Blue Wafer Tax Credit Abuse

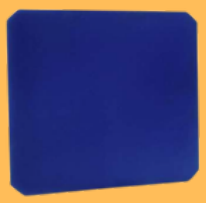
Certain manufacturers may be attempting to claim tax credits for solar cell manufacturing for finishing cells in the U.S. largely manufactured overseas. Instead of fully manufacturing components, as clearly intended by Congress, these companies are seeking credits for only "partial transformation" of a product in the United States. **This tax strategy should be a focus of the Department of the Treasury's enforcement efforts.**

What are Blue Wafers?

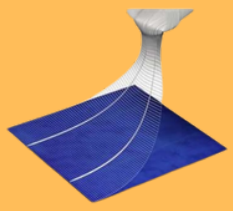
- "Blue wafers" are silicon wafers that have been chemically treated to form a positive/negative (P/N) junction that creates an internal electric field when exposed to sunlight and an anti-reflective coating, giving them a characteristic **blue** color.
- They are mostly finished cells that only need metallization, the printing of the metal busbars, and contacts to collect and extract the electricity. Dependeing on the cell type, about 50-80% of the manufacturing costs and associated capital expenditures for cell production are attributable to blue wafer production.
- Grey and Black Wafers, in contrast, are undiffused, untextured raw substrates.

Raw Wafer

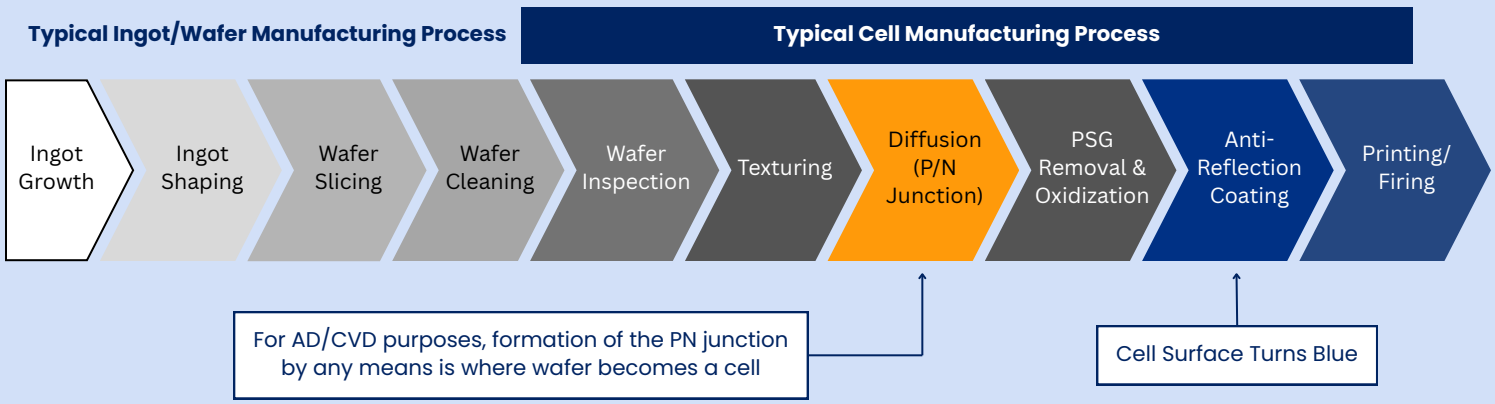
Blue Wafer (AR Coated)



Cell Printing



"Blue Wafers" are Formed in the First Stages of Cell Manufacturing



Section 45X Tax Credit Abuse

Core Issue: The explicit intention by Congress for the Section 45X tax credit was to re-establish entire manufacturing supply chains and avoid reliance on China. However, certain actors may be pursuing tax strategies to claim the credit for the processing of an imported "blue wafer." This would undermine U.S. companies that have made full investments in domestic manufacturing while failing to advance Congress' primary objective of ending U.S. dependence on foreign solar supply chains.

- Section 45X defines a photovoltaic "cell" as: "the smallest semiconductor element of a solar module that performs the immediate conversion of light into electricity."
- Having a P/N junction, a blue wafer is a silicon semiconductor element that creates an internal electric field when exposed to light, which is commonly understood to be performing the function of converting light to electricity. The manufacturing steps following the formation of the P/N junction in a blue wafer, which are applying metallization to direct the flow of electrons, are not sufficient alone to receive the 45X tax credit.
- The separate 45X definition of "wafers" does not encompass P/N junction formation. This helps confirm congressional intent that a blue wafer has crossed the definitional line into a cell.

Why this matters: Some manufacturers may be importing blue wafers, performing only limited downstream steps in the U.S., and may attempt to claim the Section 45X credit for cell manufacturing without performing the necessary step of P/N junction formation in the U.S. They are having 50-80% of the cell manufacturing done outside of the country and then trying to claim the full cell credit for the steps remaining. This is inconsistent with the statute and the intent of Congress and directly undermines investments of domestic cell manufacturers.

- Section 45X regulations expressly prohibit claiming credits for "partial transformation" of an eligible component.
- Given that 50-80% of the manufacturing costs are incurred to produce blue wafers, the remaining steps should be considered "partial transformation."

Companies should not be able to claim the Section 45X cell credit for merely applying metallization onto blue wafers.

Domestic Content Bonus Abuse

Core issue: Cells printed from imported blue wafers should not qualify as "domestically manufactured" solar components for the purposes of the Domestic Content Bonus under Sections 45/48/45Y/48E merely because finishing steps occur in the U.S.

- To claim the Domestic Content Bonus, regulations require taxpayers to demonstrate that the "manufacturing process" for a certain percentage of components in a project was performed in the U.S.
- The "manufacturing process" must result in a "new item functionally different from that which would result in mere assembly of the elements or materials."
- An imported blue wafer is already "functionally different" from a standard wafer because it can convert light into an internal electric field. The critical transformation to finish the cell – formation of the P/N junction – happened overseas.

Why this matters: Some manufacturers may be importing blue wafers and performing only limited steps in the U.S. – such as metallization – and then characterizing the finished product as a domestically manufactured cell. This is inconsistent with the statute and the intent of Congress.

Regulations define the complete manufacturing process for a wafer, reinforcing that a complete manufacturing process for a cell is required to claim a component as domestically manufactured.

Because applying metallization onto blue wafers is not cell manufacturing under the law, the value of a photovoltaic cell utilizing an imported blue wafer should not be considered domestically manufactured for the purposes of Domestic Content Bonus calculations.