

**DESCRIPTION**

Golden Rose is the first 18 kt pink thickness electrolyte available on the market in an acidic process. This system is particularly indicated for decorative applications which require hard gold or thickness plating in a pink shade while reaching thickness up to 5 micron. The gold is co-deposited with copper to generate an alloy which is 75% (18 kt) gold by title granting a significant cost savings. With a 400 HV hardness the layer is durable and tightly nit at the microstructure. The majority of Gold/Copper systems available on the market operate on a chemical principle which requires a constant balance of the copper/cyanide ratio in order to maintain the alloy and color of the electrolyte. This requires routine maintenance and adds significant management costs to the system use. Our system is acidic, simplifying the maintenance to that of other acid gold electrolytes, making it the easiest system of its kind to manage on the market today.

- 18 kt pink gold color
- Thickness up to 3  $\mu\text{m}$
- 18 kt deposition without free cyanide
- Nickel, Cobalt and Cadmium free

**DEPOSIT DATA**

Purity (%)	75.0
Hardness [HV 0.01]	400 - 450
Density [g/cm <sup>3</sup> ]	16.0
Thickness from-to [ $\mu\text{m}$ ]	0.02 - 3
Aspect	Shiny
Color	Pink

**PRODUCT FORM**

Metal concentration	4 g/l
Product pH	Acidic
Format	Ready to use liquid
Color of the product	Blue
Storage time	2 years
Volume	1 L

PRODUCT USAGE	RANGE	OPTIMAL
Voltage [V]	1.0 - 3.0	1.8
Current density [A/dm <sup>2</sup> ]	0.3 - 0.8	0.7
Working temperature [°C]	40 - 50	40
Deposition time [µm/min]	0.2 @ 0.7 A/dm <sup>2</sup>	
Cathodic efficiency [mg/Amin]	50 - 55	50
pH	4.8 - 5.2	5.0
Solution density [°Bé]	10 - 14	12
Anode/cathode ratio	3:1 - 4:1	4:1
Anode type	Ti/Pt or Mixed oxides	
Stirring	Moderate	

## METAL CONCENTRATION

METAL g/l	RANGE	OPTIMAL
Au	3.5 - 4.0	4.0
Cu	1.8 - 2.2	2.0

## COLOR COORDINATES

L *	83.9
a*	9.6
b*	14.7
c*	17.6

**Note:** Color coordinates here reported have been measured on a white underlayer and they are to be intended as PURELY INDICATIVE being strongly dependent on underlayer color, on thickness of the deposit and on specific design (shape) of the surface.

## RELATED PRODUCTS - MAINTAINING

AUS683.100G*	Replenisher salt for gold plating 68.3 g Au/100 g
K18R.1L*	Acidic 18 kt pink gold thick plating replenisher - 1 L
K18BR.1L	Brightener for acidic 18 kt pink gold thick plating - 1 L
K18M.1L	Wetting agent for acidic 18 kt pink gold thick plating - 1 L
K18A.1L	Acidic 18 kt pink gold thick plating additive - 1 L
K18SCA.5KG	Acidic conducting salts for acidic 18 kt pink gold thick plating - 5 kg
K18SCB.5KG	Alkaline conducting salts for acidic 18 kt pink gold thick plating - 5 kg

\* Product which is subject to the international regulations concerning transportation of dangerous goods

**USER GUIDE****ANODES**

Use Titanium Platinized anodes with a layer in platinum not lower than 1.5 µm. Alternatively, it is also possible to use Mixed oxides anodes.

**READY TO USE SOLUTION PREPARATION**

GT4PINK is a ready-to-use plating solution at the concentration of 4 g/l of gold. No preparation is required. Pour it directly into working tank, heat it up to the preset temperature and once reached start to plate.

**WORKING TANK MATERIALS**

For small volume amount solutions - in beaker scale - use Pyrex glass; vice versa use PP /PVC/HDPE tanks for larger volumes and equipped with an efficient exhaust fume/suction or aspiration system (the gold plating solution might develop potentially toxic or harmful fumes that can also be irritant if inhaled or with allergenic effects).

**DC POWER - RECTIFIER**

Use a current DC rectifier having an alternate current residue –ripple– less than 5% and having an output amperage enough to obtain a proper electroplating process. The rectifier should be equipped with:

- Amperemeter
- Voltmeter
- Ampere/minutes counter (for bigger installations only).

**HEATING SYSTEM**

The admitted materials for heaters are: Pyrex, quartz or PTFE.

**FILTRATION AND MOVEMENT**

For bigger plating installations (> 5 liters) it is advisable to keep the plating solution continuously filtered and in movement through a magnetic driven filter pump with 5-15 µm cartridges in PP that must have been previously conditioned by boiling them for at least 3 hours and then washed with DI water in order to prevent any possible organic contamination. The rate speed of the feed for the pump must not be too much high in order to realize a moderate movement for the liquid.

