

## E-Brite™ 181

### Matte Acid Tin Plating Process

**E-Brite 181** is a stable bath, which deposits a leveled plate exhibiting a soft white to gray matte finish with excellent solderability.

**E-Brite 181** baths have a wide window of operation in regard to concentration and operate well with low tin concentration.

#### BATH MAKE UP

#### 100 GALLONS

|                                 |              |
|---------------------------------|--------------|
| <b>Barrel</b> -Stannous Sulfate | 23 pounds    |
| <b>Rack</b> -Stannous Sulfate   | 34 pounds    |
| Sulfuric Acid C.P.              | 10 gallons   |
| <b>E-Brite 180-M</b> Make-Up    | 2.50 gallons |
| <b>E-Brite 181</b>              | 1 gallon     |

#### OPERATING CONDITIONS

|                              | <u>OPTIMUM</u> | <u>RANGE</u>       |
|------------------------------|----------------|--------------------|
| Tin Metal (Barrel)           | 2.0 oz/gal     | 0.5 – 2.5 oz/gal   |
| Tin Metal (Rack)             | 3.0 oz/gal     | 1.0 – 5.0 oz/gal   |
| Sulfuric Acid                | 10% by volume  | 8 - 12% by volume  |
| <b>E-Brite 180-M</b> Make Up | 2.5% by volume | 2 – 4% by volume   |
| <b>E-Brite 181</b>           | 1.0% by volume | 0.5 – 2% by volume |
| Temperature                  | 70°F           | 60 - 90°F          |

|                |   |
|----------------|---|
| Agitation:     | Barrel: Rotation is sufficient<br>Rack: Rod is sufficient |
| Voltage:       | 6 volts   |
| Cooling coils: | Teflon or Teflon coated                                   |
| Filtration:    | Continuous  |

|              |                               |
|--------------|-------------------------------|
| Anodes:      | 99.9% pure tin slabs          |
| Anode Bags:  | Not required                  |
| Tank:        | Plastic or rubber lined steel |
| Anode Hooks: | Monel or titanium             |

### **BRIGHTENER MAINTENANCE ADDITION**

The **E-Brite 180-M** and **E-Brite 181** additives **should always be diluted** with equal amounts of water before being added to the bath.

The **E-Brite 180-M** make up and **E-Brite 181** additives are consumed mainly by drag-out. The amount of drag-out can be measured by the consumption of Sulfuric Acid. When acid additions are made, one quart of **E-Brite 180-M** and 13 fluid ounces of **E-Brite 181** should be added per one gallon of Sulfuric Acid.

A two (2) amp, 4 min., 80°F, Hull Cell panel can also be used to determine the additions of the **E-Brite additives**.

### **BATH CONTROL**

#### **Stannous Sulfate:**

1. Pipette 5 ml tin plating solution into 500 ml Erlenmeyer flask.
2. Add:
  - a) 100 ml Deionized water
  - b) 50 ml Conc. HCl.
  - c) about 1/2-gram Sodium Bicarbonate slowly, to dispel air.
  - d) 1 cc Starch Indicator Solution
3. Titrate with 0.1N Potassium Iodate to a blue color which persists for 30 seconds.

$$\text{oz/gal Stannous Sulfate} = \text{ml 0.1N Iodate titrated} \times 0.287$$

$$\text{oz/gal Tin metal} = \text{ml 0.1N Iodate titrated} \times 0.158$$

### **SULFURIC ACID**

1. Pipette 5 ml tin plating solution into 250 ml Erlenmeyer flask.
2. Add
  - a) 50 ml (4%) Ammonium Oxalate Solution
  - b) 5 ml Methyl Red Indicator
3. Titrate with 1.0N NaOH to color change from red to yellow.

$$\% \text{ by vol. H}_2\text{SO}_4 = \text{ml 1.0N NaOH titrated} \times 0.53$$

The tin metal and Sulfuric Acid concentrations should be analyzed on a regular basis and maintained within their recommended limits.

### **SAFE HANDLING**

Use acid resistant apron, gloves and eye shields when making Sulfuric Acid additions. When making up a new bath of **E-Brite 181**, fill the tank approximately half full with cold water and then slowly and cautiously add the required amount of Sulfuric Acid. Stir continuously during addition. Do not allow solution temperature to exceed 150°F during mixing.

Stannous Sulfate should be slurried in a pail of cold water prior to adding to the bath with continuous stirring.

Following mixing, bring the bath close to final volume with water leaving room for the diluted **180- M** and **181**.

Working baths of **E-Brite 181** must be well ventilated for acid fumes.

The **E-Brite 180-M** make up and **E-Brite 181** are non-hazardous. However, good industrial hygienic procedures should be followed.

**IMPORTANT NOTICE! For Industrial Use Only**

The following is made in lieu of all warranties, expressed or implied, including the implied warranties of merchantability and fitness for purpose: seller's and manufacturer's only obligation shall be to replace such quantity of the product as proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. **Neither seller nor manufacturer shall be liable either in tort or in contract for any loss or damage, direct, incidental or consequential, arising out of the use or the inability to use the product.**

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