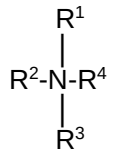
CLAIMS

1. A stripper solution for removing a resist from a substrate comprising one or more than one organic solvent, water, hydroxylamine or one or more than one derivative of hydroxylamine, one or more than one corrosion inhibitor, optional one or more than one surfactant, and one or more than one quaternary ammonium hydroxide, wherein the quaternary ammonium hydroxide has the formula:



where R^1, R^2, R^3 and R^4 are alkyl groups, benzyl, aryl groups, or a combination thereof having collectively at least 5 carbons.

2. The stripper solution of claim 1 wherein R^1, R^2, R^3 and R^4 are C_1-C_8 alkyl groups, C_1-C_8 benzyl, C_1-C_8 aryl groups, or a combination thereof.

3. The stripper solution of claim 1, wherein the quaternary ammonium hydroxide is selected from the group consisting of ethyltrimethylammonium hydroxide, benzyltrimethylammonium hydroxide, tetraethylammonium hydroxide, and tetrabutylammonium hydroxide.

4. The stripper solution of claim 1, wherein the stripper solution contains substantially free of tetramethylammonium hydroxide.

5. The stripper solution of claim 1, wherein the stripper solution comprises from about 1 to about 20 wt% quaternary ammonium hydroxide, or wherein the stripper solution comprises from about 1 to about 7 wt% quaternary ammonium hydroxide, or wherein the stripper solution comprises from about 1.5 to about 4 wt% quaternary ammonium hydroxide, or wherein the stripper solution comprises from about 1.75 to about 3.75 wt% quaternary ammonium hydroxide.

6. The stripper solution of claim 1, wherein the organic solvent is selected from the group consisting of dimethylsulfoxide, N-methyl-2-pyrrolidone, N,N-dimethylacetamide, N,N-dimethylformamide, N,N-dimethylimidazole, y-butyrolactone, sulfolane, 2-pyrrolidinone, 1-methyl-2-pyrrolidinone, 1-ethyl-2-pyrrolidinone, 1-propyl-2-pyrrolidinone, 1-hydroxyethyl-2-

pyrolidinone, 1-hydroxypropyl-2-pyrrolidinone, diethylene glycol monoalkyl ethers, dialkyl sulfones, tetrahydrothiophene-1,1-dioxides, polyethylene glycol, and preferably wherein the organic solvent is dimethyl sulfoxide.

7. The stripper solution of claim 1, wherein the composition comprises from about 20% to about 98% of the solvent, or wherein the composition comprises from about 40% to about 95% of the solvent, or wherein the composition comprises from about 60% to about 90% of the solvent.

8. The stripper solution of claim 1 comprising hydroxylamine.

9.The stripper solution of claim 1, comprising hydroxylamine derivative.

10. The stripper solution of claim 1, wherein said hydroxylamine derivative is selected from the group consisting of DEHA, isopropyl hydroxylamine or salts of hydroxylamine.

11. The stripper solution of claim 1, wherein said composition comprises hydroxylamine or one or more than one hydroxylamine derivative or mixtures thereof in amount of from about 0.1 to about 10 wt %, or in amount of from about 0.1 to about 5 wt %, or in amount of from about 0.1 to about 1.8 wt %.

12. The stripper solution of claim 1, wherein said composition comprises water in an amount from about 1 to about 30 wt %, or in an amount from about 1 to about 8 wt %, or in an amount from about 3.5 to about 9 wt %, or in an amount from about 4.4 to about 8 wt %.

13. The stripper solution of claim 1, wherein the corrosion inhibitor is selected from the group consisting of aromatic hydroxyl compounds, acetylenic alcohols, carboxyl group-containing organic compounds and anhydrides thereof, triazole compounds and imidazole compounds, or wherein the corrosion inhibitor is selected from the group consisting of benzotriazole, carboxybenzotriazole, amino-benzotriazole, D-fructose, t-butyl catechol, L-ascorbic acid, vanillin, salicylic acid, diethyl hydroxylamine, poly(ethyleneimine), and 2-mercaptobenzimidazole, or wherein the corrosion inhibitor is selected from the group consisting of benzotriazole, o-tolyltriazole, m-tolyltriazole, and p-tolyltriazole, or wherein the corrosion inhibitor comprises benzotriazole.

14. The stripper solution of claim 1, wherein the stripper solution comprises from about 0.1 to about 15 wt % of said corrosion inhibitor, or wherein the stripper solution comprises from about 0.1 to about 10 wt % of said corrosion inhibitor, or wherein the stripper solution comprises from about 0.5 to about 5 wt %of said corrosion inhibitor, or wherein the stripper solution comprises from about 0.1 to about 1 wt% of said corrosion inhibitor.

