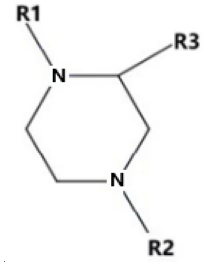
WHAT IS CLAIMED IS:

1. A photoresist stripper capable of protecting gallium arsenide (GaAs) and polyimide (PI) substrates, consisting essentially of a cyclic organic amine, an alcohol ether organic solvent, a diol, and an azole corrosion inhibitor; wherein

the cyclic organic amine has a chemical formula as shown in formula (I):



formula (I);

wherein in the formula (I), R1 and R2 are each independently selected from the group consisting of -H, $-CH_3$, $-NH_2$, $-C_6H_5$, $-CH_3C_6H_5$, $-CH_3CH_2OH$, and $-CH_3CH_2NH_2$, and R3 is selected from the group consisting of -H and $-CH_3$;

the diol is at least one selected from the group consisting of propylene glycol, 1,3-propanediol, ethylene glycol, 2,3-butanediol, neopentyl glycol, 2-methyl-2,4-pentanediol, 1,6-hexanediol, 1,2-hexanediol, and 2-butyne-1,4-diol, and a content of the diol in the photoresist stripper is in a range of 31 wt% to 40 wt%; and

the photoresist stripper is free of any one selected from the group consisting of water, an aprotic polar solvent, an oxidizing agent, a halogen compound, a hydroxylamine, a quaternary ammonium hydroxide, and an inorganic base.

2. The photoresist stripper of claim 1, wherein the cyclic organic amine is at least one selected from the group consisting of 1-(2-hydroxyethyl)piperazine, N-aminoethylpiperazine, 1-(2-hydroxyethyl) methylpiperazine, 2-methylpiperazine, 1-methylpiperazine, 4-amino-1-methylpiperazine, 1-benzylpiperazine, and 1-phenylpiperazine; and/or

the alcohol ether organic solvent is at least one selected from the group consisting of diethylene glycol monomethyl ether, dipropylene glycol monomethyl ether, diethylene glycol monoethyl ether, diethylene glycol monopropyl ether, diethylene glycol monobutyl ether, propylene glycol monomethyl ether, propylene glycol butyl ether, tri(propylene glycol) butyl ether, ethylene glycol monomethyl ether, 2-ethoxyethanol, 2-butoxyethanol, 2-phenoxyethanol, 3-phenoxy-1-propanol, triethylene glycol monomethyl ether, triethylene glycol monoethyl ether, triethylene glycol monobutyl ether, polyoxyethylene cumylphenol ether, and alkyl phenyl

polyoxyethylene ether; and/or

the azole corrosion inhibitor is at least one selected from the group consisting of 1H-benzotriazole, benzimidazole, benzothiazole, benzoxazole, 1,2,4-triazole, tolyltriazole, 5-methyl-1H-tetrazole, 1-phenyltetrazole-5-thiol, 4-amino-1,2,4-triazole, 5-aminotetrazole, alkylimidazole, 2-mercaptobenzimidazole, 3-amino-1,2,4-triazole, 2-mercapto-5-methylbenzimidazole, 2-aminobenzimidazole, 2-benzothiazolamine, 2-mercaptobenzothiazole, 1-hydroxybenzotriazole, and 1-[bis(hydroxyethyl)aminoethyl]methylbenzotriazole; and/or

the aprotic polar solvent is at least one selected from the group consisting of N-methyl-2-pyrrolidone, dimethyl sulfoxide, N,N-dimethylacetamide, N,N-dimethylformamide, sulfolane, acetone, hexamethylphosphoramide, acetonitrile, and 1,3-dimethyl-2-imidazolinone, the oxidizing agent is a peroxide, the halogen compound is a fluoride, and the quaternary ammonium hydroxide is at least one selected from the group consisting of tetramethylammonium hydroxide, tetrapropylammonium hydroxide, tetrabutylammonium hydroxide, tetraethylammonium hydroxide, benzyltrimethylammonium hydroxide, (2-hydroxyethyl)trimethylammonium hydroxide, and tris(2-hydroxyethyl)methylammonium hydroxide.

