
AUROMEX®

TECHNICAL INSTRUCTIONS

DATA SHEETS

AUROMEX HT-16

DECORATIVE ALLOY GOLD PLATING PROCESS

INTRODUCTION

AUROMEX HT-16 is a slightly alkaline alloy gold electroplating process that produces an 16 Karat deposit very similar in color to the Swiss Standard NIHS 4N. The process is specially designed for fine jewelry finishes, watch industry and especially suitable for the spectacle frame industry.

AUROMEX HT-16 produces extremely hard, fully bright deposit with a uniform color and long durability. High hardness in the range of 400-450 Vickers makes these coatings hard wearing with excellent resistance to tarnishing and corrosion. **AUROMEX HT-16** process is extremely stable, easy to operate and will deposit any require thickness up to 30 microns.

PROCESS FEATURES

- * Economic, easy to operate
- * Uniform 16 Karat color
- * High resistance to tarnishing and wearing
- * Uniform distribution, thickness

DEPOSIT CHARACTERISTICS

Karat	16 Kt (approx.)
Purity	67% (approx.)
Hardness	400-450 mHv20g
Color	Similar to Swiss Standard NIHS 4N
Specific gravity	14.5-15.5

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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 ruthenium anodes may also be used.

PLATING BATH PREPARATION

AUROMEX HT-16 make up agent is supplied in unit form. Each unit contains all the products required to make 10 liters of solution. It does not contain gold.

The following instructions are for the preparation of 10 liters of solution. Material required :

Gold Potassium Cyanide (68.3%)	65.9 grams
AUROEMX HT-16 Make Up Solution	10 liters
AUROEMX HT-16 Acid (Code 6047)	
Potassium Hydroxide	

Procedures :

- 1) Fill to a clean plating tank 2/3 of the required final volume with the Make Up Solution.
- 2) Check and adjust pH to 10.5 with 10% potassium hydroxide or AUROMEX HT-16 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) Add the remaining Make Up Solution into the tank, stir it well and the solution is ready to use.

OPERATING CONDITIONS

	<u>Unit</u>	<u>Range</u>	<u>Optimum</u>
Gold metal content	g/l	4.0-5.0	4.5
Copper metal content	g/l	40-60	50
Cadmium metal content	g/l	1-3	2
Free Cyanide (KCN)	g/l	25-30	25
Anode to Cathode ratio		1 to 2	
Cathode current density	A/dm ²	1-1.5	1.2
pH, electrometric at 60°C		10-12	10.5
Density	°Be	18 or higher	18
Temperature	°C	60-70	65
Cathode Agitation	m/min	8-12	12
Plating rate	mgm/Amp-min	65-70	65
Time to deposit 1 μ at 1.2 A/dm ²	min	2.0-2.5	2.2

BATH MAINTENANCE

The gold metal content should be maintained at the recommended concentration (4.0-5.0 g/l) with periodic additions of gold potassium cyanide (68.5%).

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>2300</u>	<u>100 grams</u>

For every 100 grams gold metal replenishment (147 grams 68.3% PGC), add one units **AUROMEX HT-16** replenishment.

1 unit **AUROMEX HT-16** replenishment consists of :

110 grams **AUROMEX HT-16** Copper Replenishment Salts (Code 6055)

200 mls **AUROMEX HT-16** Replenishment Brightener (Code 6056)

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 HT-16** 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 HT-16** Acid (Code 6047)