15. The stripper solution of claim 1 comprising surfactant, wherein the surfactant is selected from the group consisting of amphoteric salts, cationic surfactants, anionic surfactants, zwitterionic surfactants, non-ionic surfactants, and combinations thereof, or wherein the surfactant is selected from the group consisting of bis(2-ethylhexyl)phosphate, perfluoroheptanoic acid, prefluorodecanoic acid, trifluoromethanesulfonic acid, phosphonoacetic acid, dodecenylsuccinic acid, dioctadecyl hydrogen phosphate, octadecyl dihydrogen phosphate, dodecylamine, dodecenylsuccinic acid monodiethanol amide, lauric acid, palmitic acid, oleic acid, juniperic acid, 12 hydroxystearic acid and dodecyl phosphate.

16. The stripper solution of claim 1, wherein the stripper solution comprises from about 0.001 to about 15 wt% of said one or more than one surfactant, or wherein the stripper solution comprises from about 0.1 to about 1 wt% of said one or more than one surfactant, or wherein the stripper solution comprises from about 0.001 to about 1 wt% of said one or more than one surfactant, or wherein the stripper solution comprises from about 0.5 to about 5 wt% of said one or more than one surfactant.

17. The stripper solution of claim 1, wherein the solvent comprises from about 80% to about 98% of the composition; water comprises from about 3.5 wt% to about 9 wt% of the composition; the quaternary ammonium hydroxide comprises from about 1 wt% to about 5 wt% of the composition; and the hydroxylamine or hydroxylamine derivative or mixture thereof comprises more than zero but less than 2 wt%, the corrosion inhibitor comprises from about 0.1 to about 5 wt%, and the surfactant comprises from about 0.01 to about 5 wt % of the composition, or wherein the solvent comprises from about 80% to about 90% of the composition; water comprises from about 3.5 wt% to about 8 wt% of the composition; the quaternary ammonium hydroxide comprises from about 1 wt% to about 5 wt% of the composition; and the hydroxylamine or hydroxylamine derivative or mixture thereof comprises from about 0.5 but to 1.5 wt%, the corrosion inhibitor comprises from about 0.1 to about 5 wt%, and the surfactant comprises from about 0.01 to about 3 wt % of the composition.

18. A method for removing a resist from a substrate comprising: (a) providing a substrate having a resist thereon; (b) contacting the substrate with a stripper solution for a time sufficient to remove the resist; (c) removing the substrate from the stripping solution; and (d) rinsing the stripper solution from the substrate with a solvent, wherein the step of contacting the substrate with a stripper solution of any of the preceding claims.

19. The method of claim 18, wherein contacting the substrate with a stripper solution includes immersing the substrate in the stripping solution with agitation at a temperature of at least about 40 ºC or at a temperature of less than 40 ºC.

20. The method of claim 18, wherein contacting the substrate with a stripper solution includes spraying the stripper solution onto the substrate, wherein the stripper solution is at a temperature of at least about 40 ºC, or is at a temperature of less than about 40 ºC.

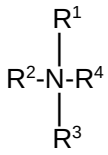
21. The method of claim 18, wherein contacting the substrate with a stripper solution includes contacting the substrate with a stripper solution substantially free of tetramethylammonium hydroxide.

22. The method of claim 18, wherein providing a substrate having a resist thereon, involves providing a substrate having a resist which is a bilayer resist having two polymer layers, or is a bilayer resist having one inorganic layer and one polymer layer.

23. An electronic device prepared according to the method comprising: (a) providing a substrate having a resist thereon; (b) contacting the substrate with a stripper solution for a time sufficient to remove a desired amount of resist; (c) removing the substrate from the stripping solution; and (d) rinsing the stripper solution from the substrate with a solvent, wherein contacting the substrate with a stripper solution involves contacting the substrate with a stripper solution of claim 1.

24. A method for preparing a stripper solution comprising the acts of: (a) providing a container; (b) providing components of the stripper solution composition; and (c) adding said components of said stripper solution to said container to provide contents, wherein said providing components involves providing one or more than one organic solvent, water, one or more than one corrosion inhibitor, hydroxylamine or one or more than one hydroxylamine derivative or mixtures thereof, optional one or more than one surfactant and one or more than one

quaternary ammonium hydroxide, the one or more than one quaternary ammonium hydroxide having the formula:



where R^1, R^2, R^3 and R^4 are alkyl groups, benzyl, aryl groups, or a combination thereof having collectively at least 5 carbons.