

## PRODUCT DESCRIPTION

Elgatin TL is a matt tin plating solution, based on a sulphate system which produces a very smooth, white and fine grained tin deposit with excellent throwing power.

Elgatin TL matte sulphate plating bath can be used to plate directly on copper, nickel, and nickel alloys such as Alloy 42 and Kovar.

Steel can also be plated after a copper strike has been applied.

This process is suitable for rack, barrel, strip or wire line plating and is particularly effective as a metal etch resist in printed circuit board applications.

## EQUIPMENT PREPARATION

Equipment	Material
Tanks	PP, PE, PVC
Anodes	Sn 100%
Anodic Bags	PP, Synel <sup>®</sup> , Un-napped Terylene <sup>®</sup>
Heater	Teflon, Porcelain
Filtration	PP or Dynel cartridge 1-5µm

### Anodes:

Use pure tin only, without a steel strap core.

Monel or Titanium hooks are satisfactory when kept out of the plating bath.

Anodes corrode most uniformly when do not extend below the work.

## SOLUTION MAKEUP

Chemicals Required	Amount
Deionized Water	To final volume
Stannous Sulphate (Tin Metal)	37.5 g/l (19 g/l)
C.P. Grade Concentrated Sulphuric Acid (H <sub>2</sub> SO <sub>4</sub> )	100 ml/l
Elgatin TL Make Up	100 ml/l

### MAKE UP PROCEDURE/ORDER OF ADDITION

1. Fill an appropriately cleaned storage tank with 2/3 of warm (32 – 38°C) deionized water.
2. Slowly, with thorough mixing, add C.P. grade concentrated Sulphuric Acid (d= 1.84).  
CAUTION!! This reaction is EXOTHERMIC.
3. Allow the solution to cool down.
4. Add to the solution stannous sulphate and mix well.

Small amounts of tin oxide in the tin sulphate may cause the solution to be turbid: filter if necessary.

5. Add Elgatin TL Make Up.
6. Dilute to working volume with DI water.
7. Thoroughly mix the solution.

New tanks, anode bags and filter cartridges should be leached with 5% v/v sulphuric acid for 24 hours before use.

### OPERATING PARAMETERS

	Range	Optimum
Tin metal	7.5 – 30g/l	19 g/l
Sulphuric Acid (96% Pure Grade)	80 – 120 ml/l	100 ml/l
Elgatin TL Make Up	80 – 120 ml/l	100 ml/l
Temperature	18 – 35°C	25°C
Current Density	0.5 – 2 A/dm <sup>2</sup>	Depend on application

## GENERAL MAINTENANCE

Add 500ml of Elgatin TL Replenisher per 1000Ah.

The Elgatin TL Make Up should also be added proportional to the volume of sulphuric Acid Replenished.

Add one part by volume Elgatin TL Make Up for every 10 parts by volume of sulphuric acid added to operating baths.

## ANALYTICAL CONTROL METHODS

### Determination of tin concentration

#### Equipment

- Pipette
- 50ml burette
- 250ml Erlenmeyer flask
- 25ml Graduated Cylinder

#### Reagents

- Iodine solution 0.1N
- Starch Paste Indicator
- Hydrochloric Acid 37%

#### Procedure

1. Pipette 2.0 ml of working solution into a 250ml Erlenmeyer flask.
2. Add 5 ml of hydrochloric acid.
3. Add 5 drops of Starch Paste Indicator.
4. Titrate with iodine 0.1N to a permanent blue endpoint.

#### Calculation

Concentration of Tin metal ( $\text{Sn}^{++}$ )(g/l) = mls of Iodine \*  $N_{\text{Iodine}}$  \* 29.7

Concentration of Tin Sulphate (g/l) = mls of Iodine \*  $N_{\text{Iodine}}$  \* 53.76

### Determination of Sulphuric Acid

#### Equipment

- Pipette
- 50 ml Burette
- 250 ml Erlenmeyer flask
- 25ml Graduated Cylinder

## Reagents

- Sodium Hydroxide 0.1N
- Methyl orange indicator solution

## Procedure

1. Pipette 5 ml of working solution into a 250 ml Erlenmeyer flask and add 100 ml of DI water.
2. Add 5 drops of methyl orange indicator.
3. Titrate with 1 N sodium hydroxide until yellow/orange colour develops.

## Calculation

Sulphuric Acid Concentration (g/l) = ml of NaOH \* 9.8

## STORAGE

Only store Elgatin TL in original containers, upright, away from direct sunlight and in a dry area at 10 – 32°C.

Keep container closed when not in use.

Keep away from organics, reducing agents, strong alkalis and oxidizers.

## HANDLING PRECAUTIONS

Elgatin TL working solution is highly acidic and requires the normal precautions for handling strong acids.

Avoid the contact with skin and eyes.

Handle with care.

Wear chemical goggles, chemical gloves and suitable protective clothing when handling Elgatin TL working solutions.

In case of contact flush affected area with copious amounts of cold, clean water for at least 10 minutes.

In case of serious exposure, particularly for eyes, obtain medical attention for acid burns.

**READ MATERIAL SAFETY DATA SHEET PRIOR TO HANDLING THIS PRODUCT**

## WASTE TREATMENT

It is the user's responsibility to verify that treatment procedures comply with local regulations. Working solutions should be diluted, neutralized and disposed of in accordance with local regulation.

In case of order please indicate this code:

<b>Elgatin TL Make Up</b>	<b>GC 6335</b>
<b>Elgatin TL Replenisher</b>	<b>GC 6340</b>
<b>Elgatin TL Bath RTU</b>	<b>GC 6330</b>

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**HEADQUARTER**

Via della Merlata, 8  
20014 Nerviano (MI) ITALY  
T. +39 0331 58 69 47  
F. +39 0331 58 77 51

UNI EN ISO 9001:2015  
UNI EN ISO 14001:2015



**MANUFACTURING SITE**

Via C. Chiesa, 30  
20010 Pogliano M.se (MI) ITALY  
T. + 39 02 93 55 90 06  
F. +39 02 93 55 90 07

elgaeurope@pec.it  
R.E.A. Milano n. 861433  
Reg. Imp. di Milano n. 154339  
C.F. /P.IVA 01857060154  
Cap. Soc. € 3.014.026,00 I.V.

[www.elgaeurope.it](http://www.elgaeurope.it)