

# TECHNICAL DATA SHEET

## i -FIN AL GOLD

i-Fin Al Gold is a single liquid concentrate used in the aluminum electrolyte coloring of gold bath. It provides various shades of gold or light brass. The variation depends upon dyeing time & voltage applied on the article.

It provides great resistance to light and weather conditions, which is obtained by means of an alternate current treatment. The shades of gold depends upon thickness & porosity of the anodize aluminum article. A deeper colour obtained by increasing the immersion time.

i-Fin Al Gold is pink colour product containing a mixture of metallic salt, complexes and various stabilizers necessary for the correct functioning. It provides uniform dispersion along with very high penetration ability of dyes to the articles.

### OPERATING CONDITIONS

	Unit	Immersion process		Electro colour process	
		Range	Optimum	Range	Optimum
i-Fin Al Gold	gm/ltr	10- 30	20	30 -50	40
pH	-	3.8 – 5.0	4.5	4 -5	4.5
Temperature	°C	50 – 60	55	40-45	43
Voltage (AC)	V			12-15	14
Current density	A/dm <sup>2</sup>	-	-	1.0 -1.5	1.2
Time	Seconds	30- 180	100	30-90	60

**Note:** Sodium Hydroxide is used to raise the pH and sulphuric acid is used to lower the pH.

### BATH MAKE UP

- Fill the tank with deionized water up to  $\frac{3}{4}$  of its volume.
- Add the required sulphuric acid, mix well, and observe all safety regulations.
- Add the required i-Fin Al Gold, distributing it over the whole tank surface and mix well again.
- Stir well for at least one hour and add deionized water up to the final volume.
- The bath is ready for operation after all the ingredients have been thoroughly mixed.

### OPERATING PROCESS

- 1) Immerse the parts in the bath, adjust the agitation timer for about  $\frac{1}{2}$ -minute work.
- 2) Adjust the waiting timer in such a way that the parts remain without current for at least 1–2 minutes.
- 3) Operate the programmer in order that the tension may reach in a continuous or gradual form i.e. 18 V in one minute.
- 4) Once 18 V is reached, fix the selected time by means of one of the timers placed in the cabinet. At the end of this time, the current is automatically stopped and a sound alarm starts to blow.
- 5) Take the parts out of the bath. Check the coloring and fix the timer at the appropriate lapse so that all subsequent loads may get the same shade.
- 6) If deeper or lighter shades are required, repeat the proceeding operations and once these shades are achieved, fix the necessary time in each one of the timers of the programmer.
- 7) To subsequently reproduce the master shades, it is necessary to operate a switch.

## EQUIPMENT

### Tank:

The tanks must be lined with a material that may be resistant to acids (e.g. PVC, polypropylene, fibreglass, polyester, etc.)

### Heating coil:

It is necessary to provide heating with steam through stainless steel coils.

### Filtration:

It is advisable to circulate the bath by agitator and/or filtration. Since certain tin IV compounds develop during the work, it is recommended to pass the liquid to another tank every 6-8 months and to clean the bottom of the tank before replacing the working solution in it.

### Electrode:

The electrode should be made of S.S 316 and the surface area should be at least as large as that of the surface to be treated.

## RACKING

It is essential to have a perfect contact. The rack contacts ought to be completely clean and have a suitable size for a uniform distribution of the current.

Profiles and similar parts must be placed on the racks inclined to make easier the escape of the small bubbles that are likely to form in the electrolyte. As connecting material, only aluminum must be used. The parts must be tied with wires.

## CURRENT SUPPLY

A three – phase alternating current transformer should be designed for secondary voltage from 0 to 25 volts. It is necessary to use a transformer capable of giving a tension varying from 0 to 25 volts and a current strength depending on the surface of the parts to be colored. Normally, it is advisable to use amperage that is a 50 % of the maximum nominal amperage available in the rectifier of the anodizing tank.

It is necessary to incorporate an automatic control system that may allow varying and fixing the voltage and the time necessary to achieve a given shade.

## CONTROL

i-Fin Al Gold : 2-3 ml/l

The amount can be higher or lower depending on the Operating conditions, temperature, electrolyte composition, treatment time, alloy composition, anodizing conditions,

## ANALYSIS PROCEDURE

### Analysis of gold bath:

1. Pipette out 25 ml of the bath solution in a 250 ml flask.
2. Add 20 ml of sulphuric acid ( 50 %), 50 ml of hot water, 10 drops of ammonium Molybdate ( 10 %) and 2 gms of Potassium Iodide crystals.
3. Stopper the flask and heat to approximately 55°C for 30 mints. Allow it to cool to room temperature.
4. Titrate with the above solution with 0.1 N Sodium Thiosulphate until a light straw colour is obtained.
5. Add 2 ml of starch indicator and continue titrating until the deep colour disappears and a light blue-green colour is obtained.
6. Run a blank and deduct the number of ml of 0.1 N Sodium Thiosulphate.

### Calculation:

$1.82 \times x$  ml. of 0.1 N Sodium Thiosulphate = gm/ltr. of I-Fin Al Gold.

## NECESSARY PRECAUTION

The oxide layer on electrode in coloured bath undergoes fluctuation of voltage resulting in uneven shade of color. The electrode should be brushed and cleaned. The affected part must be stripped, freshly anodized and dyed carefully again. If the shade is too bright, the electrode should be immersed in the electrolyte once again, and re-dyed for few seconds depending on the color desired with higher voltage by 1 or 2 volt than previous voltage given. If the shade is too dark, the job must be immersed for a few seconds without current depending on the color desired.

## WASTE TREATMENT

For more details, refer **MSDS**.

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