
AUROMEX®

TECHNICAL INSTRUCTIONS

DATA SHEETS

DECORMEX C12

HIGH EFFICIENCY ACID HARD GOLD ELECTROPLATING PROCESS

INTRODUCTION

AUROMEX DECORMEX C12 is a new **Nickel Free** complexed metallic brightened high efficiency acid hard gold electroplating process specially formulated for high quality jewellery , spectacle frames , watch cases and cutlery.

DECORMEX C12 is based on an entirely new acid gold electrolyte that contains an effective Organic and metallic complex (gold – cobalt – indium metallic complex). High efficiency , even distribution characteristics and an exceptional throwing power make **DECORMEX C12** an economic process to use. Increased output is obtained with a plating rate of 20-30 mgm/Amp-min (5.0-8.0 minutes to deposit one micron at 1.0 A/dm² depends on operating temperature).

DECORMEX C12 produces mirror bright extreme hard and ductile deposits of approximate 21.5-22 karats that are uniform pale yellow in colour (12 kt Colour). There is no need to employ special additional finishing procedures with this process. Hardness values in the range 250-320 Vickers prolong the fine appearance and value of **DECORMEX 12** coatings and eliminate wear point problems. The deposits are non-porous and resistant to tarnishing and corrosion.

PROCESS FEATURES

- * Higher cathode efficiency and ability to plate thicker deposit.
- * Excellent distribution and throwing power.
- * Good corrosion resistance.
- * Lower internal stress of deposits.
- * Wear and abrasion resistant.
- * Good tolerance to metallic impurities.
- * Easy to operate.
- * Nickel Free

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CHEMICALS CORPORATION

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DEPOSIT CHARACTERISTICS

Appearance	: Mirror bright , lustrous deposit
Deposit purity	: 92-94%
Karat	: 21.5-22 Karats
Hardness	: 250-320 mHv20g
Deposit Density	: 16.5-17.5 g/cm ³
For 1 micron deposit	: 165-175 mgm/dm ²
Colour of deposit	: 12 kt pale yellow colour

EQUIPMENT REQUIRED

Tank	Polypropylene or PVC glass fiber reinforced tanks are suitable.
Heater	Heating is required and temperature regulation is essential. Therefore, thermostatically 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 stepless 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, Platinized Titanium anodes with an area sufficient to provide a maximum current density of 0.25A/dm ² are recommended.

PREPARATION OF SOLUTION

The following instructions are for the preparation of 10 litres of Electrolytes.

Materials required :

Potassium Gold Cyanide (68.3%)	29.3 grams
DECORMEX C12 Make Up Salt (Code C1220)	1.5 kgs.
DECORMEX C12 Make Up Brightener (Code C1221)	1 litre
DECORMEX ACID (Code C1232)	
Potassium Hydroxide	

Make Up Procedures :

- 1) Pour 6 litres of demineralised or distilled water into the clean plating tank.
- 2) Add in the 1.5 kgs. Make Up Salt (Code C1220), stir until completely dissolved and the 1 litre Make Up Brightener (Code C1221) .
- 3) Check and adjust pH to 3.6 with 10% potassium hydroxide or **DECORMEX ACID** (Code C1232).
- 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 3.6 if necessary with **DECORMEX ACID** or potassium hydroxide.
- 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	1.0-4.0	2.0
Metallic Cobalt content	g/l	3.0-6.0	4.0
Metallic Indium content	g/l	0.3-1.2	0.5
pH electrometric		3.5-4.0	3.6
Temperature	°C	30-45	35
Cathode current density	A/dm ²		
still vat plating		0.5-2.0	1.0
Barrel plating		0.2-0.4	0.2
Density	°Be	13-18	15
Anode : Cathode ratio , Vat		3:1-5:1	4:1
Barrel		2:1-3:1	2:1
Agitation		vigorous	vigorous
Plating rate	mgm/Amp-min	20-30	22
Time to deposit 1 u at 1 A/dm ²	min	5-8	6

BATH MAINTENANCE

Gold metal content of the solution should be maintained at the recommended concentration (1-4 g/l) by periodic additions of gold potassium cyanide 68.3% .

Replenishment Brightener is supplied as a liquid in units of 100 mls. One unit contains all the necessary agents 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 C12** process deposit metal at the following rates.

<u>Amp-min</u>	<u>Gold consumed</u>
4830	100 grams (at 35 °C, 1 ASD)

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

For every 100 grams gold replenishment(147 grams 68.3% PGC) add one units (100 mls.)

DECORMEX C12 Replenishment Brightener (Code C1222)

Conductivity : Specific gravity of the solution should be maintained between 13-18 Baume. If for any reason excessive drag out occurs, and the specific gravity of the solution drops below 13 °Be conducting salts (Code 1225) 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. To lower the solution pH by addition of **DECORMEX ACID**.
To increase pH by addition of 10% w/v potassium hydroxide.

CONTROL OF IMPURITIES

In general, any metallic impurities could interfere with the operation of the **DECORMEX** gold bath. Introduction of metallic impurities into the bath should be prevented by proper rinsing of the parts to the plated and a **DECORMEX S-100** gold strike prior to gold plating.

PACKING

When ordering, reference should be made to the following code numbers:

DECORMEX C12 Make Up Salt (Code C1220)	1.5 Kgs./unit
DECORMEX C12 Make Up Brightener (Code C1221)	1 litre/unit
DECORMEX C12 Replenishment Brightener (Code C1222)	100 mls./unit
DECORMEX C12 Conducting Salt (Code C1225)	1,2,5 kgs/pack
DECORMEX C12 Special Conducting Salt (Code C1255)	1,2,5 kgs/pack
DECORMEX C12 Acid (Code C1232)	1,2,5 litre/pack