Alkaline Non Cyanide Gold Baths	
Gold (as sulfite complex)	3-16 g/l
Sodium sulfite	20-100 g/l
Complexing Agents	0-100 g/l
Sodium Hydroxide	2-10 g/l
Addition Agents (Brighteners)	0-10 g/l
pH - 7 - 10	7-10
Temperature	40-60° C
C.D.	1-10 ASF
C.C.E.	~100%
Agitation	Rapid
Filtration	Continuous
Anodes	S/S, Pt/Ti, Pt/Ta

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Although gold sulfite compounds have been known for more than 100 years, plating solutions based on these complexes were developed recently (since 1962) for decorative and engineering applications.

Sodium gold sulfite [$Na_3Au(SO_3)_2$] is the source of the gold (I) metal ion. Potassium or ammonium compounds can also be used.

"Free" sulfite, as sodium sulfite, is necessary to stabilize the gold complex. It also increases solution conductivity, acts as a buffer and improves both macro- and micro-throwing power. In addition, other conducting salts such as phosphates, citrates, acetates may be added to enhance these characteristics of the solution.

Complexing Agents (chelates) such as sodium EDTA, ethylenediamine, diethylene-triamine pentaacetate increase conductivity of the solution, improve throwing power, provide buffering and can either retard the deposition of base metal impurities or permit the co-deposition of alloying elements.

Sodium Hydroxide increases solution conductivity and maintains bath pH.

Addition agents—brighteners—reduce or inhibit grain growth and increase deposit hardness. These include heavy metals (such as copper, iron, nickel, cobalt) or their organic complexes (such as CuEDTA), antimony, selenium, tellurium, arsenic (as AsO_3) compounds.

The baths are characterized as providing good macro- and micro-throwing power, the latter approaching leveling. Bright, hard, yet ductile deposits with very fine grained or amorphous structure are produced; thick pure and alloy deposits can be plated.