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Production of Rice Straw Fiber Board using Lignin from Catalytically Depolymerized Rice Straw

A sustainable, low-cost method extracts lignin and cellulose from rice straw to create non-carcinogenic composite board binders that significantly reduce manufacturing costs.

Purdue University researchers developed a method for extracting lignin and reinforcing fibers from rice straw for use in composite board manufacturing. Contemporary fabrication of composite binders requires use of formaldehyde or PMDI resin, one poses a health hazards and the other is expensive. To remediate these drawbacks, researchers at Purdue University have developed a process for extracting depolymerized lignin from rice straw, which is then formulated into a sustainable binder. Combination of lignin-based binder with clean cellulose fibers from the reaction produced composite boards with desirable physical properties. A cost analysis shows a significant cost reduction over formaldehyde-free composite board production when fabricating medium density fiber boards. This technology provides a low-cost sustainable, green method for producing composite boards that could deliver higher margins to composite board manufactures.

Advantages:

-Less Expensive

-Non-carcinogenic materials

Potential Applications:

-Manufacturing

-Construction

TRL: 5

Intellectual Property:

Technology ID

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Category

Chemicals & Advanced Materials/Green & Bio-Based Chemistry

GreenTech/Circular Economy & Waste Reduction

Materials Science & Nanotechnology/Composites & Hybrid Materials

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