3. The photoresist stripper of claim 1, wherein the azole corrosion inhibitor bears an electron-donating group, and the electron-donating group is at least one selected from the group consisting of methyl, amino, hydroxyl, mercapto, phenyl, and alkyl.

4. The photoresist stripper of claim 1, wherein a content of the cyclic organic amine in the photoresist stripper is in a range of 5 wt% to 30 wt%; and/or

a content of the alcohol ether organic solvent in the photoresist stripper is in a range of 25 wt% to 60 wt%; and/or

a content of the azole corrosion inhibitor in the photoresist stripper is less than 0.5 wt%.

5. The photoresist stripper of claim 1, wherein a content of the cyclic organic amine in the photoresist stripper is in a range of 10 wt% to 30 wt%; and/or

a content of the alcohol ether organic solvent in the photoresist stripper is in a range of 30 wt% to 56 wt%; and/or

a content of the azole corrosion inhibitor in the photoresist stripper is in a range of 0.01 wt% to 0.3 wt%.

6. The photoresist stripper of claim 1, wherein the photoresist stripper consists of: 53.3 wt%

of diethylene glycol monobutyl ether, 31.5 wt% of ethylene glycol, 15 wt% of N-aminoethylpiperazine, and 0.2 wt% of tolyltriazole; or

the photoresist stripper consists of: 53.3 wt% of diethylene glycol monomethyl ether, 31.5 wt% of ethylene glycol, 15 wt% of 1-(2-hydroxyethyl)piperazine, and 0.2 wt% of tolyltriazole; or

the photoresist stripper consists of: 57.7 wt% of diethylene glycol monobutyl ether, 34 wt% of ethylene glycol, 8 wt% of 1-(2-hydroxyethyl)methylpiperazine, and 0.3 wt% of tolyltriazole; or

the photoresist stripper consists of: 47.7 wt% of dipropylene glycol monomethyl ether, 40 wt% of ethylene glycol, 12 wt% of 1-(2-hydroxyethyl)piperazine, and 0.3 wt% of 1-phenyltetrazole-5-thiol; or

the photoresist stripper consists of: 42.9 wt% of diethylene glycol monobutyl ether, 40 wt% of ethylene glycol, 17 wt% of 1-(2-hydroxyethyl)methylpiperazine, and 0.1 wt% of tolyltriazole; or

the photoresist stripper consists of: 37.7 wt% of dipropylene glycol monomethyl ether, 32 wt% of ethylene glycol, 30 wt% of N-aminoethylpiperazine, and 0.3 wt% of tolyltriazole; or

the photoresist stripper consists of: 48.2 wt% of dipropylene glycol monomethyl ether, 40 wt% of ethylene glycol, 11.5 wt% of N-aminoethylpiperazine, and 0.3 wt% of tolyltriazole; or

the photoresist stripper consists of: 38.2 wt% of diethylene glycol monobutyl ether, 31.5 wt% of ethylene glycol, 30 wt% of 1-(2-hydroxyethyl)piperazine, and 0.3 wt% of tolyltriazole; or

the photoresist stripper consists of: 48.2 wt% of dipropylene glycol monomethyl ether, 40 wt% of ethylene glycol, 11.5 wt% of N-aminoethylpiperazine, and 0.3 wt% of 1H-benzotriazole; or

the photoresist stripper consists of: 48.2 wt% of dipropylene glycol monomethyl ether, 40 wt% of ethylene glycol, 11.5 wt% of N-aminoethylpiperazine, and 0.3 wt% of benzimidazole.

7. The photoresist stripper of claim 1, wherein the photoresist stripper further comprises at least one selected from the group consisting of a surfactant and a pH adjuster.

8. The photoresist stripper of claim 7, wherein the surfactant is at least one selected from the group consisting of a nonionic surfactant, an anionic surfactant, and a cationic surfactant; and/or

the pH adjuster is at least one selected from the group consisting of citric acid, malic acid, maleic acid, N,N-dimethylethanolamine, diethylamine, an acidic amino acid, and an alkaline amino acid.

9. A method for removing a photoresist, comprising the following steps:

contacting a wafer containing the photoresist to be removed with the photoresist stripper of

any one of claims 1 to 8, and removing the photoresist; and

after removing the photoresist, removing the photoresist stripper from the wafer;

wherein a substrate of the wafer comprises at least one selected from the group consisting of the GaAs and the PI.