

# HOW SOLAR PANELS ARE MADE

## Key Components of this Renewable Energy Source



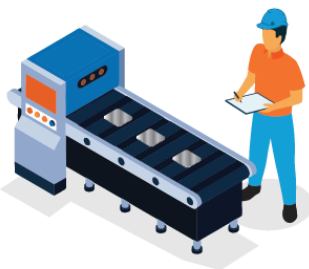
### SAND TO SILICON

Manufacturing a solar panel begins with raw materials that are formed into a thin sheet of silicon. Manufacturers typically use quartz sand to extract the highest purity silicon. This material is exposed to very high temperatures, resulting in the formation of large silicon rocks.



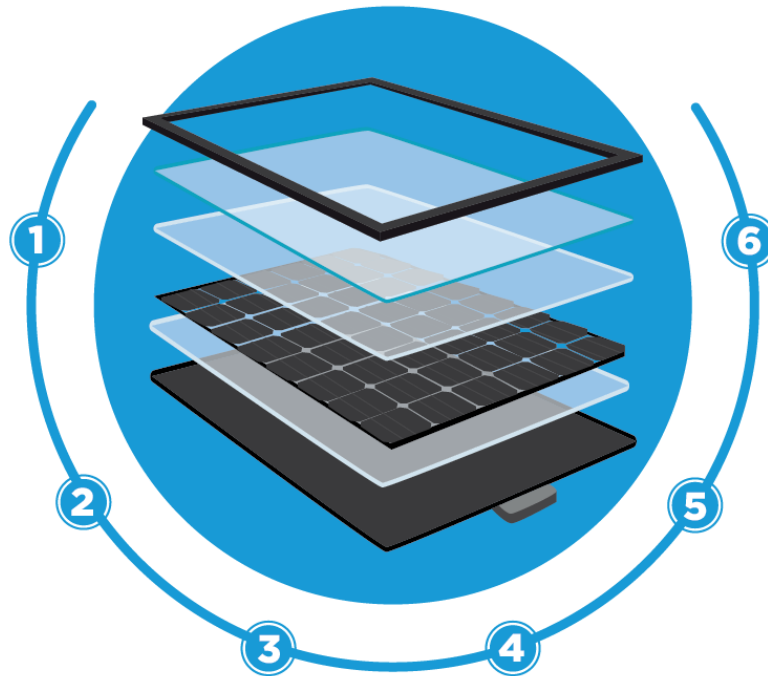
### ROCK TO INGOTS

Manufacturers melt down the silicon rocks in a cylindrical furnace, aligning silicon atoms in the desired structure and orientation. Boron is also added to the melted silicon to impart a positive electrical polarity.



### INGOTS TO DISKS

Wire saws are used to cut the cylinders into disks or wafers, depending on the type of solar panel being created. These paper-thin pieces are then soaked in an anti-reflective coating before proceeding to the next phase.



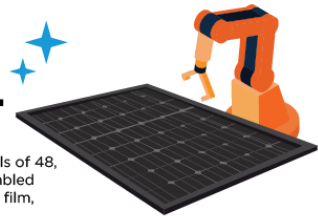
### FACTORY TO HOME

Before solar panels are shipped out to major distributors and homes, each panel undergoes testing to ensure that the cells perform as expected. Once the test is passed, the panels are cleaned, inspected once again, and then shipped out.



### CELL TO PANEL

Solar cells are linked by soldering a metal connector between each cell, forming panels of 48, 60, or 72 cells. These panels are then assembled into layers comprising of a back sheet, EVA film, tempered glass, and an aluminum frame.



### WAFER TO CELL

Metal conductors are added in a grid-like matrix on the surface of each wafer and then run through an oven-like chamber where phosphorus is diffused in a thin layer. The phosphorus layer allows the surface of each cell to carry a negative electrical charge, creating a positive-negative junction between the surface and the contents of the cell.



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