

DESIGNER GUIDELINES FOR MOISTURE-RESPONSIVE WOOD VENEER

WHAT IS MOISTURE-RESPONSIVE WOOD VENEER?

Moisture-responsive wood veneer is a material that shows a repeated dynamic bending response under changing humidity levels. It is made from oak wood veneer, a thin sheet of wood, coated on one side with waterproof wood glue. Through a specifically designed manufacturing process, the natural curvature response of wood to moisture is enhanced.

The coating creates a bilayer structure with a different swelling and shrinking rate for each layer. This difference passively activates a bidirectional bending response to moisture changes. The amount of curvature can be controlled through coating thickness, sample geometry, and assembly methods, while the visual bending direction is determined by the fiber orientation.

The result is a material that can be formed into custom geometries for design applications such as responsive surfaces, shading elements, and interior installations.

DESIGNER GUIDELINES

These guidelines translate experimental material research into practical design knowledge. They explain how the material works, how it is manufactured, how to control its performance, and the limitations and opportunities to consider.

The guidelines include sample structures where the material is used to create various geometries. These examples all have a unique combination of variables, such as changing fiber directions and assembly methods, showing the possibilities of controlling the performance in different ways. In addition, the guidelines include examples of architectural applications to provide impressions of designs using this material.

The guidelines are intended as a design tool, making the material's performance accessible to designers and acting as a bridge between material research and design practice.

