Abstract of the Disclosure

A method of reinforcing a crucible for the containment of molten semiconductor material in a Czochralski process, and of inhibiting formation of dislocations within a single crystal grown by the process. The crucible includes a body of vitreous silica having a bottom wall and a sidewall formation extending up from the bottom wall and defining a cavity for holding the molten semiconductor material. The sidewall formation and bottom wall each have an inner and an outer surface. A first devitrification promoter is deposited on the inner surface of the sidewall formation at a temperature below about 600° C. The deposit is such that, when the crucible is heated above 600° C, a first layer of substantially devitrified silica forms on the inner surface which is capable of promoting substantially uniform dissolution of the inner surface and reducing the release of crystalline silica particulates into the molten semiconductor material as a crystal is pulled from the molten semiconductor material. A second devitrification promoter is deposited on the outer surface of the sidewall formation at a temperature below about 600° C. The deposit is such that, when the crucible is heated above 600° C, a second layer of substantially devitrified silica forms on the outer surface which is capable of reinforcing the vitreous silica body.

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