GOLDTOUCH INC
12801 BEREA ROAD CLEVELAND, OHIO 44111
(800) 940-7874 (216) 941-7400 FAX (216) 941-7472
www.goldtouchinc.com

PRODUCT DATA

INSTAGOLD FLASH™

USER'S MANUAL FOR UNIFORM GOLD PLATING

InstaGold Flash is a **unique** gold plating bath which deposits gold crystals in a uniform manner. This not only saves platers from **30-70%** of their gold costs but also deposits the gold in a uniform, consistent color that is easy to operate and maintain throughout the life of the plating bath. InstaGold Flash also delivers a hard, durable, and wear resistant gold plate in 10-24 Kt. gold colors from the same bath. InstaGold Flash operates at the low gold concentration of just one (1) pennyweight of gold per gallon, thus eliminating high gold dragout loses and high gold inventories. All InstaGold Flash baths deposit uniformly between 0.5-3.0 micro-inches within the 10-24kt. color range. Greater thicknesses, up to 100+ micro-inches are also attainable with the same flexibility of different karat colors by using certain additives and higher gold concentrations.

Simple Maintenance Concept

InstaGold Flash consists of two (2) components:

(1) The initial material used for make-up, called "InstaGold Flash", and (2) PGC (Potassium Gold Cyanide) as a replenishing additive. Under most circumstances, an InstaGold Flash bath will maintain its chemical balance and desired gold plating characteristics with regular additions of PGC alone. The pH of the solution usually remains within operating limits over the life of the bath. InstaGold Flash is supplied as a ready-to-use solution.

INSTAGOLD FLASH ELECTROLYTIC

InstaGold Flash is unique when used as an electrolytic gold plating bath.

InstaGold Flash's strong adhesion capabilities do not require higher operating temperatures. At 100-120ºF, 10 Kt through 24 Kt gold colors are easily attained. Karat colors are controlled by increasing time while maintaining less than one to two micro-inches of deposited hard acid gold, within 15-30 seconds. Gold savings are increased by minimal gold dragout due to the low concentration of gold per gallon (0.75 to 1.00 dwts./gal. or 0.3 to 0.4 gms./ltr.)

Only PGC is required for the replenishment of InstaGold Flash.
No other salts or additives are needed.
(However, infrequent additions of Cell Agent may be required when using InstaGold Flash Plus.)

One troy ounce of PGC gold plated by InstaGold Flash solution should **cover over 100,000 square inches** surface area with an average of one micro-inch of durable gold.

InstaGold Flash is replenished with PGC up to a final total concentration of one half (1/2) ounce per gallon (10 dwts./gal.). Therefore a 40 gallon bath of InstaGold Flash will have a useful life of at least 20 oz. of gold plated out of it. Minimizing contaminants prolongs the life of the solution.

When the life of the bath is over, the small amount of gold remaining in the bath is retrievable by plating out onto either nickel plated or stainless steel cathodes that can then be stripped with TivaStrip-G gold stripper or scraped off. The remaining used solution is then neutralized with bleach and directed to your waste treatment system for pH adjustment and foreign metal filtration.

OPERATING SPECIFICATIONS

Applications:
Nickel, Palladium, Gold, Silver, and certain grades of Brass

GETTING STARTED & CONTINUOUS USE:

1. EQUIPMENT

TANK: Polypropylene, Fiberglass or Pyrex .

HEATERS: Quartz heaters if bath temperature exceeds 125F, otherwise 316 stainless steel may be used.

ANODES: 316 stainless steel anodes only.

2. SET UP

Regardless of the prior use, clean tank thoroughly and leach the tank overnight with a 2-5% sulfuric or muriatic acid solution.

WARNING:

If tank was previously used for any type of cyanide based solutions, proper and complete destruction of the cyanide must be assured prior to leaching.

After emptying tank of leached solution, rinse tank thoroughly with clean water. Fill tank with InstaGold Flash electrolyte without diluting.

Add 1 dwt. (1.5 gms.) of PGC (Potassium Gold Cyanide) per gallon.

NOTE: Use 67.5% or 68% regular PGC.
Do not use alloyed gold salts or gold salts that contain free Cyanides.

Operation Conditions:

Temperature	Electrolytic: 115° - 125°F (40° - 50°C) Immersion: 170-190°F
Voltage	2 - 5 volts (3 - 15 ASF)
Time	15 - 60 seconds
pH	3.8 - 4.2 (InstaGold Flash Regular), 5.2 - 5.5 (InstaGold Flash Plus)
Gold Concentration	0.75 - 1.00 dwt./gal. or 0.3 - 0.4 gms./ltr.
Agitation	High speed cathode rod agitation required (50-70 RPM) min.

NOTE: Maintain at least 0.5 dwts. of gold/gal. InstaGold Flash will consistently produce uniform colors and deposits until gold concentrations fall below 0.5 dwt./gal.

