
AUROMEX®

TECHNICAL

INSTRUCTIONS

DATA SHEETS

DECORMEX EF99 **HIGH EFFICIENCY ELECTROFORMING GOLD PROCESS**

INTRODUCTION

The AUROMEX **DECORMEX EF99** is a high efficiency 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 and ideal for electroforming purpose, for building up thick deposits where subsequent finishing is not required.

FEATURES

- * Semi-Bright to Satin finish deposits
- * Deposits are hard and highly ductile
- * 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

DEPOSIT PROPERTIES

Appearance : Semi Bright to Bright (rich lemon yellow colour)
Deposit purity : 99.9% up
Karat : 24 Kt
Hardness : 80 - 120 mHv20g
Deposit Density : 18.7 - 19.0 g / dm²
For 1 micro deposit : 187 - 190 mgm / dm²

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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 / dm² are recommended.

PLATING BATH PREPARATION :

AUROMEX DECORMEX EF99 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%) | 366 gms. |
| Decormex EF99 Make Up Salt (Code 10090) | 1.8 kg |
| Decormex EF99 Make Up Brightener (Code 10091) | 100 mls. |
| Decormex EF99 Acid Adjustment Solution (Code 10095) | |
| Potassium Hydroxide | |

Make up Procedures :

1. Pour 6 litres of demineralised or distilled water into the clean plating tank.
2. Add in the 1.8 kgs Make Up Salt (Code 10090), stir until completely dissolved and then
3. add the 100 mls Make Up Brightener (Code 10091).
Check and adjust pH to 7.0 with **Decormex EF** 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 | 20 - 30 | 25 |
| pH electrometric | | 6.5 – 7.5 | 7.0 |
| Temperature | | 30 - 50 | 40 |
| Cathode current density | A/dm ² | 0.5 – 2.0 | 1.0 |
| Density | Be | 12 - 20 | 16 |
| Anode : Cathode ratio | | 3:1 – 5:1 | 4:1 |
| Agitation | | moderate | moderate |
| Plating rate | µm/hour | 20 - 70 | 40 |

BATH MAINTENANCE

Gold metal content of the solution should be maintained at the recommended concentration (20-30 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 EF99** process deposit metal at the following rates

| <u>Amp-min</u> | <u>Gold consumed</u> |
|----------------|----------------------|
| 820 | 100 grams |

For every 100 grams gold replenishment (147 grams 68.3% PGC) add one units (100 mls) **DECORMEX EF99** Replenisher Brightener (Code 10098).

Conductivity : Specific gravity of the solution should be maintained between 12-20 baume. If for any reason excessive drag out occurs, and specific gravity of the solution drops below 12 Be conducting salt (Code 10099) 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 Acid. To increase pH by addition of 10% potassium hydroxide solution.

PACKING :

| | |
|--|-------------------------|
| DECORMEX EF99 Make Up Salt (Code 10090) | 1.8 kg / unit |
| DECORMEX EF99 Make Up Brightener (Code 10091) | 100 mls / unit |
| DECORMEX EF99 Replenisher Brightener (Code 10098) | 100 mls / unit |
| DECORMEX EF99 Conducting Salt (Code 10099) | 1 , 2 , 25 kgs / pack |
| DECORMEX EF99 Acid Adjustment Solution (Code 10095) | 1 , 2 , 5 litres / pack |