


GENERAL INFORMATION

GFRED-ECO is a mild alkaline flash gold plating electrolyte that deposits a uniform, bright layer in red gold. The final color produced can be considered a high end fashion red gold color while corresponding to the normalized NIHS standard 6N gold. Though the solution is a mild alkaline formula, it functions without the help of potassium cyanide, therefore there are no free cyanides in the solution. This makes for a safer and non-toxic approach to electroplating. The alloy deposited is more complex than standard red gold plating solutions making GFRED-ECO more resistant to tarnish or oxidation. This red gold plating solution is intended for decorative use as the maximum thickness obtainable is 0.2 micron.

Product form

Metal concentration	1 g/l (Au)
Product's pH	Alkaline
Solution form	Ready-to-use
Solution form	Liquid
Plating solution color	Blue
Storage time	2 years
Volume	1 liter

Deposit data

Solution appearance	Shiny
Purity (%)	99.9
Hardness [HV 0.01]	90-100
Density [g/cm ³]	19.0
Plating solution color	Red
Thickness range [μm]	0,1 - 0.2



Operating data	RANGE	OPTIMAL
pH	10.00-11.00	10.5
Voltage [V]	4.0-6.0	5.0
Current density [A/dm ²]	0.5-5.0	2.0
Working temperature [°C]	50-60	55
Exposure time (sec)	30 - 50	40.0
Cathode efficiency [mg/Amin]	8-14	10.0
Anode-cathode ratio	>1:1	
Anode type	Platinized titanium	
Agitation	Moderate	

Metal concentration	METAL	RANGE (g/l)	OPTIMAL (g/l)
	Gold	0.5 - 1.5	1.0

Color coordinates

L*	85.5
a*	10.4
b*	17.0
c*	19.9

**PREPARATION**

GFRED-ECO is a ready-to-use plating bath at the concentration of 1 g/l of gold. No preparation is required.

EQUIPMENT

Working vessel materials: Pyrex glass / PVC / polypropylene; Power supply: DC current rectifier with low residual AC (<5%); Heating element; Anode type: Platinized titanium [1.5-2.5 µm] or stainless steel

For larger bath volumes: Magnetic driven filter pumps with 5-15 µm cartridge (before use, boil and wash the cartridges with demineralized water for 3 hours to prevent organic contamination); Amp/min counter.

PRE TREATMENT

GFRED-ECO can be deposited directly onto Palladium, Nickel, and precious metal substrates. An intermediate deposit of Palladium or Nickel is required over Silver, and all alloys containing copper to prevent copper migration. An intermediate deposit or precious metal plating strike is necessary before depositing onto Tin, Lead, Zinc, Cadmium, Aluminum and Iron.

POST TREATMENT

Electrolyte should be removed from the surface as quick as possible. Rinse off the bath rests in a recovery rinse (still rinse). Rinse the parts in circulating deionized water and dry.

WATER PURITY

To prevent contamination of the bath both during its preparation and any replenishing operations, use demineralized water with a conductivity of less than 3µS/cm (containing no traces of organic compounds, Chlorine, Silicon, or Boron).

BATH MAINTENANCE

Temperature and pH: Best performances are obtained within a working temperature of 50-60°C. Optimum pH value is 10.5; nevertheless it is acceptable when kept between 10.0 and 11.0. If necessary correct by adding 25% phosphoric acid solution to lower the pH or by adding 25% potassium hydroxide to raise the pH.

Analytical controls: This process is easy to maintain, but it initially requires frequent analytical controls in order to obtain a correct concentration level of all the metals present. Clearly, metal concentrations greatly influences the final color deposited; therefore, incorrect management of these parameters shall inevitably lead to unwanted color shades. Some general guidelines for maintenance are described below:

- Adding GFAG-ECO will lead the color towards white/pale hues.
- Adding GFCU-ECO will lead the color towards red/pink hues.
- Adding AUS683 salts or GF10AUR solution will lead the color towards yellow hues besides to restore the gold content.

SUPPLEMENTARY INFORMATION

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. For larger volumes it is sufficient the use of a magnetic drive filter pump with a not too much high capacity.

SAFETY INFORMATION

Being an alkaline solution, the electrolyte is an irritant to the skin, eyes and mucous membranes. Caution should be exercised when using the product. Keep away from acid based chemicals. For further information please refer to the MSDS.

DISCLAIMER

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, 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.

**RELATED PRODUCTS LIST****Prodotto Complementari**

AUS683	Gold (I) potassium cyanide 68.3%
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Prodotto Alternativi

GFRED-ECOC	Concentrate red gold solution for bath plating 1 g/100 ml
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