

## E-Brite 2.0 Ag RTP

### Non-Cyanide Alkaline Silver Plating

**E-Brite 2.0 Ag RTP** is an alkaline, cyanide free plating solution, which can plate bright silver for brush, electronic, industrial and decorative uses. **E-Brite 2.0 Ag RTP** eliminates the high cost of waste treatment of cyanide. It operates at room temperature and can be utilized in both rack, barrel and brush plating.

**E-Brite 2.0 Ag RTP** can plate directly on silver, brass, bronze, nickel and copper and does not require a separate silver strike on these substrates. **E-Brite 2.0 Ag RTP** has exceptional covering and throwing power. It produces fine-grained, smooth, dense, hard silver plate with low porosity and excellent bonding properties. The plate may be buffed for a high luster.

It exhibits superior color of a brilliant white. It is cost effective because it plates out of the silver anodes rather than the solution. **E-Brite 2.0 Ag RTP** is easy to maintain with a single maintenance additive. **E-Brite 2.0 Ag RTP** meets **ASTM B-700** and **AMS 2411J**.

It is a very stable bath.

#### Plating Specifications:

	<u>Optimum</u>	<u>Range</u>
Silver Metal	1.5 oz/gal	1.0-2.0 oz/gal
pH	10.0	9.5-10.5
Temperature	68°F	60-75°F
Cathode current density	3 - 10	2-20 ASF
Anode current density	--	2-10 ASF
Agitation	Cathode rod agitation or air agitation on the cathodes.	

#### Equipment and Operation:

Anode	Pure silver anodes should be used.
Anode/cathode ratio	A 2:1 anode to cathode ratio is required. Calculate the maximum cathode area before setting up the process and ensure the anode area is two times the maximum cathode area.
Filtration	The solution must be kept free of suspended matter in order to prevent roughness. Continuous filtration with 1 micron filter is recommended. New filter cartridge must be flushed prior to use by circulating DI water through the cartridge.
Tank	Plastic tanks may be used. Large polypropylene tanks must be reinforced. A high volume, low pressure air source is required for air agitation of the anodes and cathodes.

**Cooling:** In hot climates or manufacturing facilities, a cooling system using a 304/316 stainless cooling coil will extend the bath life. A water or chiller cooling system is preferred. In some locations, a cooling coil fixtured in the DI Water rinse with the silver bath flowing through (utilizing the filtration system pump) can be used to keep the bath at 68°F (20°C).

**Warning:** Tanks, racks, filters, barrels and other equipment must be thoroughly cleaned before using them with an **E-Brite 2.0 Ag RTP** solution. Equipment previously used for cyanide silver should be washed with hypochlorite solution and the tank soaked for 24 hours in 2% hypochlorite to destroy residual cyanide. After removal of the hypochlorite solution and water rinsing, a 5% sulfuric acid or nitric acid rinse should be used, followed with another rinse with DI water. When destroying cyanide, forced ventilation should be used at all times to prevent toxic cyanide fumes from accumulating. Personnel should be equipped with self-contained breathing apparatus.

**Best results** are obtained with a new tank or by installing a new flexible liner in a tank which previously contained a cyanide silver solution and which has been cleaned as outlined above. New anodes and baskets are also recommended.

#### **pH control for E-Brite 2.0 Ag RTP solution**

It is very important to operate **E-Brite 2.0 Ag RTP** at pH range 9.5 to 10.5. If pH is below 9.5, adjust with KOH. If pH is over 10.5 adjust with 50% nitric acid. The pH must not go over 11.5.

#### **E-Brite 2.0 Ag RTP bath control**

The bath is maintained by measuring the pH, by titrating the silver concentration, and by running Hull Cell panels to determine contamination and evaluate plate adhesion.

