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# AUROMEX®

TECHNICAL

INSTRUCTIONS

DATA SHEETS

## DECORMEX 1000HS

### HIGH SPEED ACID HARD GOLD ELECTROPLATING PROCESS

#### INTRODUCTION

**AUROMEX DECORMEX 1000HS** is a new cobalt brightened high speed / high efficiency acid hard gold electroplating process specially formulated for high quality jewellery, spectacle frames, watch cases and cutlery.

**DECORMEX 1000HS** is based on an entirely new acid gold electrolyte that contains an effective cobalt complex. High efficiency, even distribution characteristics and an exceptional throwing power make **DECORMEX 1000HS** an economic process to use. Increased output is obtained with a plating rate of 55 mgm/Amp-min(3.5 minutes to deposit one micron at 1.0 A/dm<sup>2</sup>).

**DECORMEX 1000HS** produces mirror bright deposits of approximate 23.5 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 160-220 Vickers prolong the fine appearance and value of **DECORMEX 1000HS** 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.
- \* Wear and abrasion resistant.
- \* Good tolerance to metallic impurities.
- \* Easy to operate.

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**AUROMEX®**

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## **DEPOSIT CHARACTERISTICS**

Appearance	: Mirror bright, lustrous deposit
Deposit purity	: 99.7% approx.
Karat	: 23.5 Karats
Hardness	: 160-220 mHv20g
Deposit Density	: 17.5-18.0 g/cm <sup>3</sup>
For 1 micron deposit	: 175-180 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 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 :

Gold Potassium Cyanide (68.3% )	87.8 grams
<b>DECORMEX 1000HS</b> Make Up Salt	1.5 kgs.
<b>DECORMEX 1000HS</b> Make Up Brightener	500 mls.
<b>DECORMEX</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 1.5 kgs. Make Up Salt, stir until completely dissolved and then add the 500 mls Make Up Brightener .
- 3) Check and adjust pH to 4.5 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 4.5 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	4.0-8.0	6.0
pH electrometric		4.3-4.8	4.5
Temperature	°C	30-40	35.0
Cathode current density	A/dm <sup>2</sup>		
Still Vat plating		0.5-2.0	1.0
Barrel plating		0.2-0.4	0.2
Density	°Be	13-18	15.0
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	50-60	55.0
Time to deposit 1u at 1A/dm <sup>2</sup>	min	3.0-4.0	3.5

## **BATH MAINTENANCE**

Gold metal content of the solution should be maintained at the recommended concentration (4-8 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 1000HS** process deposit metal at the following rates

<u>Amp-min</u>	<u>Gold Deposit</u>
1820	100 grams

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 1000HS** replenisher Brightener.

Conductivity : Specific gravity of the solution should be maintained between 13-18 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 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 S-100** gold strike prior to gold plating.

## **PACKING**

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

<b>DECORMEX 1000HS</b> Make Up Salt	1.5 /kgs
<b>DECORMEX 1000HS</b> Make Up Brightener	500 /Mls
<b>DECORMEX 1000HS</b> Replenisher Brightener	100 /mls
<b>DECORMEX 1000HS</b> Conducting Salt	1,2,5 kgs/pack
<b>DECORMEX 1000HS</b> Special Conducting Salt	1,2,5 kgs/pack
<b>DECORMEX 1000HS</b> Acid	1,2,5 kgs/pack