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# AUROMEX®

TECHNICAL

INSTRUCTIONS

DATA SHEETS

## **DECORMEX 3N** **DECORATIVE GOLD PLATING PROCESS**

### **INTRODUCTION**

The **DECORMEX 3N** process is an acid gold plating solution designed to produce a hard, scratch-resistant, mirror bright to gold deposit. The DECORMEX 3N process is specifically designed to satisfy jewellery and decorative finishing specifications. The process is suitable for both vat and barrel plating and as the name implies fully conform to the SWISS standard NIHS colour. The mirror brightness of the deposit combined with the unvarying reproducibility of the deposit colour makes the DECORMEX 3N process ideally suited to high volume production plating.

### **PROCESS FEATURES**

- \* Economic, Easy to operate.
- \* Uniform 3N Karat colour.
- \* High resistance to tarnishing and scratching.
- \* Uniform distribution.
- \* High coating thickness.

### **DEPOSIT CHARACTERISTICS**

APPEARANCE	: Mirror bright, lustrous deposit
KARAT	: 23.5 Karats
HARDNESS	: 160-200 mHv20g
Specific Gravity	: 17.5 – 18.5

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**AUROMEX®**

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## 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  $0.25\text{A/dm}^2$  are recommended.

## PREPARATION OF SOLUTION

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

Materials required :

Potassium Gold Cyanide (68.3%)	58.6 grams
<b>DECORMEX 3N</b> make up salt (Code 1070)	1.5 kgs.
<b>DECORMEX 3N</b> make up Brightener A (Code 1071)	500 mls.
<b>DECORMEX 3N</b> make up Brightener B (Code 1072)	500 mls.
<b>DECORMEX</b> Acid (Code 1090)	
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 (Code 1070), stir until completely dissolved and then add the 500 mls. each of Make Up Brightener A & B (Code 1071 & 1072).
- (3) Check and adjust pH to 3.5 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 3.5 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	3.0-5.0	4.0
pH ELECTROMETRIC		3.5-4.0	3.5
TEMPERATURE	°C	35-40	35
CATHODE CURRENT DENSITY	A/dm <sup>2</sup>		
STILL VAT PLATING		0.5-1.2	1.0
BARREL PLATING		0.2-0.4	0.2
DENSITY	°Be	13-16	15
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	25-30	28
TIME TO DEPOSIT 1u at 1 A/dm <sup>2</sup>	min	6-8	7

## BATH MAINTENANCE

Gold metal content of the solution should be maintained at the recommended concentration (3.0-5.0 g/l) by periodic additions of gold potassium cyanide 68.3%. Replenishment 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 3N** process deposit metal at the following rates.

<u>Amp-min</u>	<u>Gold consumed</u>
3570	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 (100 mls.) **DECORMEX 3N** Replenishment Brightener (Code 1075).

**CONDUCTIVITY** : Specific gravity of the solution should be maintained between 13-16 Brume. If for any reason excessive drag out occurs, and the specific gravity of the solution drops below 13 °Be ,conducting salts (Code 1050) 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 interface 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 and Numbers :

<b>DECORMEX 3N</b> Make Up Salt (Code 1070)	1.5 kgs/unit
<b>DECORMEX 3N</b> Make Up Brightener A (Code 1071)	500 mls/unit
<b>DECORMEX 3N</b> Make Up Brightener B (Code 1072)	500 mls/unit
<b>DECORMEX 3N</b> Replenishing Brightener (Code 1075)	100 mls/unit
<b>DECORMEX 3N</b> Conducting Salt (Code 1050)	1,2,5 kgs/pack
<b>DECORMEX 3N</b> Acid (Code 1090)	1,2,5 litre/pack