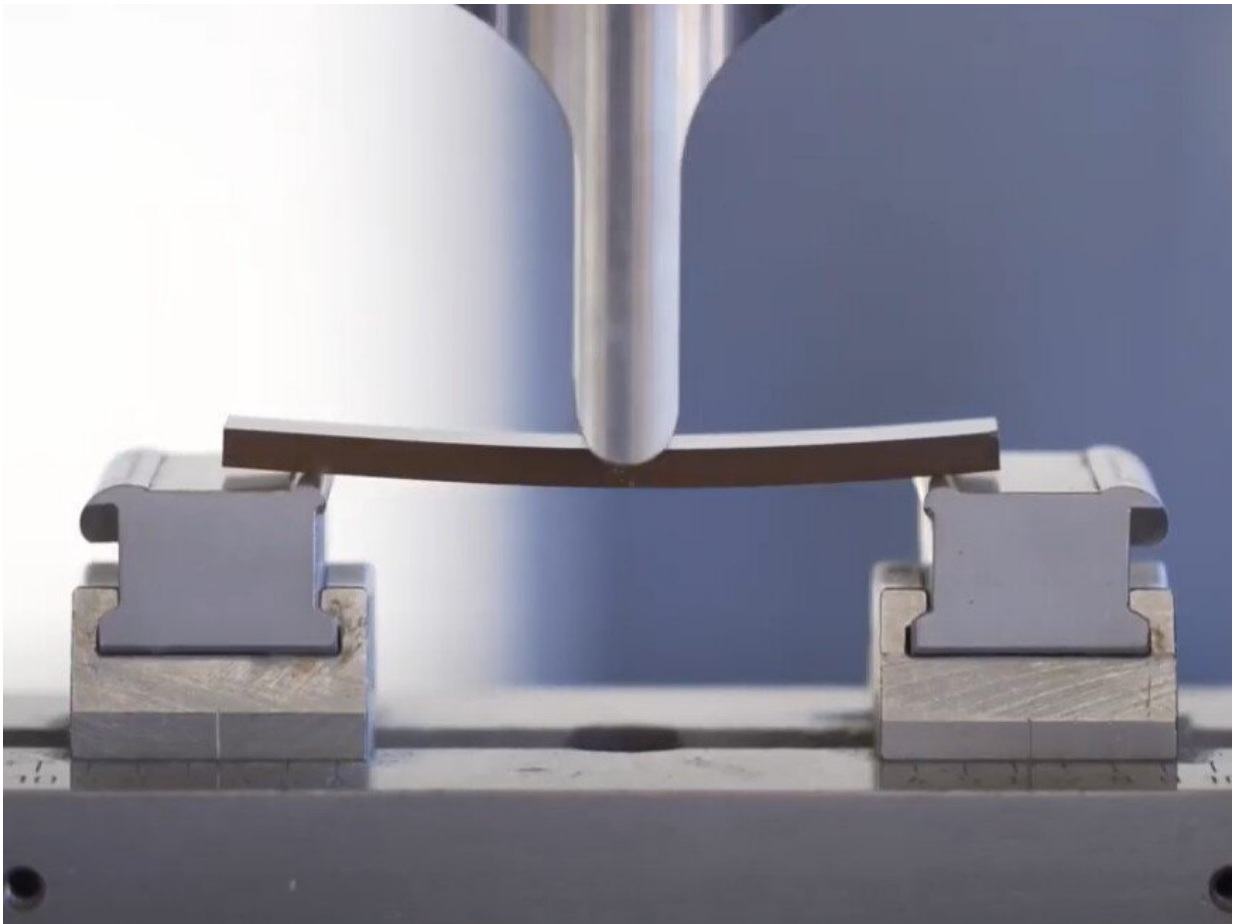


Finding new bio-based products from lignin could help shift from plastics

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Credit: Bio4Products

In daily life we are surrounded by fossil raw materials, from products in

our cars, insulations in buildings to kitchenware, like pan handles. Society needs to find new ways to unlock the hidden potential of renewable raw materials.

Lignin, a basic component of almost any plant that grows, is a promising resource to make the shift in Europe's manufacturing industry happen.

"Recent times and political developments have definitely shown that more and more [green products](#) are demanded by the market. Lignin is a raw material that has long been part of research. Now, within the Bio4Products project, we at Hexion have been able to investigate lignin in more detail," explains Melike Bayram from Hexion.

In the framework of Bio4Products, scientists at Hexion, a global leader for phenolic speciality resins, have succeeded in partially replacing fossil phenol with bio-based lignin in resins. Two applications seem very promising: insulating foams and molding compounds.

Granulated plastic molding compound is the base material for molded plastic products. Molding compounds have to meet many requirements to ensure that the end product meets customer expectations.

Tests of the mechanical properties should ensure that the bio molding compound has the same performance as the phenol based one.

The researchers used compression and tension tests to evaluate the reactions of the [molding compounds](#) to crushing and determine the breaking points of the material and its elongation. The results were very promising, as Jens Gannath from Hexion explains: "During these tests, we could see that the use of lignin in our products gives good performance data. We at Hexion see a great potential to integrate this bio-based material into our products."

A second promising use case is the application of lignin resins in insulating foams. One of the most important properties of these foams is long-lasting protection in case of a building fire. In a fire [test](#), the new [foam](#) is exposed to a heat of over 1,000 degrees. Even after five minutes of exposure to heat, the material remains stable.

"We have shown that this foam has better properties than standard foams. Additionally, we have conducted application tests in cooperation with a number of customers. These customers were able to see clear advantages with new renewable [raw materials](#)," said Melike.

Although [lignin](#) is not yet as reactive as fossil phenols in all areas, Bio4Products research proves that a transformation to a bioeconomy will be possible in the near future.

More information: For more information, see www.bio4products.eu

Provided by CORDIS

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