EXAMPLE: FOR 40 GALLON BATH

To Set Up For 40 gallon Bath:

1. Polypro or fiberglass tank must be clean and free of debris.
2. Fill tank to 40 gallons with InstaGold™ Flash.
3. Heat bath to 120°F (43°C).
4. Add 2 troy ounces of PGC.
5. Check connections from rectifier to buss bars to be sure that positive (+) is connected to outside bars and negative (-) is connected to middle bar.
6. Hang stainless steel anodes; usually 2- 4 are required per rack or barrel on each outside (anode) bar.
7. Check proper functionality of the bath by placing a nickel plated substrate attached to copper wire on the middle (cathode) bar. Set rectifier to 3 volts. After 30 seconds, piece should be bright yellow gold color.

TIME CYCLE: The plating time is dependent on the finish required. If the temperature of the plating bath is maintained constant, then the longer the

time in the gold bath, the richer the Karat color with only a minimal increase in gold thickness. Refer to the chart below as a quick reference to approximate results being achieved in the industry. The karat colors below are plated at 3v-5v for rack & barrel respectively.

KARAT COLOR CONTROL GUIDE

Temperature:	**110 F**		**130 F**		**150 F**	
	Karat Color		Karat Color		Karat Color	
TIME	Rack	Barrel	Rack	Barrel	Rack	Barrel
15 Seconds:	10Kt-14Kt	10Kt-12Kt	10Kt-14Kt	10Kt-14Kt	14Kt-18Kt	14K-16Kt
30 Seconds:	14Kt-16Kt	10Kt-14Kt	18Kt-22Kt	14Kt-16Kt	22Kt-24Kt	16Kt-18Kt
60 Seconds:	16Kt-18Kt	14Kt-16Kt	22Kt-24Kt	16Kt-18Kt	24Kt-Rich	18Kt-24Kt
90 Seconds:	18Kt-24Kt	16Kt-18Kt	24Kt-Rich	18Kt-24Kt	24Kt-Rich	24Kt-Rich

Usually, the higher the current supplied by the rectifier, the lighter karat colors are achieved. The Lower the current, the richer karat colors are achieved. If typical additions of your older gold bath before the use of InstaGold Flash were at 1/4 OZ PGC every 5.0 amp hours, then PGC should be added every 6-6.5 amp hours for InstaGold Flash. When greatest gold savings are obtained, the additions may be extended to 7.0-8.0 amp hours. This amounts to a 25-45% decrease in gold usage.

REMINDER - The amount of PGC to be added is dependent on the platers normal usage.

As gold concentrations fluctuate between .5-1.1 pennyweight of gold per gallon, gold colors should not vary. InstaGold allows for a range of gold concentrations

without noticeable changes in color, assuming all other variables are maintained relatively stable. However, when operating at lower gold concentrations longer plating time is required to obtain the same color.

BATH LIFE: InstaGold Flash electrolyte will plate a total use of 1/2 Tr.Oz. of gold per gallon. For example: A 40 gallon bath that is started with two (2) ounces of gold and is then replenished slowly with gold over a two month period, and at the end of the two months the total amount of gold that was plated out of the bath was 20 ounces of gold. This bath is now depleted and must be replaced. Tivian recommends immediate replacement at this time even if the bath still seems to be working. In this manner you will always guarantee yourself no rejects or problems.

When the bath needs to be changed, pour either 1 quart of Clorox bleach or 8 ounces of 20% sodium hypochlorite into the bath to help neutralize any remaining complexed cyanides. If the pH is above 5 and under 8.5, the bath may be safely discarded.

DISSOLVING POWDERED PGC INTO A LIQUID REPLENISHER

Dissolve 1 Troy Oz. Potassium Gold Cyanide (PGC) in 200 ml. warm Deionized water. Result: Since 1 Tr. Oz. PGC = 20 dwt. (penny weights) 1 Tr. Oz. PGC in 200 ml. water = 20 dwt. replenisher. Therefore, every 10 ml. replenisher = 1 dwt.

Trouble Shooting

Bath Discoloration:

1. If bath turns light blue to dark blue, light green to dark green, or light brown to dark brown your bath is operating fine.
2. If bath turns dark gray, black, or purple/black then the bath is building up harmful contaminants. This is usually caused by inadequate copper underplate coverage which allows for tin, lead, or zinc to bleed through when immersed in a heated acidic bath. As soon as this problem is noticed, call the Tivian Support Line

(401-435-3125). There are a number of ways to rectify the problem. The best is to add CELL AGENT from Tivian. This will tie up the contaminants and allow clean gold to deposit.

NOTE: CARBON TREATMENT IS STRONGLY RECOMMENDED FOR ELECTROLYTIC PROCESSES. PLEASE CHANGE YOUR CARBON FILTER AT LEAST ONCE TO TWICE A WEEK.

