

INNOVATION IN COMPOSITE MATERIALS

FINALIST: BindEthics

Ecohesive™, developed by BindEthics, is a pioneering bio-adhesive for engineered wood that replaces toxic urea-formaldehyde (UF) glues with a sustainable alternative derived from industrial food waste. Formaldehyde-based binders dominate a £16 billion market but are carcinogenic, fossil-based, and prevent recyclability of wood panels. Ecohesive™ offers equivalent bonding strength and durability while cutting CO₂ emissions by 80%, enabling furniture and construction products to fully participate in the circular economy.

Unlike soy or lignin adhesives that rely on virgin crops, Ecohesive™ valorises food waste - particularly brewers' residues - eliminating competition for arable land or freshwater. Panels bonded with Ecohesive™ can be safely recycled, used for energy recovery, or biodegraded without releasing toxins. Manufacturers gain a drop-in, non-toxic, low-carbon adhesive compatible with existing production lines; builders and consumers benefit from healthier, truly sustainable materials.

The innovation was achieved through four years of R&D and over 4,000 hours of specialised chemistry, biomaterials, and process engineering, supported by Innovate UK, the Biorenewables Development Centre, and Birmingham University. Pilot trials on oak, ash, and birch panels have validated mechanical performance equal to UF resins.

Targeting a £20 billion global market, Ecohesive™ enables an estimated 8% reduction in embodied CO₂e per panel and could save hundreds of thousands of tonnes of CO₂ annually in the UK alone. With commercial-scale validation underway with partners including Egger and BE-ST, BindEthics is positioned to deliver the first food-waste-derived adhesive capable of transforming the engineered-wood industry toward true carbon circularity.

Learn more at: www.bindethics.com



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