ABSTRACT

The invention is a precleaning process suitable for fabricating metal plugs in a low-K, carbon-containing dielectric. More specifically, the invention is a process for cleaning a contact area of a metal conductor on a semiconductor workpiece so as to minimize damage to a low-K, carbon-containing dielectric overlying the metal. After forming contact openings in the low-K dielectric so as to expose contact areas on the underlying metal conductor, the contact areas are cleaned by exposing the workpiece to an atmosphere formed by plasma decomposition of a mixture of hydrogen-containing and helium gases. Surprisingly, our preclean process can repair damage to the dielectric caused by preceding process steps, such as oxygen plasma ashing processes for removing photoresist.

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