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USDA FOREST SERVICE • FOREST PRODUCTS LABORATORY

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Wood Reinforced with Fiberglass Offers Environment-Friendly High-Strength Material

MADISON, Wis. -- Wood reinforced with fiberglass potentially offers “green”—or environment-friendly—products, according to a life-cycle inventory (LCI) that investigated the energy consumed and environmental emissions produced during its premanufacture and manufacturing stages. The analysis was conducted by researchers at ERG, Inc., of Lexington, Mass., and reported in the Forest Products Journal in June, 2005.

The reinforced wood door system analyzed in the study, for example, uses patented technology developed at the USDA Forest Service Forest Products Laboratory (FPL) in Madison, Wis. The fiberglass reinforcement, primarily at joints, hinges and latches, improves the strength and durability of the doors, making them suitable for use in some residential applications where increased security is a primary concern.

The life-cycle inventory looked at energy consumption and emissions involved in acquiring raw materials, such as harvesting lumber or mining iron ore, and in manufacturing a typical door. The study did not include distribution, product use or disposal.

The LCI analysis quantifies 44 atmospheric emissions (including five greenhouse gases), 32 waterborne wastes, energy consumption and solid-waste generation associated with the premanufacturing and manufacturing states of a door’s life cycle.

An additional environmental benefit from using wood-fiberglass doors is the fact that the doors can be manufactured using low-grade, small diameter timber.

Lynn Knight, vice president of ERG, Inc., and Melissa Huff, senior chemical engineer at Franklin Assoc., a division of ERG, Inc., conducted the LCI analysis. In addition to Knight and Huff, Janet I. Stockhausen, patent advisor at the USDA FPL, and Robert J. Ross, supervisory general research engineer at FPL, coauthored the article published in the Forest Products Journal.

For information about opportunities for licensing the patented wood-fiberglass composite technology, contact Ms. Janet Stockhausen at the FPL, 608-231-9502.

The USDA Forest Service Forest Products Laboratory was established in 1910 in Madison, Wis., with the mission to conserve and extend the country's wood resources. Today, FPL's research scientists work with academic and industrial researchers and other government agencies in exploring ways to promote healthy forests and clean water, and improve papermaking and recycling processes. Through FPL's Advanced Housing Research Center, researchers also work to improve homebuilding technologies and materials. Information is available at FPL's Web site: www.fpl.fs.fed.us.

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NOTE TO REPORTERS/EDITORS: An electronic copy (PDF file) of the referenced article describing the life cycle analysis of the reinforced wood is available on request from George Couch at the Forest Products Laboratory: gcouch@fs.fed.us.