

METHOD FOR PREPARING MOLTEN SILICON MELT
FROM POLYCRYSTALLINE SILICON CHARGE

ABSTRACT

5 A process for preparing a molten silicon melt
from polycrystalline silicon for use in producing single
crystal silicon by the Czochralski method is disclosed.
Polycrystalline silicon is initially loaded into a
Czochralski crucible, and melted to form a partially
10 melted charge which includes both molten silicon and
unmelted polycrystalline silicon. The molten silicon has
an upper surface above which the unmelted polycrystalline
silicon is partially exposed. Granular-polycrystalline
silicon is fed onto the exposed unmelted polycrystalline
15 polycrystalline silicon in a manner sufficient to allow the granular-
polycrystalline silicon to dehydrogenate while it is
resident on the surface of the unmelted polycrystalline
silicon and before it becomes immersed in the molten
silicon. The granular-polycrystalline silicon and the
unmelted polycrystalline silicon are then fully melted to
20 form a molten silicon melt. The method results in
improved zero defect yield, throughput and mean hot cycle
times during the production of single crystal silicon
ingots.

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