
AUROMEX®

TECHNICAL

INSTRUCTIONS

DATA SHEETS

AUROMEX EF-18G

DECORATIVE 18K ALLOY ELECTROFORMING GOLD PROCESS

INTRODUCTION

AUROMEX EF-18G is a high efficiency alkaline alloy gold electroforming process that produces an 18 Karat deposit very similar in colour to the Swiss Standard NIHS 1N. 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-18G 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-18G** 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	18 kt green gold colour (17.5-18.5% approx.)
Purity	75% gold, 23.5% silver, 1.5% cobalt (approx.)
Hardness	140-160 mHv20g
Colour	Similar to Swiss Standard NIHS 1N
Deposit Density	16.0-16.5 g / dm ²
For one micron deposit	160-165 mgm/ dm ²

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CHEMICALS CORPORATION

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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-18G 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%)	117.1 grammes
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AUROMEX EF-18G Make Up Solution (Code 2100)	10 litres
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AUROMEX EF-18G Acid (Code 2140)

Potassium Hydroxide

Procedures :

- 1) Add in the 10 litres **AUROMEX EF-18G** Make Up Solution (code 2100).
- 2) Check and adjust pH to 12.0 with 10% potassium hydroxide or **AUROMEX EF-18G** 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

	<u>Unit</u>	<u>Range</u>	<u>Optimum</u>
Gold metal content	g/l	6.0-10.0	8.0
Silver metal content	g/l	1.5-2.5	2.0
Free Cyanide (KCN)	g/l	70-90	80
Anode to Cathode ratio		1 to 2	
Cathode current density	A/ dm ²	0.3-0.8	0.5
pH, electrometric at 60°C		10-12.5	12.0
Density	°Be	10 or higher	15
Temperature	°C	20-25	20
Cathode Agitation	m/mim	3-8	5
Plating rate	mgm/Amp-min	50-70	55
Time to deposit 1 μ at 0.8A/dm ²	min	2.5-3.5	3.0

BATH MAINTENANCE

The gold metal content should be maintained at the recommended concentration (6-10 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.

<u>Amp-min</u>	<u>Gold Deposit</u>	<u>Silver Deposit</u>
2400	100 grams	35 grams

For every 100 grams gold metal replenishment (147 grams 68.3% PGC), 35 grams silver metal (65 grams 54% potassium silver cyanide) needed to be added together with one units, 100mls **AUROMEX EF-18G** Replenisher Brightener (code 2160).

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-18G** 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-18G** Acid (Code 2140)

Packaging :

AUROMEX EF-18G Make Up Solution	(code 2100)	10 litres/unit
AUROMEX EF-18G Replenisher Brightener	(code 2160)	100 mls/unit
AUROMEX EF-18G Acid Adjustment Solution	(code 2140)	1,2 or 5 litres/unit
AUROMEX EF-18G Complexing Agent	(code 2190)	0.5 or 1.0 kgs/unit
AUROMEX EF-18G Wetting Agent	(code 2150)	1,2 or 5 litres/unit