Spaceboard™: Today's Structural Recycled Fiber Products for the Future

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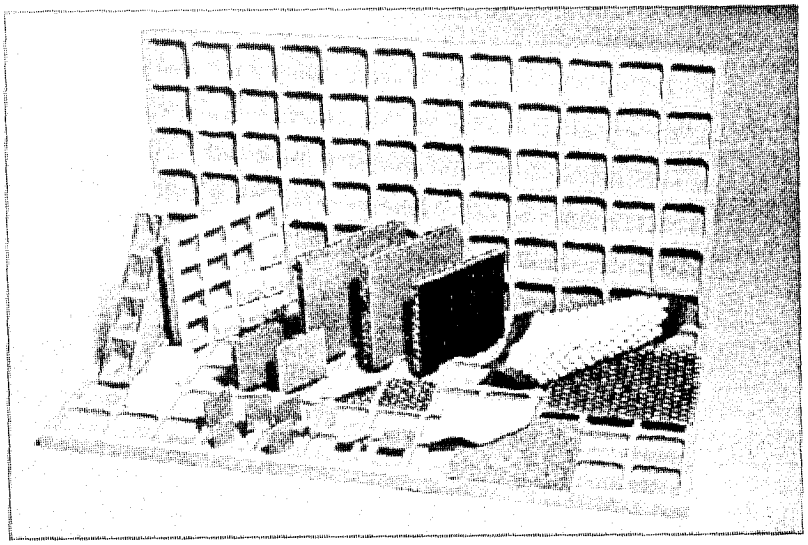
Spaceboard™ is a process technology that forms recycled fibers into three-dimensional (3-D) structural products. Processing adjustments can be made to produce desired performance properties of the end product. This processing flexibility allows placement of fibers within a product for maximum structural and material efficiency. The Forest Products Laboratory (FPL) has six related patents for the Spaceboard™ process.

Spaceboard™ technology involves primarily two methods of forming and consolidating fibers. The first method uses an array of rubber pads attached to a forming screen to form, densify, and if desired hold and restrain the fiber mat during drying or curing. This method has a variety of process options which are used for the development of various performance properties for the end product. The second method uses retractable porous mandrels to form and consolidate deep thick ribs. Once formed and consolidated, the fiber mat is removed and dried in subsequent steps similar to the first method.

FPL has used Spaceboard™ to form a number of trial 3-D products of various shapes and sizes (see figure). Potential commercial product applications include packaging products, corestock for furniture panels, wall sections, or structural long-span floor and roof decking, and marine structures.



A variety of fibers can be used in the process including recycled wood fiber, agricultural fiber, and some post-industrial synthetic fibers. Spaceboard™ technologies seek to achieve optimal usage of fiber for maximum structural and material efficiency in the end product by controlling forming and molding process variables to match the capabilities of the fiber to the performance needs of the application.

FPL Spaceboard™ attracted the interest of entrepreneurs from the construction and architectural industry as well. A strong upsurge in recycling interests across the nation and the potential for use of recovered paper materials in FPL Spaceboard™ were key elements for assuring the marketability of this "green" technology.

Erratum:
Spaceboard is not a trademarked name.

Assessment of potential markets for the wide array of possible Spaceboard™ products yielded a strategy for segmenting the licensing of the technology in the following fields:

1. Packaging/shipping materials;
2. Construction and related industrial uses; and
3. Aerospace, automotive, and marine vehicle applications.

The licensee for the construction field provided support for a full-scale pilot process line to develop the process for 4 by 8 panels. That licensee (Gridcore Systems International) now uses over 60 tons per month of mixed wastepaper to manufacture GRIDCORE™. a panel for use in furniture. exhibits, staging. and other applications. Winner of Popular Science's Best of What-s New Top 100 in 1993, FPL Spaceboard™ exemplifies the potential for transferring technology through public/private partnerships.

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