LEGOR®

JEWELRY PLATING

TECHNICAL SHEET

GFBROWN-K

READY TO USE GOLD FLASH PLATING BATH BROWN COLOR

DESCRIPTION

- Chocolate brown gold color
- Good tarnish resistance
- Decorative layers up to 0.2 micron
- Good color repeatability and stability
- Low gold content
- Nickel, lead and cadmium free
- Contains no free cyanide

Brown gold or otherwise known as Chocolate Gold is now obtainable through a plating deposition. GFBROWN-K gives jewelers and electroplating operators everywhere an alternative gold color option away from the standard yellow and red tones that are available today, granting more design options. Chocolate Gold is also an excellent way to highlight brown stones in a setting, bringing out the stones color with less contrast and giving more emphasis to the highlight color. GFBROWN-K is intended for decorative use therefore has been designed for flash plating permitting a deposition thickness of up to 0.2 micron. This brown gold plating solution is Nickel, Lead, and Cadmium free.

PRODUCT FORM	
Form	Liquid
Material color	Pale blue
Storage time	1 year
Volume	1 liter

DEPOSIT DATA	
Purity (%)	85
Hardness (HV 0,01)	80 - 100
Density (g/cm3)	16.0
Thickness (µm)	0.02 – 0.2
Appearance	Shiny
Color	Brown

OPERATING DATA	RANGE	OPTIMAL
Voltage (V)	3.0 – 5.0	3.5
Current density (A/dm^2)	1.5 - 3.0	2.0
Working temperature (°C)	60 - 70	65
Treatment time (sec)	20 -- 60	45
pH	3.5– 4.5	4.0
Cathode efficiency (mg/Amin)	8- 14	10
Solution density [°Bé]	12 - 16	14
Anode type	Titanium platinized	
Agitation	Moderate	

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PREPARATION

GFBROWN-K is a ready-to-use plating solution. No preparation is required. Pour it directly into working tank, heat it up to the preset temperature and once reached start to plate.

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

This gold plating solution for flash application can be directly deposited directly 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 TREATMENT

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. As this deposit is well passivated versus tarnishing if a post treatment as protective e-coating on its top is required, the pieces plated with **GFBROWN-K** must be properly activated. In doing so it will be necessary to run preliminarily a short anodic degreasing process for 5-7 seconds at 3 V in order to remove the very thin layer of passivation for the brown gold layer and after that it will be then possible the subsequent treatment.

WATER PURITY

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

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BATH MAINTENANCE

For volumes up to 5-6 liters it is advisable to use GFBROWN-K without any replenisher and until its exhaustion. For bigger tanks it is possible to maintain this electrolytic system by using the appropriate replenisher solution **GFBROWNKR1** (the blue solution, sold in 1 liter bottle containing 10 replenisher units in total) and **GFBROWNKR2** (transparent solution, sold in one liter bottle containing 10 replenisher untis in total) within the following guideline: add every 3000 Aminutes (which are corresponding to a consumption of about 10 g of fine gold) 14.6 g of AUS683 salts (gold potassium cyanide 68.3%) together with 1 unit replenisher for both GFBROWNKR1 and GFBROWNKR2 which is equal to the addition of: 100 ml of GFBROWNKR1 + 100 ml of GFBROWNKR2.

Anyway we here repeat that this is just a general guideline as a frequent chmical analysis (by Atomi Absorption or ICP or even chemical titration) of the plating solution is strongly suggested in order to know exactly the real metal species concentration in the same system and run the replenishing operation in the most appropriate way.

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.

When used at higher voltage, GFBROWN-K will give layers which result in a deeper brown color. If the voltage is too high, burning will occur. For the darkest color range achievable for the selected surface, it is advisable to find the maximum admitted voltage to apply without taking burning at the high current density areas.

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

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