

Acid baths—and neutral baths—containing even small concentrations of nickel or cobalt can produce deposits which contain organic-cyanide polymers (“Munier” polymer). The inclusion of these polymers contribute to the generally good wear resistance of alloy gold deposits and also to their lower densities.

Other brightening or hardening additives such as arsenic, thallium and hydrazine have also been used. These refine the grain structure and increase the hardness of the deposit.

Acid Gold Baths Plating Conditions		
Parameter	Matte Finish	Bright Finish
Temperature	40-70° C	20-50° C
Current density	1-5 A/ft ²	8-20 A/ft ²
Current Eff.	98-100%	25-35%
pH	3-6	3-5
Agitation	Moderate	Rapid
Filtration	Continuous	Continuous

SLIDE 28

A wide range of plating conditions are available with acid gold systems depending upon the desired end result. Cathode efficiency for the pure or mat finish system approaches 100%; for the bright systems about 25 to 35%.

As the acid gold bath is used the pH will rise. The pH is maintained through the use of a compatible acid. If the pH is allowed to remain below 3.0 for an extended period of time, insoluble aurous cyanide will precipitate from the system. To raise the pH, 20% potassium hydroxide solution is used.

Gold anodes generally are not used in acid systems because they will not dissolve in the bath. The usual method of gold replenishment is through the use of alkali gold cyanide salts.