

HeraGlaze[®]

Up to
4 %
more yield
per ingot

Pure Efficiency

FUNCTIONAL COATING FOR CRUCIBLES



High purity SiO₂ diffusion barrier coating

- Increased yield per ingot and higher cell efficiencies
- For multi-Si and mono-like solar cells

The innovative HeraGlaze[®] coating is a leap in quality and yield for integrated PV-manufacturers. It enhances crucible performance for up to 4% more wafers per ingot and significantly higher cell efficiencies.

HeraGlaze[®] is a high purity, high density SiO₂-barrier coating, which prevents thermally induced impurity transfers from the crucible surface into the Si-melt/ingot without increase of oxygen permeation during the crystallization process. The enhanced quality of the Si-melt/ingot results in improved carrier lifetime leading to significantly higher cell efficiencies.

HeraGlaze[®] is in-situ applicable for all commercially available crucibles thus it eliminates the need for additional capital expenditures. Please contact our local technical service teams for detailed product information.

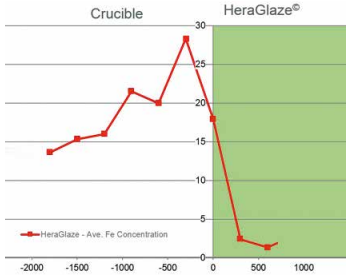
KEY BENEFITS

- Enhances crucible performance in multi-silicon solar wafer production
- Up to 4% higher yield per ingot
- Enhanced cell efficiency by improved carrier lifetime
- In-situ applicability, no CAPEX required
- Fits to all commercially available crucibles

FUNCTIONAL LAYER

In standard wafer production processes, it comes to thermal interactions between the porous silica surface of the crucible and the molten silicon. Impurities like Fe contaminate the Si-melt/ingot, negatively affecting ingot yield and cell efficiency.

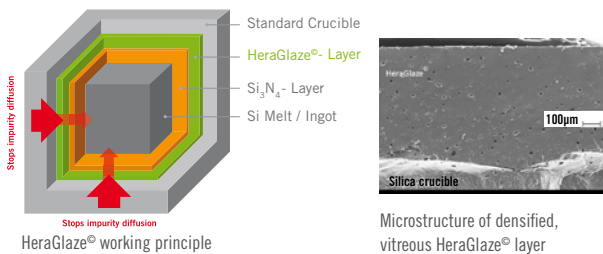
PREVENT IMPURITY DIFFUSION



LA-ICP-MS measurement by University of Mainz

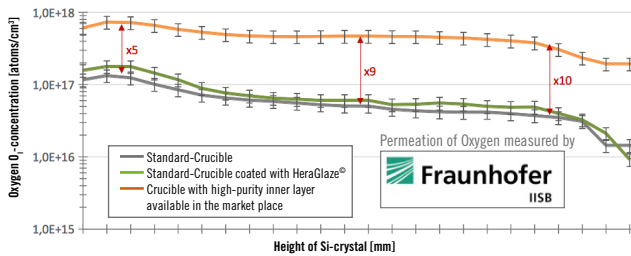
HeraGlaze® effectively prevents the diffusion of impurities by forming a highly densified layer thus creating a diffusion barrier on the crucibles surface.

Applied as a dispersion of micro- / nanoscale SiO₂ particles it sinters in-situ to create a glass-like layer.



NO INCREASE IN OXYGEN

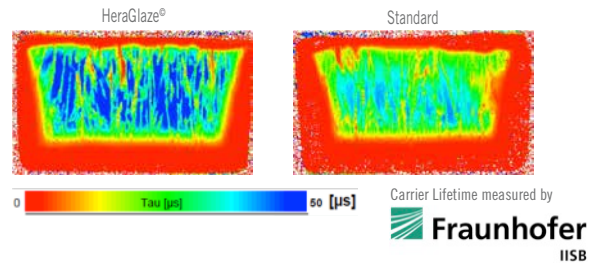
The HeraGlaze® diffusion barrier coating maintains the oxygen content of the Si-melt/ingot during crystallization at the same level as the standard process, which also contributes significantly to higher yield and higher cell efficiencies.



Oxygen content of Si-melt / ingot produced with HeraGlaze® coated crucible is factor 10 lower over the height of a G1 crystal.

BETTER YIELD, HIGHER CELL EFFICIENCIES

HeraGlaze® reduces the red-zone in the outer volume of the ingot and enables up to 4% more wafer volume yield.

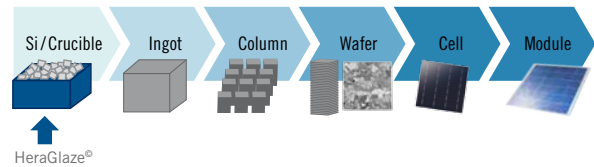


The overall impurity level in the ingot bulk material is reduced by the HeraGlaze® barrier coating, resulting in an improved carrier lifetime which contributes to significantly higher cell efficiencies.

PURITY: THE VALUE PROPOSITION OF HERAGLAZE®

By HeraGlaze® the purity of the silicon is ensured already at the first step of the solar cell and module production process.

This provides a real value-add to all integrated PV-manufacturers, which can enhance yield and cell efficiencies simultaneously.



HERAGLAZE®

The product itself comes as a dispersion of fine-ground micro- / nanoscale SiO₂ particles, which is applied using the suction behavior of the crucible's porous surface. Due to its in-situ densification capabilities the crucibles can be coated directly in the ingot melting processes at the customer's premises. This provides customers with a cost advantage over other solutions.

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