

ABSTRACT

COMPOSITIONS FOR THE REMOVAL OF POST-ETCH AND ASHED PHOTORESIST RESIDUES AND BULK PHOTORESIST

The invention provides cleaning compositions for cleaning microelectronic substrates that are able to essentially completely clean such substrates and inhibit metal corrosion or produce essentially no corrosion of the metal elements of such substrates, and to do so at relatively short cleaning times and relatively low temperatures compared to the cleaning times required for prior art alkaline-containing cleaning compositions. The invention also provides method of using such cleaning compositions to clean microelectronic substrates without producing any significant corrosion of the metal elements of the microelectronic substrate. The cleaning compositions of this invention comprise (a) at least one organic solvent, (b) at least one unneutralized inorganic phosphorus-containing acid, and (c) water. The cleaning compositions of this invention optionally can have present in the compositions other components, such as for example surfactants, metal complexing or chelating agents, corrosion inhibitors, and the like. The cleaning compositions of this invention are characterized by an absence of organic amines, hydroxylamines or other strong bases such as ammonium bases and the like that would neutralize the inorganic phosphorus-containing acid component. The cleaning and residue removal compositions of this invention are especially suitable for cleaning microelectronic substrates containing aluminum, titanium, and tungsten.

No Figure to accompany Abstract