**PLATING SOLUTION MAINTENANCE**

It is necessary to maintain the bath according to the optimal operating conditions by the addition of a gold solution (obtained by dissolving salts of AUS683, gold (I) potassium cyanide 68.3% in hot demineralized water) and some units of REPLENISHER. The replenisher K18R contains copper, additives, and brighteners necessary for maintaining the electrolyte at optimal parameters. Replenishment is pre-calibrated based on Amp/minute consumption.

Maintenance schedule: every 900 Amp/min. restore with

- 50 grams of gold salt to 68% AUS683
- 1 liter of replenisher K18R

In addition to REPLENISHER, common system recovery products, may be necessary to maintain the electrolyte over the long term. The latter are listed here below:

- K18BR: brightener useful in the event that the deposit lacks brilliance or if cloudy effect is visible at the medium-low current density areas.

-K18M: wetting agent to increase the wettability of the pieces.

-K18SCA and K18SCB: acidic and alkaline conductive salts respectively to increase the density of the bath in case it is too low or to adjust the pH in case it is not too far with respect to the reference values range.

-K18A: liquid additive to be used in the case of a hazy deposit.

## GT4PINK

READY TO USE THICK PLATING BATH 4G/L GOLD PINK COLOR

### PRETREATMENTS

This gold plating solution for micron application can be directly deposited on Gold, Silver, Palladium, other precious metal substrates and Nickel. For other metals (i.e. Copper and its alloys or Silver) it is necessary to make an intermediate deposit of Palladium or Nickel to prevent copper migration. An intermediate deposit or precious metal plating strike is necessary before depositing onto Tin, Lead, Zinc, Aluminum, and Iron-based materials in general. As pre-treatment it is suggested to run a preliminary degreasing through a cycle of ultrasonic degreasing treatment -solution followed by a wash step into running water. Then proceed with the electrolytic degreasing step by using the alkaline degreasing solution SGR1. Once the items has been washed again in demineralized water, then proceed in activate and neutralize the surface of the same by dipping them into the slightly acidic solution NEUT1 for 3 - 4 times subsequently at room temperature, in order to be sure that no any alkaline residues coming from the degreasing previous steps are dragged into the rhodium solution together with the same items to be treated (which would lead to a reduction of its life). After the neutralization, wash in demineralized running water and immerse the pieces in the gold plating solution for the plating treatment.

### POST TREATMENTS

The electrolyte should be removed from the surface as quick as possible. Wash off the plating solution residues in a recovery rinse (static rinse). Rinse the parts in circulating deionized water and dry. A possible last rinse in hot static water before dry can help in gain more brightness and luminosity.

### WATER PURITY

To prevent contamination of the plating solution during any replenishing operations, use demineralized water with a conductivity of less than 3  $\mu\text{S}/\text{cm}$  (containing no traces of organic compounds, Chlorine, Silicon, or Boron). To achieve maximum deposit quality we suggest to use our high- grade purity WATER.

### ITEMS AND PLATING SOLUTION MOVEMENT

Being this micron gold plating an acidic solution, hydrogen bubbles tend to adhere to the items and must be removed by agitating the solution, by moving the rack or by tapping or knocking on the rack. Otherwise darker stains on the parts may occur. The movement of the rack can be provided by a cathodic bar movement system at a speed of 5-10 cm/s. For maximum performance and in particular in terms of resulting color do not use an excessive agitation. A moderate agitation of the pieces to be plated will be sufficient.

### ABOUT WORKING TEMPERATURE

Temperature is a paramete that might influence the final gold deposition color. GT4PINK gives best performance at around 45°C. In this sense it is important that the solution stays as closer as possible to this temperature value.

### ABOUT pH

The solution pH should be held at the nominal value as it can have strong influence on the final deposit color. It is possible to correct it by adding K18SCA acidic conducting salts to lower it or of alkaline conducting salts K 18SCB to raise it.

### ABOUT SOLUTION DENSITY

To correct the plating solution density, and in the specific case to higher it, add the conducting salts K18SCA and K18SCB in the ratio of: 1 part of K18SCA per every 2 parts of K18SCB.

Keep in mind that 9-10 g of this salt mixture higher the density of the plating solution of 1°Bé. For this reason 9 g will be made of:  
3 g of K18SCA + 6 g of K18SCB

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### **SUPPLEMENTARY INFORMATION**

As reported on the previous paragraph all the operating parameters will influence the deposited color, especially temperature and pH. For this reason, it is strongly recommended to consult our Technical Customer Service before modifying the nominal operative conditions.

### **SAFETY INFORMATION**

Being an acidic solution, the electrolyte is an irritant to the skin, eyes and mucous membranes. Caution should be exercised when using the product, avoiding contact with the eyes and skin. Use gloves and safety goggles. For further information please refer to the relative MSDS.

### **DISCLAIMER**

All recommendations and suggestions in this bulletin concerning the use of our products are based upon tests and data believed to be reliable. Since the actual use by others is beyond our control, no guarantee expressed or implied, is made by Legor Group, its subsidiaries or distributors, as to the effects of such use or results to be obtained, nor is any information to be construed as a recommendation to infringe any patent.