



# Hemp Cars Could Be Wave of the Future

**A CAR MADE FROM GRASS** may not sound sturdy, but scientists say plant-based cars are the wave of the future.

Researchers in Australia and England are working on developing materials from plants like hemp and elephant grass to replace plastic and metal-based car components. Scientists say the materials are biodegradable and can increase fuel efficiency since they weigh about 30 percent less than currently used materials.

"The lighter the car, the less fuel you need to propel it," explains Alan Crosky of the School of Material Science and Engineering in the University of New South Wales (sic) in Australia.

## Use, Then Bury

Crosky and his partners have been developing tough material from hemp, the reedy, less controversial cousin of the marijuana plant. "Hemp fibers have higher strength to weight ratios than steel and can also be considerably cheaper to manufacture," he says.

The hemp used in car construction contains only traces of the narcotic tetrahydrocannabinol, which lends marijuana its psychedelic effect.

Crosky explains building cars — even their outer shells — from plants like hemp could reduce the number of rusting car bodies and rotting car parts on old lots. The plant fibers are cleaned, heated, in some cases blended with small amounts of biodegradable plastics and molded into hardened paneling and filling.

Each year in the United States, 10 million to 11 million vehicles putter out and reach the end of their useful lives. While a network of salvage and shredder facilities process about 96 percent of these old cars, about 25 percent of the vehicles by weight, including plastics, fibers, foams, glass and rubber, remains as waste.

A car made mostly of heated, treated and molded hemp, says Crosky, could simply be buried at its life end and then consumed naturally by bacteria.

## Europe Leading the Way

The idea has already taken firm root in countries like Germany and Britain, where manufacturers are required to pay tax for the disposal of old vehicles. As environmental issues become more pertinent, researchers believe natural fibers are likely to

become a major component of cars around the world.

"Manufacturers pay a lot of money here to landfill something," says Mark Johnson, an engineer at the University of Warwick Manufacturing Group in England. "If it's made from degradable parts, you don't have to pay."

Johnson and his team have been creating parts from elephant grass, a bamboo-like plant that, he says, requires less processing than hemp to harden and mold into car components.

German car companies including Mercedes (Daimler/Chrysler), BMW and Audi Volkswagen have been leading the way in incorporating plant fibers in their models. Since the introduction of jute-based door panels in the Mercedes E class five years ago, German car companies have more than tripled their use of natural fibers to about 15,500 tons in 1999.

The next trend could be in building the shells of cars from plants. Crosky says he and his team are now looking at building exterior car panels from hemp.

In the United States, automobile companies have approached the idea more gingerly.

"We use natural fibers only when it makes sense technologically," says Phil Colley, a spokesman for the Ford Motor Co.

Colley says Ford has used flax, recycled cotton and a 14-foot tall, fibrous crop called kenaf in some parts, including under front hoods to dampen the sound of slamming them shut. Deere & Co. has used soy-based fiberglass composites in the panels of some of its tractors. By 2010, the New Jersey consulting firm Kline & Company anticipates natural fibers to replace a fifth of the fiberglass in current U.S. car models.

While researchers tout their benefits, Colley points are there are some drawbacks. Smell can become a problem, he says, particularly with hemp which can produce a musty odor when incorporated into a vehicle.

"You have to take into account all the tradeoffs," Colley says.

## Inspirations in History

Although fiber car components may be a thing of the future, the idea of manufacturing material from fibrous plants dates back to even ancient times. Fragments of fabric woven from hemp have been found from 8,000 BC. Bamboo and sturdy

## INNOVATION IN THE NEWS

grasses have been used in construction for centuries and plots in Japan still provide hemp to weave the emperor's religious robes.

Henry Ford, founder of the Ford Motor Co., first toyed with the idea of plant-based car parts in 1940, when he took an ax and whacked the hood of a car trunk made from a soybean-based material to test its strength.

The car hood reportedly withstood the blow and now, 70 years later, car companies, including Ford's own, have finally begun to put the concept to use.

"Increasing the use of biodegradable and recycled materials will lower the impact of vehicle disposal," says Jim Kliesch, a researcher at the American Council for an Energy-Efficient Economy, a nonprofit, Washington-based organization dedicated to improving the environmental impact of technologies. "And that can only be a good thing." ●

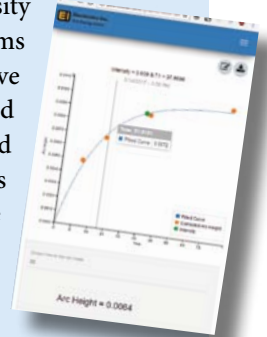
### PEENSOLVER

Your Free Curve Solver Web App

Download it at

[www.peensolver.com](http://www.peensolver.com)

Peensolver calculates peening intensity as defined in SAE J443. It also conforms to SAE J2597. It evolved from the Curve Solver spreadsheet program developed by Dr. David Kirk that is widely used around the world. Like Dr. Kirk's program, it generates a fitted curve through the given data points. Using the corrected arc heights from the curve, it then locates the one arc height that increases by 10% for the doubling of exposure time. This arc height is the intensity value.



[www.theshotpeenermagazine.com](http://www.theshotpeenermagazine.com)

- ▶ Read the latest issue
- ▶ Get advertising rates
- ▶ Request a free subscription
- ▶ Download past issues





**Shot Peening**

**NDT**

**Mass Media Finishing**

**Aerospace, Military & Commercial Approvals**

**FAA Repair Stations**  
**KJ1R272K (CT) & G89R878X (GA)**

**On-site Capabilities**

 Accredited

**Surface Enhancement (CT & GA)**  
**Nondestructive Testing (GA)**








**peentech.com**

8 Eastern Park Road  
East Hartford, CT 06108  
860-289-4328

3117 Emery Circle  
Austell, GA 30168  
770-941-9573

*Established 1966*