

**DESCRIPTION**

- Color flexibility
- Optimum distribution and throwing power
- Easy to use
- Thickness up to 0.2 micron
- Anti-burn technology

This customizable gold flash electrolytic system is designed for decorative purposes allowing for operators customize the color of the gold deposit by adjusting the alloy metals. By the usage of a colorimeter system we are able to assist our clients in matching any gold flash color obtainable all while making it easy to control with pre-calibrated replenishment systems based on amp/minute consumption. As the system is only a flash, the maximum obtainable thickness is 0.2 micron. As the system does not require the addition of free cyanide over time, it is easier to control over the life of the bath. Possible applications cross a wide range of industries: from fashion to eye ware, and jewelry to gifts.

**DEPOSIT DATA**

<b>Purity (%)</b>	99
<b>Hardness (HV 0,01)</b>	90 -100
<b>Density (g/cm3)</b>	19.3
<b>Thickness (µm)</b>	0.05 – 0.2
<b>Appearance</b>	Shiny
<b>Color</b>	Customizable


**PRODUCT USAGE**
**RANGE**
**OPTIMAL**

<b>Voltage (V)</b>	3 - 6	4.5
<b>Working temperature (°C)</b>	55 - 65	60
<b>pH</b>	9 – 11	10
<b>Solution density (Bé)</b>	2 - 6	4.0
<b>Plating time (sec)</b>	10 - 60	20 - 40
<b>Cathode efficiency (mg/Amin)</b>	10	
<b>Anode type</b>	Ti/Pt or stainless steel	
<b>Agitation</b>	Not necessary	
<b>Filtration</b>	Suggested	

*We here highlight that all the operating parameters reported in this technical chart are referred to ready-to-use gold flash solution with the gold already dissolved as gold (I) potassium cyanide salt and normally in a range that the fine gold is variable between 0.4-1.2 g/l.*

**PRODUCT FORM FOR GFB MAKE\_UP**

<b>Metal concentration (g/l)</b>	No metals dissolved
<b>Form</b>	Concentrate solution (25 L=33 liters ready-to-use)
<b>Material color</b>	Transparent
<b>Storage time</b>	2 years
<b>pH of the solution</b>	Alkaline

# FLASHGOLD

CUSTOMIZABLE GOLD FLASH ELECTROLYTIC SYSTEM

## NECESSARY PRODUCTS

<b>GFB</b>	Concentrate make-up for gold flash (25L=33 Liters ready-to-use)
<b>GFB-7</b>	Concentrate make-up for gold flash (5,25L=7 Liters ready-to-use)
<b>AUS683*</b>	Gold (I) Potassium cyanide salts (68.3% Au)
<b>FLASHGOLD-R</b>	Replenisher solution for flash gold plating 1 L
<b>GFNI*</b>	Nickel complex solution for gold flash 20 g/l (Ni), 1L
<b>GFCU*</b>	Copper complex solution for gold flash 30 g/l (Cu), 1L
<b>GFAG*</b>	Silver complex solution for gold flash 30 g/l (Ag), 1L
<b>FLASHGOLD-SC</b>	Conducting salts for gold flash 5kg
<b>GFM</b>	Wetting agent for gold flash 1L

\* Substances which are subjected to the international regulations concerning transportation of dangerous goods.

## READY-TO-USE SOLUTION PREPARATION

Before to start the ready-to-use solution preparation, be sure that the working tank is perfectly cleaned. If not, the same must be washed carefully with 2% KOH + 2% sodium phosphate solution heated at 50°C leaving it inside the working tank for not less than two hours. After that period wash it with abundant DI water.

At this point follow stepwise this procedure:

- Fill the working tank with the **GFB** or **GFB-7** make-up in the necessary quantity required to set the desired volume plating solution
- Dissolve the required amount of **AUS683** Gold Potassium Cyanide salt 68.3% considering that 1 g of fine Au is equal to 1,46 g of salts. **This operation must be done by dissolving previously it in a portion of hot demineralized water and then poured it in the working tank.**
- Add then the eventual required bonding metal complex solution (**GFCU**, **GFAG**, **GFNI**) in the quantity necessary to match the final desired gold tone color.
- Raise the final volume and ready-to-use concentrations for plating solution by adding DI water. In doing so, we remind that the **GFB** make-up is concentrate at 75% of the ready to use volume and that part of this water has been (in case) already introduced by the solution of gold potassium cyanide salts pre-dissolved as well as with the addition of the required complexing metals solutions..
- Heat it up at 60°C (working temperature) and start to plate.