#### **Silver Analysis**

1. Pipette a 10 ml sample of the plating solution into a 250 ml Erlenmeyer flask. Add 50 ml distilled water.
2. Add 2 ml concentrated nitric acid and 2 ml of 98% H<sub>2</sub>SO<sub>4</sub>. Heat up solution and boil for 5 min.
3. Wait until the solution cools down and add 5 ml of 2% ferric ammonium sulfate solution.
4. Titrate with standard 0.1 N potassium thiocyanate (KSCN) solution until the light orange color remains.
5. oz/gal silver metal = (ml of KSCN) x 0.144

#### **Cleaning Parts**

It is extremely important to evaluate the cleaning in the existing line in order to have good performance for the **E-Brite 2.0 Ag RTP** process. **EPI** has electrocleaners as well as acid salts that are compatible with the **E-Brite 2.0 Ag RTP** solution.

#### **Plating copper, brass and bronze substrates**

1. Soak clean with **EPI's E-Kleen 153** or **E-Kleen 196**
2. Electroclean with **EPI's E-Kleen 153**
3. Cold water rinse
4. Activation with **EPI's E-Pik 219**
5. Cold water rinse

6. Cold water rinse
7. Plate with **E-Brite 2.0 Ag RTP**
8. Silver drag out (D.I. Water)
9. Cold water rinse (tap water)
10. Cold water rinse (D.I. Water)
11. A 10% Sulfuric Acid rinse
12. D.I. water rinse
13. **EPI's E-Tec 529** anti-tarnish solution\*\* or **EPI's B.P.A.** electrolytic chromate solution
14. Hot D.I. water rinse
15. Dry

### Plating Steel Substrates

1. Soak clean with **EPI's E-Kleen SR 102-E**
2. Electroclean with **EPI's E-Kleen SR 1020**
3. Cold water rinse
4. Activation in 50% HCl or 5-20% Sulfuric Acid
5. Cold water rinse
6. Cold water rinse
7. Copper strike with **EPI's E-Brite Ultra Cu** non-cyanide alkaline copper
8. Cold water rinse
9. Cold water rinse
10. Plate with **E-Brite 2.0 Ag RTP**
11. Silver drag out (D.I. Water)
12. Cold water rinse (tap water)
13. Cold water rinse(D.I. Water)
14. A 10% Sulfuric acid dip
15. D.I. water rinse
16. **EPI's E-Tec 529** anti-tarnish solution\*\* or **EPI's B.P.A.** electrolytic chromate solution
17. Hot water rinse
18. Dry

### Plating Fresh Nickel: Electroless and Electroplated Nickel Substrates (Woods & Sulfamate Nickel)

1. Cold water rinse
2. Plate with **E-Brite 2.0 Ag RTP**
3. Silver drag-out (D.I. Water)
4. Cold water rinse (tap water)
5. Cold water rinse (D.I. Water)
6. A 10% Sulfuric Acid dip.
7. D.I. water rinse
8. **EPI's E-Tec 529** anti-tarnish solution\*\* or **EPI's B.P.A.** electrolytic chromate solution
9. Hot water rinse
10. Dry

**Note:** **E-Brite 2.0 Ag RTP** contains silver in solution and therefore Section 313 of the Federal Emergency Planning and Community Right-To-Know Act, which pertains to reporting, must be adhered to.

**\*\*For tarnish protection on plated silver, be sure to use the heated E-Tec 529 solution at 25% by volume.**

**Further protection from tarnishing of silver parts can be accomplished by wrapping them in Silver Saver Volatile Corrosion Inhibitor (VCI) paper available from Daubert Cromwell:**

phone 800-535-3535 or website [www.daubertcromwell.com](http://www.daubertcromwell.com)

### **Caution**

There is the possibility of chronic health effects with **E-Brite 2.0 Ag RTP**. The absorption of silver compounds into the circulation and the deposition of reduced silver in various tissues of the body may result in the production of generalized grayish pigmentation of the skin and mucous membranes (argyria). Generalized argyria develops after 2 to 25 years of exposure. Ingestion is harmful and may cause death.

### **Packaging**

One (1) gallon, five (5) gallon pails and 55 gallon drums

### **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.**

**11/18/21**