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# AUROMEX®

TECHNICAL

INSTRUCTIONS

DATA SHEETS

## **AUROPLEX AG-12**

### **DECORATIVE ALLOY GOLD PLATING PROCESS**

#### **INTRODUCTION**

AUROPLEX AG-16 is an alkaline cyanide alloy gold electroplating process that produces a 12 Karat pale yellow colour gold deposit (Gold-Silver alloy) up to microns thickness. The process is specially designed for fine jewellery, watch cases, band and spectacle frame as an undercoating for saving cost.

#### **PROCESS FEATURES**

- \* Economic, easy to operate
- \* Uniform 12 Karat pale gold colour
- \* High resistance to tarnishing and wearing
- \* Uniform distribution, thickness

#### **DEPOSIT CHARACTERISTICS**

Karat	: 12 Kt. (approx.) gold / silver
Purity	: 50% (gold), 47.5% (silver), 2.5% (cobalt)
Hardness	: 160-180 mHv20g
Colour	: Pale yellow
Specific gravity	: 11.5-12.5

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**AUROMEX®**

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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 : Solution temperature should be maintained at optimum by thermostatically
- Control : Controlled stainless steel or titanium immersion heaters. (when needed)
- Anodes : Platinized titanium ruthenium anodes may also be used.

## **PLATING BATH PREPARATION**

AUROPLEX AG-12 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%)	88 grammes
Silver Potassium Cyanide (54%)	93 grammes
AUROPLEX AG-12 Make Up Salt (Code 80400)	1.5 kgs
AUROPLEX AG-12 Make Up Brightener (Code 80401)	1 litre
AUROPLEX AG-12 Make Up Additive (Code 80402)	200 mls
AUROPLEX AG-12 Acid (Code 80405)	
Potassium Hydroxide	

Procedures :

- 1) Fill to a clean plating tank 2/3 of the required final volume with distilled or deionised water.
- 2) Add in the 1.5 kgs Make Up Salt (Code 80400), stir until completely dissolved and then add the 1 litre Make Up Brightener (Code 80401) and 200 mls Make Up Additive (Code 80402).
- 3) Check and adjust pH to 11.0 with 10% potassium hydroxide or AUROPLEX AG-12 Acid.
- 4) Dissolve the Gold Potassium Cyanide (68.3%) and Potassium Silver Cyanide in a Separate quantity of demineralised or distilled water and then add to the above solution.
- 5) Stir and check the pH again 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>
Gold metal content	g/l	5-8	6.0
Silver metal content	g/l	4-6	5.0
Free Cyanide (KCN)	g/l	80	70-90
Anode to Cathode ratio		1 to 2	
Cathode current density	A/dm <sup>2</sup>	0.5-1.0	0.8
pH, electrometric at 60 C		10-12	11
Density	°Be	10 or higher	15
Temperature	°C	20-25	20
Cathode Agitation	m/min	8-12	12
Plating rate	mgm/Amp-min	70-80	75
Time to deposit 1 $\mu$ at 0.8 A/dm <sup>2</sup>	min	2-2.5	2

## BATH MAINTENANCE

The gold metal content should be maintained at the recommended concentration (5.0-8.0 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.

<u>Amp-min</u>	<u>Gold Deposit</u>
2650	100 grams

For every 100 grams gold metal and 50 grams silver metal replenishment (147 grams 68.3% PGC and 93 grams 54% potassium silver cyanide), add one units AUPOLEX AG-12 replenishment.

1 unit AUPOLEX AG-12 Replenishment consists of :  
100 mls AUPOLEX AG-12 Replenisher Brightener (Code 80550)

As drag out losses cannot be accounted for accurately, analytical checks should be 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 AUROPLEX AG-12 between 10-12 electrometric, proceed as follows :  
To raise pH, use 10% w/v solution of potassium hydroxide (chemically pure).  
To lower pH, add AUROPLEX AG-12 Acid (Code 80470)