### FOR 100 L Gold Flash preparation at 0.8 g/l Au

All those premised, the following are the quantities necessary for 100 liter preparation of gold flash working at 0.8 g/l Au:

**GFB:** 75 liters  
**AUS683:** 117,13 g

**GFAG** and **GFCU** have to be added according with the final achievable color and for this reason please refer to our **Technical Support Service**. We will indicate you the right quantities of both complexing metals to be added in initial make-up set up phase as well as during standard restoring operations and analysis.

**DI-WATER:** Until reaching final 100 L volume.

## BATH MAINTENANCE

The criterium to do the additions is:

### EVERY 1000 Amin add:

- 10 g of fine gold as Gold (I) Potassium Cyanide, 68.3% salt.,
- 1 liter of **FLASHGOLD-R** unit replenisher

For some specific colorations consider that specific replenisher solutions are available and sold in 1 liter bottle containing 5 replenisher units of 200 ml each. In these cases, the restoring guideline advises to add 1 unit of these replenisher solutions – *equal to 200 ml of solution*- together with 10 g of fine gold.

NOTE: All those values must differ from case and case, depending on the characteristics of the plant, type of item to be plated, or working methodology.

This plating process is very easy to run **but being every specific gold color strongly dependent of every metal species dissolved**, IT IS STRONGLY SUGGESTED TO DO FREQUENT ANALYTICAL CHECKS (by AA or ICP) IN ORDER TO NOT MOVE TOO MUCH FROM THE EQUILIBRIUM SITUATION THE PLATING SOLUTION. Every single metal will be adjusted by using every single bonding metal complex concentrate solution (**GFCU, GFAG, GFNI**).

**Our Technical Service Department is always available to provide you the right analysis and service you need to maintain properly the plating solution.**

## EQUIPMENT

In order to drive properly the gold flash plating process we suggest to work with the following equipment:

- Materials for working tank: Polypropylene;
- DC rectifier with low ripple residue: (AC < 5%);
- Ampereminute counter;
- Heating elements in Pyrex or Titanium or quartz in order to reach 60°C where the plating solution gives the optimal results
- Agitation: suggested for solution through a Filter Magnetic Driven Pump.
- 5-15 µm filter cartridges in PP that must to be previously boiled and washed with DI water for 3 hours at least to prevent any possible organic contamination.
- Anodes: In Ti/Pt or Steel

## WATER PURITY

To preserve the electrolytic solution from any type of possible contamination during both preparation and restoring operation it is strongly recommended the use of deionized water (DI water) with a conductivity less than 3 µS/cm (without any traces of organic compounds, silicates and boron)

## SERVICE TOOLS OVERVIEW

**pH corrections:** to raise it add slowly concentrate potassium hydroxide solution (20-30%); in case to lower it (very seldom) add in case 20-30% of phosphoric acid solution.

**Density of the solution:** maintain it inside optimum range. In case it has to be raised use 10-12 g/l of **FLASHGOLD-SC** conducting salt to higher the density of 1 °Bé.

**Burns at high current density areas:** if it happens it means that normally the density of the solution is lower than nominal values (see higher). If by chance the density is ok but the problem is still happening it is possible to add 0.5-1.0 ml/l of wetting agent **GFM** solution to eliminate this problem.

**On the items agitation while plating:** for gold flash treatments it is not necessary.

## PRE TREATMENT

Preliminary degreasing should be done through a cycle of ultrasonic degreasing solution. Rinse with running water and then degrease electrolytically by the use of the suitable alkaline solution of the **NEATECH** line suggested by our Technical Department..

Once finished rinse the items with DI water and then activate the surface of the same by dipping the items in **SATT** acidic solution for a couple of times subsequently at room temperature to be sure that no alkaline traces are dragged into the gold plating solution.

#### POST TREATMENT

The excess of electrolyte is dragged out together with the just treated pieces has to be immediately removed from items surface. For this reason to a recovery step in static water is generally followed a washing step inside a tank with current DI water. After wash dry the pieces or move to the following step.

In case after wash, before drying, an intermediate step of immersion in hot DI water will be of beneficial for the plating item to give more shiny aspect to the plated items.

#### SAFETY INFORMATION

Classification and designation are noted in the Material Safety Data Sheet (according to the European legislation) for any product of this process. The safety instructions and the instructions for the environmental protection have to be followed in order to avoid hazards for people and environment. Please consider the explicit details in our Material Safety Data Sheets.

#### 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.*