Process for Separating and Recovering Materials from Kerf Slurry Waste

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Abstract : Slurry waste is a byproduct generated from the slicing process of multi-crystalline silicon ingots. This waste can be used as a secondary resource to recover high purity silicon which has a great economic value. From the management perspective, the ever increasing generation of kerf slurry waste loss leads to significant challenges for the photovoltaic industry due to the current low use of slurry waste for silicon recovery. Slurry waste, in most cases, contains silicon, silicon carbide, metal fragments and mineral-oil-based or glycol-based slurry vehicle. As a result, of the global scarcity of high purity silicon supply, the high purity silicon content in slurry has increasingly attracted interest for research. This paper presents a critical overview of the current techniques employed for high purity silicon recovery from kerf slurry waste. Hydrometallurgy is continuously a matter of study and research. However, in this review paper, several new techniques about the process of high purity silicon recovery from slurry waste are introduced. The purpose of the information presented is to improve the development of a clean and effective recovery process of high purity silicon from slurry waste.

Keywords : Kerf-loss, slurry waste, silicon carbide, silicon recovery, photovoltaic, high purity silicon, polyethylen glycol
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