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# AUROMEX®

TECHNICAL

INSTRUCTIONS

DATA SHEETS

## DECORFIN 24M DECORATIVE GOLD PLATING PROCESS

### INTRODUCTION

The **DECORFIN 24M** is a new mild acid / neutral electrolyte developed to obtain flash deposits of a 24 Kt pure gold color for low priced costume jewelry and similar decorative wear. The formulation produces fully bright, ductile and high corrosion resistance deposits.

DECORFIN 24M is a extremely economic process, it has a very high tolerance to metallic contamination and can operate at low gold concentration to minimize drag out losses. The process is ideal for both still vat and barrel plating.

### PROCESS FEATURES

- \* Economic, easy to operate.
- \* Uniform color, distribution.
- \* Low gold concentration, less drag out loss.
- \* High tolerance to metallic contamination.

### DEPOSIT CHARACTERISTICS

APPERANCE	Mirror bright, lustrous deposit
KARAT	24 Karats
HARDNESS	80 – 120 mHv <sub>20g</sub>
Specific Gravity	18.0 – 18.5

P-1

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**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

## EQUIPMENT REQUIRED

Tank	Polypropylene or PVC glass fiber reinforced tank are suitable.
Heaters	Heating is required and temperature regulation is essential. Therefore, thermostatically 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 stepless 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.

## PREPARATION OF SOLUTION

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

Materials required :

Potassium Gold Cyanide (68.3%)	14.7 grams
<b>DECORFIN 24M</b> make up salt (Code 20000)	1.5 kgs.
<b>DECORFIN 24M</b> make up Brightener (Code 20001)	100 mls.
<b>DECORFIN</b> Acid	
Potassium Hydroxide	

Make up procedure :

1. Pour 6 litres of demineralised or distilled water into the clean plating tank.
2. Add in the 1.5 kgs. Make Up Salt (Code 20000), stir until completely dissolved and then add the 100 mls. Make Up Brightener (Code 20001) and stir.
3. Check and adjust pH to 4.0 with 10% potassium hydroxide or **DECORFIN** Acid.
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 4.0 if necessary with **DECORFIN** Acid or potassium hydroxide.
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	0.5-1.5	1.0
pH electrometric		3.5-4.5	4.0
Temperature	°C	30-50	40
Cathode current density,	A/dm <sup>2</sup>		
still vat plating		0.5-1.2	1.0
barrel plating		0.2-0.5	0.2
Density	°Be	10-18	12
Anode : cathode ratio			2 : 1 or higher
Agitation	m/min		vigorous
Plating rate	mgm/Amp-min	28-32	30

## BATH MAINTENANCE

The gold metal content of the solution should be maintained at the recommended concentration (1.0-3.0g/l). The additions of gold should be made on the basis of ampere-hours passed through the solution. For every ampere-hour, replenish with 1.5 grams of gold in the form of 68.3% potassium gold cyanide.

Amp-min  
3330

Gold consumed  
100 grams

Frequency periodical additions are recommended in order to keep the bath at the optimum concentration.

Brightener Replenishment :

Additions of replenishing brightener should be based on additions of gold. For every 100 grams gold replenishment (147 grams 68.3% PGC), add one units (100 mls.) DECORFIN 24M Replenishing Brightener (Code 20005).

Specific gravity :

To counter the effect of excessive drag out, DECORFIN 24M conducting salts (Code 20095) should be added to maintain the specific gravity at the optimum value. For every 16 g/l addition of this conduction salt will increase 1 °Be at 45°C.

pH ADJUSTMENT :

In order to maintain the pH value between 3.5 - 4.5 electrometric proceed as follows :

- to increase pH, add 10% w/v potassium hydroxide solution.
- to decrease pH, add DECORFIN Acid.

## **ANALYTICAL PROCEDURE**

Determination of Gold content :

1. Pipette a 20c.c. sample of the solution into a 500c.c. conical flask. **CAUTION – DO NOT** use a mouth suction pipette as the solution contains cyanide and is extremely poisonous.
2. Under a fume hood, dilute with 50c.c. of distilled water and add 25c.c. of concentrated sulphuric acid.
3. Heat until dense white fumes are evolved and allow to cool.
4. Add 2 to 5 mls concentrated nitric acid and reheat until dense white fumes are evolved to permit complete destruction of organic matter.
5. Allow to cool, and carefully add 100c.c. of distilled water.
6. Filter out the gold metal on ashless filter paper, wash thoroughly with hot water and dry.
7. Ignite the filter paper containing the gold in a crucible. Cool and weigh.
8. Calculations :  $50 \times \text{wt. Of ppt.} = \text{g/l gold metal.}$