

# News Release

## Honeycomb on the car roof

- **New type of lightweight roof on the smart fortwo**
- **First exterior car part featuring honeycomb sandwich structure with a class-A film**

With the polyurethane foam system Elastoflex® E from BASF it is possible for the first time to mass-produce an exterior car part featuring a honeycomb sandwich structure with a class-A film. The roof module in the standard model of the new smart fortwo consists of a paper honeycomb and two surrounding glass fiber mats. These are sprayed in an impregnation process with the low-density, thermally activable Elastoflex® E 3532 and pressed together with a solid-colored class-A film. A single operation thus produces a roof module which is around 30 percent lighter than the standard roof on the previous model – but retains the same strength and flexural rigidity. The lightweight roof was developed by Fehrer Composite Components, which manufactures it in its factory in Großlangheim, Germany.

The honeycomb technology has previously been used in the car interior, for example for loading floors, roof linings, and rear shelves. For use in exterior components, BASF has adjusted the viscosity and reactivity of Elastoflex® E (semi-rigid polyurethane system), which was developed for the honeycomb technology, so that it can be optimally processed in each manufacturing step and shows good adhesion properties: It guarantees uniform, thin wetting of the glass fiber mats and does not drip. Once the semi-finished product has been impregnated, it is pressed into shape in a heated mold

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Dr. Ulla Biernat  
Phone: +49 621 60-42241  
[ulla.biernat@basf.com](mailto:ulla.biernat@basf.com)

BASF SE  
67056 Ludwigshafen  
Phone: +49 621 60-0  
<http://www.basf.com>  
Communications Performance  
Materials  
Phone: +49 621 60-42241  
[www.plasticsportal.eu](http://www.plasticsportal.eu)  
[www.pu.basf.eu/](http://www.pu.basf.eu/)

together with the class-A film. This causes the PU system to foam up slightly at the edge of the sandwich and creates a solid material composite between film, reinforcing mats and paper honeycomb core.

### **Short cycle times and efficient process**

The reactivity of Elastoflex® E has been adjusted so that long spray times of up to 120 seconds are possible for large-scale parts, along with short demolding times of up to 60 seconds. Moreover, decorative materials and films can be directly bonded or back-foamed in the mold as Elastoflex® E shows good adhesion to films. The roof module of the smart fortwo is fitted on the outside with a film having a class-A surface. A textile covering is attached on the inside.

“In contrast to conventional composite parts, in this roof module the individual layers are not glued together in a multi-stage process, but are instead produced in a single manufacturing step. This is much more efficient – also thanks to the clean process with the polyurethane foam and the customized technical support from BASF,” says Gao Kwintmeyer, Global Purchasing Fehrer.

Further information: [www.elastoflex.de](http://www.elastoflex.de)

### **About BASF's Performance Materials Division**

BASF's Performance Materials division encompasses the entire materials' know-how of BASF regarding innovative, customized plastics under one roof. Globally active in four major industry sectors - transportation, construction, industrial applications and consumer goods – the division has a strong portfolio of products and services combined with a deep understanding of application-oriented system solutions. Key drivers of profitability and growth are our close collaboration with customers and a clear focus on solutions. Strong capabilities in R&D provide the basis to develop innovative products and applications. In 2014, the Performance Materials division achieved global sales of € 6.5 bn. More information online: [www.performance-materials.basf.com](http://www.performance-materials.basf.com).

**About BASF**

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