AUROMEX®

TECHNICAL INSTRUCTIONS

DATA SHEETS

AUROMEX EF-14K

DECORATIVE 14K ALLOY ELECTROFORMING GOLD PROCESS

INTRODUCTION

AUROMEX EF-14K is a high efficiency alkaline 14 karat Gold-Copper-Cadmium alloy gold electroforming process that produces an 14 Karat gold deposit very similar in colour to the Swiss Standard NIHS 5N. The process is specially designed to give a hard, ductile and fine grained 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.

AUROMEX EF-14K produces extremely hard, fully bright deposit with a uniform colour and long durability. High hardness makes these coatings hard wearing with excellent resistance to tarnishing and corrosion. **AUROMEX EF-14K** process is extremely stable, and easy to operate.

PROCESS FEATURES

* Economic, easy to operate
* Uniform in deposit karat
* High resistance to tarnishing and wearing
* Uniform distribution, thickness

DEPOSIT CHARACTERISTICS

Karat	14 kt rose gold colour (approx.)
Purity	58.5% gold, 33.5% Copper, 8% cadmium (approx.)
Hardness	320-420 mHv20g
Colour	Similar to Swiss Standard NIHS 5N
Deposit Density	14.5-15.5 g / dm^2
For one micron deposit	145-155 mgm/ dm^2

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EQUIPMENT REQUIRED

Tank	: Polypropylene containers or steel containers lined with a suitable plastic material such as Tygon, polyvinyl chloride, or Koroseal are recommended. Glass tanks may also be used.
Rectifier	: A standard D C Power supply, with an ampere output capacity sufficient to meet the requirements of the plating operation, should be used.
Filtration	: Solution clarity should be maintained by continuous filtration through double cotton cartridges.
Agitation	: Moderate agitation is necessary to maintain metal distribution. Mechanical (radial) agitation at 8 m/min. may be used, combined with a jet stream equipped with special diffusers.
Temperature Control	: Solution temperature should be maintained at optimum by thermostatically controlled stainless steel or titanium immersion heaters.
Anodes	: Platinized titanium. Stainless steel (316 or 347) anodes may also be used.

PLATING BATH PREPARATION

AUROMEX EF-14K make up agent is supplied in unit form. Each unit contains all the products required to make 10 litres of 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%)	73.2 grammes
AUROMEX EF-14K Make Up Solution (Code 40500)	10 litres
AUROMEX EF-14K Acid (Code 40470)	
Potassium Hydroxide	

Procedures :

1) Add in the 10 litres **AUROMEX EF-14K** Make Up Solution (code 40500).
2) Check and adjust pH to 10.5 with 10% potassium hydroxide or **AUROMEX EF-14K** Acid.
3) Dissolve the Gold Potassium Cyanide (68.3%) in a separate quantity of demineralised or distilled water and then add to the above solution.
4) Stir and check the pH again if necessary.
5) The solution is then ready to use

OPERATING CONDITIONS

	Unit	Range	Optimum
Gold metal content	g/l	4.0-6.0	5.0
Copper metal content	g/l	50-70	60
Cadmium metal content	g/l	2.0-4.0	3
Free Cyanide (KCN)	g/l	25-35	30
Anode to Cathode ratio		1 to 2	
Cathode current density	A/ dm^2	1.0-2.0	1.5
pH, electrometric at 60℃		10-12	10.5
Density	°Be	18 or higher	18
Temperature	℃	60-70	65
Cathode Agitation	m/mim	8-12	12
Plating rate	mgm/Amp-min	60-65	65
Time to deposit 1 μ at 1.5A/dm^2	min	1.5-2.0	1.5

BATH MAINTENANCE

The gold metal content should be maintained at the recommended concentration (4.0-6.0 g/l) with periodic additions of gold potassium cyanide (68.3%).

Gold and alloy metal replenishment :

Replenishment based on regular analysis is the best method of control but replenishment can be made according to ampere-minutes consumed.

Amp-min	Gold Deposit
2630	100 grams

For every 100 grams gold metal replenishment (147 grams 68.3% PGC), needed to be added together with one unit each of the 200mls **AUROMEX EF-14K** Replenisher Brightener (code 40560) and 120 g **AUROMEX EF-14K** Copper Replenisher Salts (code 40550).

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

pH Adjustment : This should be measured daily, using a meter, at the operating temperature of the bath. In order to maintain the pH value of **AUROMEX EF-14K** between 10-12 electrometric, proceed as follows :-
To raise pH, use 10% w/v solution of potassium hydroxide (chemically pure).
To lower pH, add **AUROMEX EF-14K** Acid (Code 40470)

Packaging :

AUROMEX EF-14K Make Up Solution	(code 40500)	10 litres/unit
AUROMEX EF-14K Replenisher Brightener	(code 40560)	200 mls/unit
AUROMEX EF-14K Copper Replenisher Salt	(code 40550)	120 grams/unit
AUROMEX EF-14K Acid Adjustment Solution	(code 40470)	1,2 or 5 litres/unit
AUROMEX EF-14K Complexing Agent	(code 40490)	0.5 or 1.0 kgs/unit
AUROMEX EF-14K Wetting Agent	(code 40200)	1,2 or 5 litres/unit
AUROMEX EF-14K Special Replenisher Br.	(code 40100)	1,2 or 5 litres/unit