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# AUROMEX®

## TECHNICAL INSTRUCTIONS

DATA SHEETS

### **DECORMEX EF99E** **HIGH EFFICIENCY ELECTROFORMING PURE GOLD PROCESS**

#### **INTRODUCTION**

The AUROMEX **DECORMEX EF99E** is a newly developed high efficiency low stress, neutral gold process, specially designed to give a hard, ductile and fine grained deposits at thickness in excess of 1.25mm (0.050 inches). This process is advantageous to many applications especially for decorative industries and ideal for electroforming purpose, for building up super thick deposits where subsequent finishing is not required.

#### **FEATURES**

- \* Fine grained, Bright deposits
- \* Deposits are highly ductile with lower internal stress
- \* Non-critical in operation and control
- \* No accumulation of deleterious brightener decomposition products
- \* Exceptional throwing and covering power
- \* High Cathode Efficiency and good thickness distribution
- \* Highly Economy

#### **DEPOSIT PROPERTIES**

Appearance : Fine ,Bright Finish (rich lemon yellow colour)  
Deposit purity : 99.9% up  
Karat : 24 Kt  
Hardness : 80 - 120 mHv20g  
Deposit Density : 18.7 - 19.0 g / dm<sup>2</sup>  
For 1 micro deposit : 187 - 190 mgm / dm<sup>2</sup>

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**AUROMEX®**

CHEMICALS CORPORATION

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## **EQUIPMENT**

- Tanks Polypropylene or PVC glass fiber reinforced tanks are suitable.
- Heater Heating is required and temperature regulation is essential. Therefore, thermostatic controlled immersion heater are recommended.
- Rectifier A standard D C power supply should be used with an ampere output capacity sufficient to meet the requirements of the plating operation. The power supply should be equipped with a voltmeter, ammeter and step less control for accurate regulation of the current.
- Filtration The solution should be filtered continuously through polypropylene or cotton cartridges to maintain clarity.
- Agitation Moderate to vigorous agitation is necessary to maintain uniform metal distribution. Jet Stream and mechanical agitation at 7-14 m/min may be used.
- Anodes Insoluble anodes should be used, platinised titanium anodes with an area sufficient to provide a maximum current density of 0.25A / dm<sup>2</sup> are recommended.

## **PLATING BATH PREPARATION :**

**AUROMEX DECORMEX EF99E** make up chemicals are supplied in unit form. Each unit contains all the necessary additives required to make 10 litres working solution. It does not contain gold.

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

### **Material required :**

Gold potassium Cyanide (68.3%)		220 gms.
<b>Decormex EF99E</b> Make Up Salt	(Code 12190)	1.2 kg
<b>Decormex EF99E</b> Make Up Brightener	(Code 12191)	100 mls.
<b>Decormex EF99E</b> Acid Adjustment Solution	(Code 12195)	

### **Potassium Hydroxide**

### **Make up Procedures :**

1. Pour 6 litres of demineralised or distilled water into the clean plating tank.
2. Add in the 1.2 kgs Make Up Salt (Code 12190), stir until completely dissolved and then
3. add the 100 mls Make Up Brightener (Code 12191).  
Check and adjust pH to 7.0 with **Decormex EF99E** (code 12195) acid or 10% potassium hydroxide solution.
4. Dissolve the gold potassium cyanide in a separate quantity of demineralised or distilled water and then add to the above solution.
5. Stir and check the pH again. Adjust to pH 7.0 if necessary.
6. Dilute the solution to 10 litres with demineralised or distilled water. The solution is then ready to use.

## OPERATING CONDITIONS :

	<u>UNIT</u>	<u>RANGE</u>	<u>OPTIMUM</u>
Metallic gold content	g/l	12 - 20	15
pH electrometric		6.5 – 7.5	7.0
Temperature		30 - 50	40
Cathode current density	A/dm <sup>2</sup>	0.3 – 0.8	0.5
Density	Be	6 - 20	8
Anode : Cathode ratio		3:1 – 5:1	4:1
Agitation		moderate	moderate
Plating rate	µm/hour	35 - 60	45

## BATH MAINTENANCE

Gold metal content of the solution should be maintained at the recommended concentration (12-20 g/l) by periodic additions of gold potassium cyanide 68.3%. Replenisher Brightener is supplied as a liquid in units of 100 mls. One unit contains all the necessary additives to be added with the appropriate quantity of gold salts corresponding to 100 grams of gold metal.

Replenishment should be based on regular analysis but under optimum operating conditions, **DECORMEX EF99E** process deposit metal at the following rates

<u>Amp-min</u>	<u>Gold consumed</u>
900	100 grams

For every 100 grams gold replenishment (147 grams 68.3% PGC) add one units (100 mls) **DECORMEX EF99E** Replenisher Brightener (Code 12198).

Conductivity : Specific gravity of the solution should be maintained between 6-20 baume. If for any reason excessive drag out occurs, and specific gravity of the solution drops below 12 Be **Decomex EF99E** conducting salt (Code 12199) should be added to the solution. For every 16 g/l addition of this conducting salt will increase 1 Be at 35 °C.

pH adjustment : The pH of the solution will rise slowly during use and should be checked periodically. To lower the solution pH by addition of **Decormex EF99E** Acid (code 12195). To increase pH by addition of 10% potassium hydroxide solution.

**PACKING :**

<b>DECORMEX EF99E</b> Make Up Salt	(Code 12190)	1.2 kg / unit
<b>DECORMEX EF99E</b> Make Up Brightener	(Code 12191)	100 mls / unit
<b>DECORMEX EF99E</b> Replenisher Brightener	(Code 12198)	100 mls / unit
<b>DECORMEX EF99E</b> Conducting Salt	(Code 12199)	1 , 2 , 25 kgs / pack
<b>DECORMEX EF99E</b> Acid Adjustment Solution	(Code 12195)	1 , 2 , 5 litres / pack