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# AUROMEX®

TECHNICAL

INSTRUCTIONS

DATA SHEETS

## DECORMEX NT240

### HIGH SPEED ACID GOLD ELECTROPLATING PROCESS

#### INTRODUCTION

**AUROMEX DECORMEX NT240** is a new high speed / high efficiency acid gold electroplating process specially formulated for high quality jewellery, spectacle frames, watch cases and cutlery. **DECORMEX NT240** is based on an entirely new acid gold electrolyte that contains an organo complex. High efficiency, even distribution characteristics and an exceptional throwing power make **DECORMEX NT240** an economic process to use.

**DECORMEX NT240** introduces semi-bright to mirror bright deposits of nearly 24 karats that are uniform rich yellow in colour. There is no need to employ special additional finishing procedures with this process. Hardness values in the range 80-120 Vickers prolong the fine appearance and value of **DECORMEX NT240** coatings and eliminate wear point problems. The deposits are non-porous and resistant to tarnishing and corrosion.

#### PROCESS FEATURES

- \* Higher cathode efficiency and ability to plate thicker deposit.
- \* Excellent distribution and throwing power.
- \* Good corrosion resistance.
- \* Lower internal stress of deposits.
- \* Reasonable wear and abrasion resistant.
- \* Good tolerance to metallic impurities.
- \* Easy to operate.

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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

## **DEPOSIT CHARACTERISTICS**

Appearance	: Semi to mirror bright, lustrous deposit
Deposit purity	: 99.9% up
Karat	: 24 Karats
Hardness	: 80-120 mHv20g
Deposit Density	: 18.7-19.0 g/cm <sup>3</sup>
For 1 micron deposit	: 187-190 mgm/dm <sup>2</sup>

## **EQUIPMENT REQUIRED**

Tank	: Polypropylene or PVC glass fiber reinforced tanks are suitable.
Heater	: 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 steeples 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 :

Gold Potassium Cyanide (68.3% )	58.5 grams
<b>DECORMEX NT240</b> Make Up Salt	1.2 kgs.
<b>DECORMEX NT240</b> Make Up Brightener	200 mls.
<b>DECORMEX NT240</b> Acid	
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, stir until completely dissolved and then add the 200 mls Make up Brightener .
- (3) Check and adjust pH to 4.8 with 10% potassium hydroxide or **DECORMEX** 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 pH 4.8 if necessary with **DECORMEX** 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	4.0-6.0	4.0
pH electrometric		4.5-5.2	4.8
Temperature	°C	30-40	35.0
Cathode current density	A/dm <sup>2</sup>		
Still Vat plating		0.3-0.8	0.5
Barrel plating		0.2-0.4	0.2
Density	°Be	6-20	8
Anode : Cathode ratio, Vat		3:1-5:1	4:1
Barrel		2:1-3:1	2:1
Agitation		vigorous	vigorous
Plating rate	mgm/Amp-min	80-100	95.0
Time to deposit 1u at 1A/dm <sup>2</sup>	min	1.5-2.5	2
Time to deposit 1u at 0.5A/dm <sup>2</sup>	min	3.0-5.0	4

## **BATH MAINTENANCE**

Gold metal content of the solution should be maintained at the recommended concentration (4-6 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 agents 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 NT240** process deposit metal at the following rates

<u>Amp-min</u>	<u>Gold Deposit</u>	<u>Replenisher</u>
1050	100 grams	1 unit(100 mls) NT240 'R'

As drag out losses cannot be accounted for accurately, analytical checks should be performed periodically.

For every 100 grams gold replenishment (147 grams 68.3% PGC) add one units **DECORMEX NT240** replenisher Brightener.

Conductivity : Specific gravity of the solution should be maintained between 6-20 Baume. If for any reason excessive drag out occurs, and the specific gravity of the solution drops below 12 °Be conducting salts should be added to the solution. For every 16 g/l addition of this conduction 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 NT240** Acid. To increase pH by addition of 10%w/v potassium hydroxide.

## **CONTROL OF IMPURITIES**

In general, any metallic impurities could interfere with the operation of the **DECORMEX** gold bath. Introduction of metallic impurities into the bath should be prevented by proper rinsing of the parts to be plated and a **DECORMEX NT240** gold strike prior to gold plating.

## **PACKING**

When ordering, reference should be made to the following code numbers :-

<b>DECORMEX NT240</b> Make Up Salt	1.2 kgs
<b>DECORMEX NT240</b> Make Up Brightener	200 mls
<b>DECORMEX NT240</b> Replenisher Brightener	100 mls
<b>DECORMEX NT240</b> Conducting Salt	1,2,5 kgs/pack
<b>DECORMEX NT240</b> Acid	1,2,5 kgs/pack