



Tinchem Enterprises

SYNGLOSS®

An ISO 9001:2008 Company

Manufacturers of :
Surface Preparation Chemicals
& Surface Preservation Chemicals

C-50, Focal Point, Patiala-147 001 (Pb.)
Tel. +91-175-2232582, 2232682
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ACID TIN PLATING

(AT system is the Process to Tin Plate Aluminum and its Alloys)

Syngloss-AT system is the latest version of M/s Tinchem Enterprises to Tin Plate Aluminum and its Alloys by immersion method.

Salient Features of SYNGLOSS AT System:

Wide Plating Range as compared to other Plating Systems.

This system works on immersion method.

A good Bond of Plating is developed.

A complete known solution of direct Tin Plating of Aluminum and its Alloys.

It works at ambient Temperature.

Applications:

Being the latest and new version of AT system as on today only two fields can be identified i.e. Bi-metal Bearings and Pistons. As far as areas of applications are, concerned sky is the limit. In order to be limited and concise methods of use and handling can be put as follows:

Equipment:

All the Tanks in use are to be made of PVC or Rubber Lined.

OPERATIONAL STAGES

a) Surface Preparation: Objects to be Tin Plated are to be made free from Oil and Greases as well foreign material. In case of Steel component joined together are to be made free from rust or oxidized films.

b) Etching Process: Etching process is done to make the surface ready for plating as well is the basic step involved for the adhesion of the coating. Details of the same can be put as follows: -

Description	Concentration	Pointage Range	Optimum
Syngloss Etching Chemical	100ml/ltr.	5.0 – 7.5	5.5

i) Temperature: **Ambient.**

ii) Duration: **1.0 – 1.5 min.** (In freshly prepared solution 1.0 min. is good enough. So be careful either keeps the optimum pointage of etching bath or increase the dipping time but not more than 1.5 min. otherwise gloss of the plating will be dull.)

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c) Water **Rinsing**: A proper water rinsing is to be done in flowing water in order to avoid any carry over of Etching Solution.

d) **AT System: Acid** Tin plating bath can be made and controlled as follows:

Description	Concentration	Pointage Range	Optimum
Syngloss AT-01	50-60 ml/ltr.	5.0 – 9.0	6.0
Syngloss AT-02	20-30 ml/ltr.	-----	-----
Sulphuric Acid C. P. Grade	55-70 ml/ltr.	12 - 18	14

- i) Temperature: **Ambient.**
- ii) Duration: **3.0 – 4.0 min.** (In freshly prepared solution 3.0 min. is good enough. So be careful either keep the optimum pointage of bath or increase the dipping time but not more than 4.5 min. otherwise plating will be thick, loose and without proper gloss.)
- iii) Agitation: A little agitation is advised, i.e. it should be so slow that there should not be excessive generation of foam as well bath solution is always on move.

Bath Make Up:

Before making up an AT System Bath in a new Tank or old Tank, not previously used for AT System. Leach the Tank for 24 hrs. with 3% Sulphuric Acid solution and 1.0 ml/ltr of AT- 02. After leaching drain the tank and after rinsing with clean water follow the procedure:-

- i) Fill the tank to the 2/3rd volume with D.M. water.
- ii) Add Sulphuric Acid as calculated from the above table slowly. (It is advised to use only C.P. grade Acid.)
- iii) Allow the bath to cool down to Ambient Temperature.
- iv) Add AT - 01 Slowly. **Caution:** Being the materials in use are Acidic, so follow Safety measures while making the baths. Later on Baths are not so hazardous.
- v) Add AT – 02 of desired quantity while stirring the bath regularly. It is advised to start with minimum quantity of AT-02 as it works as Adhesive between the product and Tin Plating. Higher value of AT02 leads to more complications. More details can be had from Trouble shootings.
- vi)

e) **Water Rinsing:**

A proper water rinsing is to be done in flowing water in order to avoid any carry over or plating chemicals left on the surface leading to stains.

f) **Hot D. M. Water Dip:** Rinsing followed by Hot D. M. Water is recommended.

Analysis for SYNGLOSS AT System:

Apparatus Needed:

5 ml Pipette

50 ml Burette

250ml Erlenmeyer flask

Reagents Needed:

AT-O3 Testing Solution

1.0 N Sodium Hydroxide Solution

Phenolphthalein Indicator

Starch Indicator Solution freshly prepared

Etching Bath:

Take **5ml** sample of Etching Bath in Erlenmeyer flask.

Add 2-3 drops of **Phenolphthalein** Indicator.

Titrate against 1.0 N Sodium Hydroxide solution till **Colourless** solution changes to **Pink**.

Note the volume of Standard Sodium Hydroxide consumed in mls.

Mls. of Sodium Hydroxide consumed are called **Pointage**.

SYNGLOSS AT System Bath:

To Check Acidity:

Take **5ml** sample of AT System bath in Erlenmeyer Flask.

Add 2-3 drops of **Phenolphthalein** Indicator.

Titrate Against 1.0 N Sodium Hydroxide solution till **Colourless** solution changes to **Pink**.

Note the volume of Standard Sodium Hydroxide consumed in mls.

Mls. of Sodium Hydroxide consumed are called **Pointage**.

To Determine Tin Pointage:

Take **5ml** sample of AT System bath in Erlenmeyer Flask.

Add 50 mls of D.M. water.

Add **5-7** mls of Starch Indicator.



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Titrate Against testing reagent AT-03 till **Colourless** solution changes to **Violet/Black** end point.
Note the volume of AT-03 consumed in mls.
Mls. of AT-03 consumed are called **Pointage**.

Trouble Shooting:-

Faults	Causes	Correction
Loose Bonding	Poor Acid Etching	It is advised to check the Acid Etching Time/Pointage.
	Sulphuric Acid Pointage	Check that Sulphuric Acid Pointage, It is not to be less than minimum value.
Less Coating Thickness	AT-02 Adhesive Less	Add 3-4 mls/ltr. Of AT-02.
	Tin Pointage is Higher	Check the same and dilute the bath if required.
	Plating Time less	Check the same.
Steel Surface plating is less in case of Bi-Metal Bearing	Acid Etching of Steel Surface is less	Check the same and do needful.
	Tin Pointage is Higher	Check the same and dilute.



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NOTE: All information's provided in this technical data is on the basis of our experience and feedback of our customers. We always welcome any type of queries or information regarding this technical data to upgrade the same.

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