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GOLD PLATING PROCESS

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This invention relates to an improved bath for plating gold on other metals.

Prior art processes for plating gold are inadequate for obtaining a sound plating of thicknesses more than a few mils, particularly where the plating has to cover base metals such as soft solder and relatively unclean surfaces.

The present invention provides a gold plating bath and process which produces a smooth, semi-hard, bright deposit which is non-porous and effective for producing a plating which can be any thickness, even exceeding 25 mils in thickness. It also has a throwing power approaching 100 percent, and has excellent covering power over base metals such as soft solder and over relatively unclean surfaces.

One example of a preferred bath in accordance with the present invention is an aqueous solution containing gold cyanide, potassium cyanide and sulfonated castor oil in amounts per liter of solution as follows:

Gold cyanide.....	grams.....	25
Potassium cyanide.....	do.....	80
Sulfonated castor oil.....	cc.....	1

In percentages these proportions are 75.47 percent potassium cyanide, 23.59 percent gold cyanide, and 0.94 percent sulfonated castor oil.

The specific example given above has been found to be satisfactory and preferred, however, it has been determined that satisfactory plating baths, per liter of solution, can contain the above ingredients in the following ranges: Gold cyanide from about 15 to about 50 grams, potassium cyanide from about 70 to about 125 grams, sulfonated castor oil from about 0.1 to about 10 cc.

The bath is operated at from about 50° C. to about 70° C. with a cathode current density from about 5 to 15 amperes per square foot. The anodes may be stainless steel or pure gold.

The ability of the bath to produce pore-free surfaces has been tested in the following manner. A piece of cop-

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per has been plated with one mil of gold using the bath of the above-disclosed preferred recipe. The plated copper was then immersed in hot concentrated nitric acid for a period of 24 hours. No weight loss was apparent from this treatment, thus indicating that the pinhole density present after plating with this bath is negligible or non-existent.

What is claimed is:

1. A plating solution for gold plating consisting essentially of about 15 to about 50 grams of gold cyanide, of about 70 to about 125 grams potassium cyanide, and of about 0.1 to about 10 cc. of sulfonated castor oil per liter of aqueous solution.

2. A gold plating bath consisting essentially of the following ingredients per liter of solution: gold cyanide—about 25 grams, potassium cyanide about 80 grams, and sulfonated castor oil about 1 cc.

3. The process for producing a gold plating on an article comprising immersing the surface of the article to be plated in an aqueous bath consisting essentially in each liter of aqueous solution gold cyanide about 25 grams, potassium cyanide about 80 grams, and sulfonated castor oil about 1 cc., and passing electric current through the bath with the article to be plated being the cathode.

4. The process of claim 4 including maintaining the bath between from about 50° C. to about 70° C.

5. The process of claim 4 including maintaining the cathode current density to from about 5 amperes per square foot to about 15 amperes per square foot.

6. A process for producing a gold plating comprising immersing the part to be plated in an aqueous bath consisting essentially in each liter of solution, gold cyanide from about 15 to 50 grams, potassium cyanide from about 70 to about 125 grams, and sulfonated castor oil from about 0.1 to about 10 cc., and operating said bath between from about 50° C. to about 70° C. with a cathode current density of from about 5 to about 15 amperes per square foot of plating surface.

7. The process for gold plating comprising immersing the article to be plated in an aqueous solution containing in each liter of aqueous solution about 25 grams of gold cyanide, about 80 grams of potassium cyanide, and about 1 cc. of sulfonated castor oil, and operating said bath between 50° C. and 70° C. with a cathode current density between 5 and 15 amperes per square foot article surface.

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