SUBJECT YELLOW GOLD PLATING
Process Specification

This specification covers the standard yellow gold plating formula and procedures employing alkali cyanide salts of gold. This specification was adopted initially by Lancaster Parts Manufacturing Plating Room.

1. FORMULA

a. Preparation:

Sodium gold cyanide (G601)	0.5 av. oz./gal.
Sodium cyanide (S114)	0.5 av. oz./gal.
Di-Sodium phosphate (D600)	1.0 av. oz./gal.
Distilled or deionized water.	
Gold anodes, 24 karat.	

b. Composition Limits: The plating bath shall be maintained within the following limits:

Gold Metal	0.2 - 0.4 troy oz./gal.
Free cyanide	0.4 - 0.6 av. oz./gal.
Di-Sodium phosphate	0.8 - 1.2 av. Oz./gal.

See S.N. 34-36-1 for Standard Sampling Procedure.

DANGER — CYANIDE HANDLING PRECAUTIONS - See S.N. 33-2-13A.

2. NOTES

a. Temperature of bath should be maintained from 51° to 66° C. (125° to 150°F).

b. Time of plating will depend upon thickness specified which should be kept at a minimum due to the high cost of gold.

c. Current density should be from 1 to 5 amp./sq. ft. of cathode area.

d. Use stainless or case hardened steel anodes to reduce gold content of bath, if too high. Use sodium gold cyanide to replenish gold content.

e. Mechanical stirring of bath is important when long-time plating is required.

f. Gold anodes shall not be left in bath when not in use.

g. Keep plating bath covered when not in use to prevent evaporation and contamination.

h. Metals such as chromium, aluminum, tin, iron, molybdenum and their alloys should be nickel plated prior to gold plating.

SCHEDULES ON FOLLOWING PAGES.

SCHEDULE NO. 1

Initially for half plate of 3C33 to reduce back emission. Barrel plating on nickel.

1. PROCEDURE

a. Parts delivered to plating room shall be free from grease and oxide.

b. Place 100 parts in mesh basket.

c. Soak parts for 2 minutes in C610 alkaline cleaning solution (Pennsalt K2, 10 oz./gal., 66° - 82° C. or 150° - 180° F.) with occasional shaking.

d. Rinse thoroughly in tap water.

e. Transfer parts to plating barrel (Daniels).

f. Add 1/4 lb. of 1/8-in. Pyrex glass beads to parts in plating barrel.

g. Place barrel and parts in plating unit containing 20% hydrochloric acid at room temperature.

h. Electroetch 2 minutes (with barrel rotating) at 6 v. DC with parts as anode.

i. Rinse thoroughly in tap water.

j. Transfer parts to barrel gold plating unit.

k. Gold plate for 1 hour at 4 amp. (2 amp./sq.ft.). Thickness shall be 0.00005 - 0.0002 inch.

l. Rinse parts and barrel in tap water.

m. Transfer parts and beads to separating screen and shake out beads.

n. Rinse parts thoroughly in tap water, then deionized water, and finally clean acetone (A55).

o. Dry.

p. Fire in line hydrogen at 600° C. for 2-1/2 minutes.

q. Inspect. Reject parts having loose plating or blisters anywhere on the part, or having incomplete coverage in the center depression, or having surface soil. Check four half plates from batch of 100 for thickness, weights and calculated thickness recorded.

*General Revision