

GFRED-ECO

Technical chart

Last revision

31/03/2014

READY TO USE CYANIDE FREE FLASH PLATING BATH 1g/l PINK

Pag. 1/2

Colour **Red**

[L: 85,5 a: 10,4 b: 17,0 c: 19,9 YI: 40,8]

Product description

GFRED-ECO is a ready-to-use red gold flash plating bath. The main features of this electrolyte are as follows:

- **Cyanide free flash gold plating**
- **Working temperature: 50-60C**
- **Good penetrating power**
- **Good distribution**

Recommended applications

GFRED-ECO can be used for flash plating. GFRED-ECO can be deposited directly on palladium, gold, nickel and silver; an intermediate deposit of nickel or palladium (at least 0.2 µm) is recommended before it can be used to plate on copper or brass; an intermediate specific treatment is required for plating on stainless steel with GFX1.

Deposit data

Purity [%]	99.9
Density [g/cm ³]	19.0
Hardness [HV 0.01]	90-100
Thickness [µm]	0,1-0,2
Appearance	Shiny

Operating data

	Range	Optimum
Voltage [V]	4.0 - 6.0	5
Current density [A/dm ²]	0.5 - 5.0	2.0
Operating temperature [°C]	50 - 60	55
Treatment time [s]	30 - 50	40
pH	10.00 - 11.00	10.50
Anodes	Pt or Ti/Pt	Pt or Ti/Pt
Agitation	Moderate	Moderate
Anode/Catode surface ratio	>1:1	
Cathode efficiency [mg/Amin"]	8 - 14	10
Solution filtering	>15 lit.	
DC rectifiers	0-12V/0-10-30-100 A	

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Additional informations

Packaging

The product comes in a high-density polyethylene bottle.

IMPORTANT: Once the package is opened the solution should be transferred to the container in which it is to be used; under no circumstances should the solution be stored inside its original packaging.

Equipment

It is more practical to use glass containers for quantities up to 5 litres, whereas for greater quantities it is best to install PTFE or polypropylene plants equipped with:

- A current rectifier with an ammeter and voltmeter, with low residual AC (< 5%).
- Amp/min counter.
- Platinum-coated titanium anodes, coated with 2.5 µm of platinum or stainless steel AISI 316.
- Magnetic drive filter pumps with 5-15 µm cartridge.

Note: Boiling and washing of the cartridges with demineralized water is recommended to prevent organic contamination before use.

Demineralized water

To prevent contamination of the bath, both during its preparation and in any subsequent topping up operations, use demineralized water with a conductivity of less than 3 µS/cm (containing no traces of any organic compounds, Silicon or Boron). To achieve maximum deposit quality we recommend using our high-grade purity WATER.

Correct working sequence

- Ultrasonic degreasing (60°C) using SGR2USP
- Recovery/rinsing with tap water
- Electrolytic degreasing using SGR1 or SGR1P
- Recovery/rinsing with tap water
- Rinsing in demineralized water
- Neutralization using NEUT1 or NEUT-SA
- Rinsing in demineralized water
- **GFRED-ECO (following the correct operating conditions)**
- Recovery/rinsing with tap water
- Rinsing in demineralized water
- Drying (steam is not advised)

Agitation of the solution and/or pieces

For maximum performance, particularly in terms of colour, do not use excessively vigorous agitations. So, for processing tanks containing considerably large volumes agitation of the solution using a magnetic drive filter pump of not too high a capacity is recommended, while for containers of modest size moderate agitation of the pieces is adequate.

Temperature and pH

Best performances are obtained at 50-60°C working temperature. Optimum pH value is 10.5, nevertheless it is acceptable when included 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 influence the final deposited color; therefore, an incorrect management of these parameters shall inevitably lead to unwanted colors. Some general guidelines for maintenance are below described:

- Adding GFAG-ECO will lead the colour towards white/pale hues.
- Adding GFCU-ECO will lead the colour towards red/pink hues.
- Adding GF10AUR will lead the colour towards yellow hues.

Safety Information

Being an alkaline solution, the **GFRED** bath is irritant to 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 safety datasheets.

Bath plating solutions	Code
Ready-to-use plating bath (1 g/l packaging)	GFRED-ECO
Make-up solution for GFRED-ECO (1 L packaging)	GFRED-ECOB
Concentrated solution of GFRED-ECO 1g/100 ml (100 ml packaging)	GFRED-ECOC
Complete replenisher solution per GFRED-ECO 2g/100 ml (100 ml packaging)	GFRED-ECOR
Bath formation salts for GF series gold plating (1 kg packaging)	GF-SF
Silver replenishing solution for GFRED-ECO (1 g/l packaging)	GFAGR-ECO
Copper replenishing solution for GFRED-ECO (10 g/l packaging)	GFCUR-ECO
Gold replenishing solution for GF series gold plating	GF10AUR