

STABILIZATION OF PEROXYGEN-CONTAINING SLURRIES
USED IN CHEMICAL MECHANICAL PLANARIZATION

ABSTRACT

An embodiment of the instant invention is a method of fabricating an electrical device having a structure overlying a semiconductor substrate which is planarized using chemical mechanical planarization, the method comprising the steps of: forming a layer of material over the semiconductor wafer; polishing the layer of material by subjecting it to a polishing pad and a slurry which includes peroxygen; and wherein the slurry additionally includes a stabilizing agent which retards the decomposition of the peroxygen in the slurry. Preferably, the stabilizing agent is comprised of: pyrophosphoric acids, polyphosphonic acids, polyphosphoric acids, Ethylenediamine Tetraacetic acid, a salt of the pyrophosphoric acids, a salt of the polyphosphonic acids, a salt of the polyphosphoric acids, a salt of the Ethylenediamine Tetraacetic acid and any combination thereof. In addition, the stabilizing agent may be comprised of: sodium pyrophosphate decahydrate, sodium pyrophosphate decahydrate, and/or 8-hydroxyquinoline. The decomposition of the peroxygen in the slurry is catalyzed by transition metals included in the slurry, and may be caused by the pH of the slurry. The layer of material is, preferably, comprised of: tungsten, copper, aluminum, a dielectric material, and any combination thereof.

Figure 2