agitation
Deposition rate	0.9µm/min at 2asd Optimum	

EQUIPMENT

Tanks	Steel or GRP lined with PVC, polypropylene or hard rubber.
Heaters	PTFE immersion with thermostatic control.
Cooling	PTFE coils.
Filtration	Continuous recommended, all plastic construction pump.
Agitation	Work movement (<u>not</u> air agitation).
Anodes	Pure tin to BS 1468.

MAINTENANCE AND CONTROL

The stannous tin and sulphuric acid concentrations should be analysed regularly using the methods detailed in the Data Sheet.

Tin Plate SA should be added at a rate of 700 to 900 ml/1000 amp hours.

Tin Plate SA Booster can added at a rate of 25 to 50 ml/1000 amp hours for extra brightness especially when plating large surface areas.

Drag in of chloride should be avoided.

Post Treatment - after rinsing a dip in 1 - 5% w/w sodium hydroxide is recommended before final rinsing and drying.



ANALYSIS METHODS

1. Stannous sulphate

Reagents

Concentrated hydrochloric acid.

Sodium bicarbonate

Iodine indicator.

0.1N iodine.

Method

1. Pipette 5ml of the plating solution into a 250ml conical flask.
2. Add 5ml conc hydrochloric acid
3. Add approximately 100ml deionised water.
4. Add 1-2g sodium bicarbonate
5. Add a few drops iodine indicator.
6. Titrate with 0.1N iodine to a permanent blue end point.
7. Record titre = t mls.

Calculation

$t \times 2.13 = \text{g/L Stannous sulphate.}$

2. Sulphuric acid

Reagents

1.0N sodium hydroxide.

Method

1. Pipette 10ml of the plating solution into a 500ml conical beaker.
2. Add approximately 150ml deionised water.
3. Titrate with 1.0N sodium hydroxide mixing thoroughly during additions to a turbid end point.
4. Record titre = t mls.

Calculation

$t \times 4.9 = \text{g/L sulphuric acid.}$

Replenishment

For every 1g/L sulphuric acid low, add 0.5ml/L sulphuric acid.

DISPOSAL

Dispose of through an approved specialist contractor.

PRODUCT FAMILIES

The following products are referred to in this data sheet.

PRODUCT NAME	PRODUCT NUMBER
Tin Plate SA	574009
Tin Plate SA Booster	574001

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