Brownish or Redness in gold color plate:

1. **Organics are too high. Carbon treatment is required. (Replace carbon pack)**
2. **Cell Agent is required. Add 1/4 lb. per gallon.**
3. Temperature is too high (maintain at 115-125° F)
4. Amperage is either too high or too low
5. If gold concentration exceeds 2 pennyweights of gold per gallon, lower temperature and voltage to reduce redness.
6. Inadequate agitation. (try higher speed cathode rod agitation)
7. Ph is too high
8. Gold concentration is too high (redness) or too low (brownish)

Inconsistent gold coverage:

1. **Gold Concentration is too low**
2. Inadequate agitation (try cathode rod agitation)
3. **Bath requires replenishment of Cell Agent or Cell Agent-H**
4. Nickel is passivating. Predip items in a 15-20% HCl acid bath for 20-30 seconds rinse well prior to gold plate
5. Bath's life is over. Call Tivian Technical Support Line to confirm then start with a new solution.

InstaGold Flash System: Tank Specifications

HARDWARE and OPERATING SPECIFICATIONS

Tank #1 **(FOR ELECTROLYTIC)**

Acid/Rinse
Time - 10/10 secs.,
Temperature - Amb.
Tank Soltuion Vol: : 20
Solution : 20 gallons Activator-T/water

Tank #1 **(FOR IMMERSION)**

Acid/Rinse
Time - 10/15 secs.,
Temperature - ACID Amb., RINSE REQUIRES HEAT 120 F
Tank Soltuion Vol: : 20
Solution : 20 gallons Activator-T/water
Rinse Tank : 3 Kw Stainless Steel Heater or Steam coil

Tank #2 **GOLD PLATE: RACK : ELECTROLYTIC**

Time: 20-35 seconds
Temperature: 125 Degrees F
Rack capacity: 2-4 (12" x 18")
Tank Solution Volume: 60 gallons (32" x 20" x 24" deep)
Solution : 60 gallons InstaGold Flash + 2 Tr. Ozs. Gold
Heat : Only
Electric - 6KW Quartz or 316 Stainless Steel Heaters
Steam - 316 Stainless Steel Coil

Temp ctrl: Indicating preferred
Rods: 3 (2 anodes, 1 cathode)
Rectifier: 50 Amp 6V min.
Anodes: (8) 316 Stainless Steel anodes 4"-6" wide
Cathode Rod agitation: Required, high speed 70 RPM.
Filtration System: Required, 20" chamber ideal, carbon and polywound cartridges.

Tank #2

GOLD PLATE: BARREL : ELECTROLYTIC

Time: 30-60 seconds
Temperature: 125 Degrees F
Barrel capacity: 1 (8"x12")
Tank Solution Volume: 55 gallons, (24" x 24" x 24" deep)
Solution : 55 gallons InstaGold Flash + 2.5 Tr. Ozs. Gold
Heat : Only
Electric - 6KW (Quartz or 316 Stainless Steel Heaters)
Steam - 316 Stainless Steel Coil
Temp. control: Indicating preferred
Rods: 3 (2 anodes, 1 cathode)
Rectifier: 50 Amp 6V min.
Anodes: (4) 316 Stainless Steel anodes 6" wide
Filtration System: Required, 20" chamber ideal, carbon and polywound cartridges.

Tank #2

GOLD PLATE: BARREL or BASKET : IMMERSION

Time: 20-45 seconds
Temperature: 180 Degrees F
Barrel/Basket capacity: (1) 8"x12" barrel(No danglers) Or (1) 10"-12" round polypropylene basket
Tank Solution Volume: For Barrel: 40 gallons (24" x 18" x 24")
For Basket: 30 gallons (18" x 18" x 18")
Solution : For Barrel: 40 gallons IGF + 2 Tr. Ozs. Gold
For Basket: 30 gallons IGF +1.5 Tr. Ozs. Gold
Heat : (No metal)
Electric - 6KW Quartz Heaters Only
Steam - Teflon Coil Only
Temp ctrl: Indicating Required
Rods: none required

Rectifier: none required
Anodes: none required
Filtration System: Required, 20" chamber ideal, carbon and polywound cartridges. Also, 10" chamber of cationic resin in series.

Cost Savings and Ease of Use Recommendations:

For Electrolytic Gold Baths:

Amp Hour Meter with Timer and Automatic Rectifier shut off.

For All Gold Baths:

Closed Loop Rinse & Gold Recovery Unit.
Resin column unit plumbed in line with pump and chamber continuously filtering second drag-out tank, with resin that can be incinerated /resin able to hold up to 15 ounces of gold.

Tank #3 **Drag/Drag/Rinse**

Time - 5/5/10 secs.
Temperature : Amb.
Tank Vol : 15/15/20
Solution : water

Optional: Strongly Recommended:

Tank #4 **D.I. Hot Rinse**

Time - 5 secs.
Temperature: 110-130 F
Tank Vol : 20
Solution : water
Heat : 2KW
Temp ctrl : Non indicating

Closed Loop D.I. Spot Free Rinse Unit
Resin column unit plumbed in line with pump and chamber to maintain clean De-ionized water assuring spot free drying.