

PROCESS AND APPARATUS FOR CONTROLLING
THE OXYGEN CONTENT IN SILICON WAFERS
HEAVILY DOPED WITH ANTIMONY OR ARSENIC

Abstract of the Disclosure

A process and apparatus for regulating the concentration and distribution of oxygen in a single crystal silicon rod pulled from a silicon melt, optionally doped with antimony or arsenic, in accordance with the Czochralski method wherein an atmosphere is maintained over the melt. In batch embodiments of the process, the gas pressure of the atmosphere over the melt is progressively increased to a value in excess of 100 torr as the fraction of silicon melt solidified increases. In continuous embodiments of the process, the gas pressure of the atmosphere over the melt is maintained at or near a constant value in excess of 100 torr. The process and apparatus are further characterized in that a controlled flow of inert gas is used to remove vapors and particulate away from the surface of the rod and melt, resulting in the production of a single crystal silicon rod having zero dislocations.

Figure 1