Claims

(1) An electroless palladium plating solution comprising a palladium compound, an amine compound, a sulfur compound and reducing agents, said sulfur compound being selected from thioglycolic acid, thiodiglycolic acid, sodium thiosulfate and sodium sulfite, and contained in an amount of 0.01 to 0.1 mol/l, characterized in that:

(a) said reducing agents being 0.05 to 1.0 mol/l of sodium hypophospite, and 0.001 to 0.1 mol/l of sodium ammonium, or potassium formate, and

(b) said sodium hypophosphite and said formate being used in combination,

(c) thereby induction time of electroless plating being shortened and undeposition phenomenon of a palladium plating film being prevented.

(2) The electroless palladium plating solution according to claim 1, wherein the palladium compound is one or more members selected from the group consisting of palladium chloride, palladium acetate, palladium nitrate, palladium sulfate, and ammonium palladium chloride.

(3) The electroless palladium plating solution according to claim 1, wherein the amine compound is one or more members selected from the group consisting of methylamine, dimethylamine, trimethylamine, benzylamine, methylenediamine, ethylenediamine, tetramethylenediamine, diethylenetriamine, EDTA(ethylenediaminetetraacetic acid), sodium ethylenetriminetetraacetate,and tetraethylenepentamine.

(4) The electroless palladium plating solution according to claim 1, wherein a pH value thereof is 4.0 to 10.0.

(5) The electroless palladium plating solution according to claim 1, wherein a temperature thereof is 35 to 80 °C.

Claims

(1) In an electroless palladium plating solution comprising a palladium compound, an amine compound, an inorganic sulfur compound, and a reducing agent, said palladium compound being one or more selected from the group consisting of palladium chloride, palladium acetate, palladium nitrate, palladium sulfate, and ammonium palladium chloride, said amine compound being one or more selected from the group consisting of methylamine, dimethylamine, trimethylamine, benzylamine, methylenediamine, ethylenediamine, tetramethylenediamine, diethylenetriamine, EDTA, sodium ethylenetriaminetetraacetate, and tetraethylenepentamine, said inorganic sulfur compound being one or more selected from the group consisting of thioglycolic acid, thiodiglycolic acid, sodium thiosulfate, and sodium sulfite, and said reducing agents being selected from the group consisting of hypophosphorous acid compound and formic acid or formate, CHARACTERIZED IN THAT:

(a) said inorganic sulfur compound being contained in an amount of 0.01 to 0.1 mol/ℓ, and

(b) said hypophosphorous acid compound as a reducing agent being used in an amount of 0.05 to1.0 mol/ℓ, and formic acid or formate as a reducing agent being used in an amount of 0.001 to 0.1 mol/ℓ, and these reducing agents being used in combination.

(2) The electroless palladium plating solution according to claim 1, wherein a pH value thereof is 4.0 to 10.0.

(3) The electroless palladium plating solution according to claim 1, wherein a temperature thereof is 35 to 80°C.

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