



Sep 27, 2012 | Dearborn, Mich.

Pulp Function: Ford and Weyerhaeuser Collaborate to Develop Automotive Applications Using Natural Fiber Materials

- Ford's investigation into the use of tree fibers called cellulose in plastic composites has shown using the fiber in automotive applications could significantly reduce CO₂ emissions and weight, while speeding processing time by as much as 40 percent
- Ford has worked with Weyerhaeuser – one of the largest forest products companies in the world – to prove out a more sustainable plastic composite material for future Ford vehicle components
- Ford already uses a variety of sustainable materials throughout its lineup, including soybean-based cushions and head restraints that save about 5 million pounds of petroleum annually

[Click here](#) to download PDF.

Cellulose joins the growing list of sustainable materials originating from unlikely sources that could soon be used in Ford vehicle components and help further reduce the automaker's reliance on traditional content such as fiberglass and petroleum.

The Ford biomaterials research team has been working with forest products leader Weyerhaeuser (NYSE: WY) to investigate the use of a plastic composite material utilizing cellulose fibers from trees in place of fiberglass or mineral reinforcements.

Because the cellulose fibers in this new composite come from sustainably grown and harvested trees and related byproducts, such as chips, the environmental impact of building cars could be lessened. Specifically, replacing fiberglass, minerals and/or petroleum with a natural, plant-based material can sequester CO₂ and ultimately lead to a smaller carbon footprint, among other benefits.

“Our responsibility to the customer is to increase our use of more sustainable materials in the *right* applications that benefit both the environment and product performance,” said John Viera, Ford global director of Sustainability and Environmental matters.

Ford’s research has found that Weyerhaeuser’s cellulose-based plastic composite materials meet the automaker’s stringent requirements for stiffness, durability and temperature resistance. Further, components weigh about 10 percent less and can be produced 20 to 40 percent faster and with less energy when made with cellulose-based materials compared with fiberglass-based materials. These weight and process savings can enable equivalent or reduced component costs.

And like other less-than-obvious candidates for use in vehicle components, such as retired and shredded paper currency, the cellulose-based plastic composite material could be as important to Ford as soybeans have become. Ford uses soybean-based cushions in all of its North American vehicles such as the all-new Fusion, saving about 5 million pounds of petroleum annually.

A seedling of an idea

About three years ago, Ford began working with Weyerhaeuser to evaluate the use of a cellulose-based plastic composite material for potential use in vehicle components.

Several prototype vehicle components were created from the cellulose-based material and put through a battery of tests by a team led by Dr. Ellen Lee, Ford’s plastic research technical expert.

“We found that working collaboratively at an early stage has accelerated the development of a material that has a high thermal stability, doesn’t discolor and doesn’t have an odor,” said Lee. “That’s important because it opens the door for use of the material in a wide range of applications that could eventually add up to significant environmental benefits across our product line.”

For example, prototype armrests were tested as potential components that could feature the cellulose-based material.

Not only can the cellulose material be used in interior applications, but the high level of performance provided by the cellulose fibers also makes it a good candidate for exterior and under-the-hood applications as well.

“Cellulose fiber is a great renewable resource that already has established infrastructure around the world, making it an ideal material for Ford’s global products,” said Lee.

Weyerhaeuser alone oversees more than 20 million acres of sustainably managed and third-party certified forestland around the world and plants more trees than they harvest.

“Weyerhaeuser is a pioneer in sustainable forestry. Last year, for example, we planted more than 66 million seedlings as part of an ongoing process of renewal that ensures forests and the products that come from them meet present and future needs,” said Don Atkinson, vice president market development and new products for Weyerhaeuser’s Cellulose Fibers business.

A record of sustainability

Ford’s industry leadership with increasing use of non-metal recycled and bio-based materials is nothing new. In fact, today’s vehicles feature all kinds of renewable and recycled materials:

- The new Fusion uses the equivalent of about 42 recycled plastic bottles in its seat fabric and post-consumer recycled carpet in its cylinder head covers
- Ford's entire North American lineup of vehicles contain soybean-based cushions and head restraints
- Flex has wheat straw in its plastic bins
- Kenaf fiber – derived from a plant related to cotton and okra – is used in the door bolsters of Escape
- Focus Electric uses a wood-fiber-based material in its doors and recycled plastic bottles in its seat fabric
- The new Fusion contains the equivalent of slightly more than two pairs of average-sized American blue jeans as sound-dampening material
- The equivalent of 25 recycled 20-ounce plastic bottles help make up the Escape's carpet

Information about the additional sustainable efforts of Ford Motor Company can be found in its 13th annual Sustainability Report titled "Blueprint for Sustainability: Accelerating Ahead" – a voluntary and comprehensive annual account highlighting all things sustainable, from people to products. The report can be read [here](#).

#

About Ford Motor Company

Ford Motor Company, a global automotive industry leader based in Dearborn, Mich., manufactures or distributes automobiles across six continents. With about 168,000 employees and about 65 plants worldwide, the company's automotive brands include Ford and Lincoln. The company provides financial services through Ford Motor Credit Company. For more information regarding Ford and its products worldwide, please visit <http://corporate.ford.com>.
