
AUROMEX®

TECHNICAL

INSTRUCTIONS

DATA SHEETS

DECORMEX EF99H

HIGH EFFICIENCY ELECTROFORMING 24K HARD GOLD PROCESS

INTRODUCTION

The AUROMEX **DECORMEX EF99H** is a newly developed high efficiency pure hard gold process, specially designed to give a hard, ductile and fine grained pure gold deposits at thickness in excess of 1.25mm (0.050 inches). This process is advantageous to many applications especially in jewellery industries and ideal for electroforming purpose, for building up thick deposits where subsequent finishing is not required.

FEATURES

- * Semi-Bright to Mirror Bright finish gold deposits
- * Deposits are fine, 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 with even thickness distribution
- * Extremely economy

DEPOSIT PROPERTIES

Appearance	: Semi Bright to Bright finish (rich lemon yellow colour)
Deposit purity	: 99.9% up
Karat	: 24 Kt
Hardness	: 120 - 160 mHv20g
Deposit Density	: 18.0 - 18.5 g / dm ²
For 1 micron deposit	: 180 - 185 mgm / dm ²

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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 / dm ² are recommended.

PLATING BATH PREPARATION :

AUROMEX DECORMEX EF99H 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%)		220 gms.
Decormex EF99H Make Up Salt	(Code 31090)	1.0 kgs
Decormex EF99H Make Up Brightener	(Code 31091)	100 mls.
Decormex EF99H Make Up Brightener H	(Code 31097)	100 mls.
Decormex EF99H Hardener	(Code 31092)	100 mls.
Decormex EF99H Acid Adjustment Solution	(Code 31095)	
Potassium Hydroxide (AR Grade)		

Make up Procedures :

1. Pour 6 litres of demineralised or distilled water into the clean plating tank.
2. Add in the 1.0kgs Make Up Salt (Code 31090), stir until completely dissolved and then add the 100 mls each of Make Up Brightener , H and Hardener (Code 31091/31097/31092).
3. Check and adjust pH to 4.5 with Decormex EF99H acid or 10% KOH 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 4.5 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	10 - 20	15
pH electrometric		3.8 – 4.8	4.5
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	17 - 30	24

BATH MAINTENANCE

Gold metal content of the solution should be maintained at the recommended concentration (10-20 g/l) by periodic additions of gold potassium cyanide 68.3%. Replenisher Brightener is supplied as a liquid in units of 100 mls each of replenisher brightener and replenisher H (code 31098 and 31096). 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 EF99H** process deposit metal at the following rates

<u>Amp-min</u>	<u>Gold consumed</u>
1350	100 grams

For every 100 grams gold replenishment (147 grams 68.3% PGC) add one units 100mls each of **DECORMEX EF99H** Repl. Br & Repl. H (Code 31098 & 31096).

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 8 Be conducting salt (Code 31099) 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 (within 3.8-4.8). To lower the solution pH by addition of Decormex EF99H Acid (code 31095). To Increase pH by addition of 10% potassium hydroxide solution.

Deposit Hardness : Under normal operation, we can adjust/increase the gold deposit hardness by addition of **DECORMEX EF99H** Hardener (code 31092) in 1-2 mls/litre.

PACKING :

DECORMEX EF99H Make Up Salt	(Code 31090)	1.0 kg / unit
DECORMEX EF99H Make Up Brightener	(Code 31091)	100 mls / unit
DECORMEX EF99H Make Up Brightener H	(Code 31097)	100 mls / unit
DECORMEX EF99H Hardener	(Code 31092)	100 mls / unit
DECORMEX EF99H Special Brightener	(Code 31094)	1 litres / unit
DECORMEX EF99H Replenisher Brightener	(Code 31098)	100 mls / unit
DECORMEX EF99H Replenisher H	(Code 31096)	100 mls / unit
DECORMEX EF99H Conducting Salt	(Code 31099)	1 , 2 , 25 kgs / pack
DECORMEX EF99H Acid Adjustment Solution	(Code 31095)	1 , 2 , 5 litres / pack