

---

# AUROMEX®

TECHNICAL

INSTRUCTIONS

DATA SHEETS

## SILVAMEX HB MIRROR BRIGHT SILVER PLATING PROCESS

### INTRODUCTION

The **AUROMEX SILVAMEX HB** is silver plating process is designed to produce hard mirror bright deposits over a much wider range of current densities. This process is advantageous to many applications either decorative or industrial. The use of high current densities leads directly to productivity, which is of primary importance when economics is the basic consideration.

### FEATURES

- \* Mirror Bright finish deposits.
- \* Deposits are hard, highly ductile and good wear resistance.
- \* Wider operating current densities, uniformly deposits from 0.5 to 4 Amp/dm<sup>2</sup>
- \* Non-critical, economical operation and control.
- \* No accumulation of deleterious brightener decomposition products.
- \* Exceptional throwing and covering power.
- \* High electrical conductivity.

### PLATING BATH PREPARATION

**AUROMEX SILVAMEX HB** make up agent is supplied in unit form. Each unit contains all the products required to make 10 litres of solution. It does not contain silver.

The following instructions are for the preparation of 10 litres of solution.

#### MATERIAL REQUIRED :

<b>SILVER</b> Potassium Cyanide (54%)	670 gms.
<b>AUROMEX SILVAMEX HB</b> Make Up Salt (Code 13330)	1.5 kgs.
<b>AUROMEX SILVAMEX HB</b> Make Up Brightener A (Code 13331)	200 mls.
<b>AUROMEX SILVAMEX HB</b> Make Up Brightener B (Code 13332)	20 mls.

P.1

---

**AUROMEX®**

CHEMICALS CORPORATION

UNIT NO. 2, 4/F., INTERNATIONAL PLAZA, 20 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, H.K.  
TEL: 2796 7238 FAX: 852-2796 7117

## PROCEDURES :

- (1) Fill to a clean plating tank 2/3 of the required final volume with distilled or deionised water.
- (2) Add in the 1.5 kgs **SILVAMEX HB** Make Up Salt (Code 13330), stir unit completely mixed.
- (3) Dissolve the silver Potassium Cyanide (54%) in a separate quantity of demineralised or distilled water and then add to the above solution.
- (4) Add in the **SILVAMEX HB** Make Up Brightener A & B.
- (5) Dilute the solution to 10 litres with demineralised or distilled water, the solution is then ready to use.

## OPERATING CONDITION :

	<u>UNIT</u>	<u>RANGE</u>	<u>OPTIMUM</u>
Silver metal	g/l	35 – 40	36
KCN (Free)	g/l	90 – 110	100
K <sub>2</sub> CO <sub>3</sub>	g/l	15 – 60	20
pH		12 – 12.5	12.3
Temperature	°C	25 – 30	28
Cathode Current Density	A/dm <sup>2</sup>	1 – 3	1
Deposition rate	min / u	5 microns in 7.5 minutes at 1 A/dm <sup>2</sup>	
Anode		Fine grained extruded 99.9% silver	
Anode : Cathode ratio		2 : 1 min.	
Agitation		Moderate to Vigorous	
Current efficiency		100%	

## EQUIPMENT

Tanks	Steel lined with suitable plastic material such as polyethylene, Tygon, polyvinyl chloride, Koroseal and glass containers are recommended.
Heaters	Not normally required but a stainless steel immersion heater with thermostat control.
Filtration	Preferably continuous using filter paper stacks or woven nylon or polypropylene cartridges.(capacity of approx.1-2 times tank volume per hour.)
Agitation	The most suitable method of providing agitation is by means of a moving cathode bar arrangement. In additions, particularly in cases of continuous operation, moderate circulation of the solution by means of a pump is most desirable.

## **SOLUTION MAINTENANCE**

### **SILVER METAL :**

The silver content should not be allowed to drop below 50 gram per litre. Below this figure, because of lack of sufficient silver ions the tendency for dullness at the high current density areas will increase. During the operation, the silver anodes normally maintain the silver content. Sufficient anodes should be used in the tanks so that the anode current density does not at any time exceed about 12 amperes per square foot. A ratio of cathode to anode area of 1 to 2 is highly desirable.

### **POTASSIUM CARBONATE :**

As in all cyanide baths, carbonates build up. The carbonate content may reach a value of 80 g/l without adverse effect.

### **SILVAMEX HB REPLENISHER BRIGHTENER :**

This is the active additive for maintaining bright deposits. Additions are made on the basis of the number of ampere hours passed through the solution. For each 100 ampere hours. add 200 mls. **SILVAMEX HB** Replenisher Brightener A and 20 mls. **SILVAMEX HB** Replenisher Brightener B.

### **STRIKE SOLUTION**

A silver strike should be used prior to silver plating. A typical formula is as follows :

AgCN	1.5 - 3.5 g/l
KCN	100 - 115 g/l