

LANXESS at NPE 2006

## **“Organic Sheets” – the Alternative in the Hybrid Technology**

### **Low Weight and High Strength**

**Chicago, IL– June 19, 2006** – Hybrid technology – also known as plastic-metal composite technology – is being increasingly used in the automotive industry for the continuous production of highly-integrated structural parts that can withstand high stresses and are light in weight. For example, the front ends of many different car models are made of a combination of sheet steel and Durethan® BKV 30, a glass fiber-reinforced polyamide six from LANXESS. Car roof frames are also manufactured with this polyamide using hybrid technology. To extend the application and performance potential of the hybrid technique even further, LANXESS is now working on replacing the steel and aluminum component with “organic sheets”. For this purpose, the Company is cooperating with the firm Bond-Laminates GmbH, one of the leading manufacturers of these thermoplastic fiber composites (TEPEX®), based in Brilon.

"What we basically then have is a hybrid part made completely of plastic. It is lighter than its counterpart of metal and also has higher surface stiffness and much higher strength data. Apart from that, it does not need any protection from corrosion, which is an additional cost factor with metal," explains Ulrich Dajek, an expert in hybrid technology in the LANXESS Semi-Crystalline Products business unit.

Potential applications exist not only in traditional hybrid parts, but also in components that have to display high surface rigidity, such as spare-wheel recesses, bulkheads to the engine compartment and vehicle floor components. "This also gives us an opportunity to integrate add-on parts like reinforcements, fixing points, guides and clips by simply molding them in place," says Dajek.

These organic sheets consist of special fabrics embedded in a defined orientation in a thermoplastic matrix. The fabrics are made of glass fiber, Kevlar or carbon fiber. A suitable thermoplastic matrix is polyamide, because, apart from its many other advantages, it also displays good adhesion to the fibers.

To manufacture an all-plastic hybrid part, the organic sheet is first shaped by thermoforming. The resultant semi-finished product is then heated to just below the melting point of the plastic matrix, after which it is placed in an injection molding tool and encapsulated. If desired it can be provided with thermoplastic ribs and reinforcements at selected points. Because the organic sheet is preheated, it adheres well to the thermoplastic over the entire area of contact, like a good bond or weld. In a similar way to traditional hybrid technology, a frictional connection is formed between the two components, significantly increasing the mechanical properties of the component as a whole. "Thermoforming of the organic sheet is much cheaper than metal as far as tool investment is concerned, so this method offers particular advantages where small to medium production runs are involved," said Dajek.

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If polyamide is used both as the injection molding partner and as the thermoplastic matrix for the organic sheet, the hybrid component is a single-product solution, which also has recycling benefits.

In an endeavor to further increase the economic efficiency of the new composite technology, development work is currently focusing on moving the thermoforming of the organic sheets to the injection molding machine. With this kind of integration, the separate heating and thermoforming of the sheet before encapsulation would become superfluous.

### **About LANXESS**

The LANXESS-Group manufactures high-quality products in the areas of chemicals, synthetic rubber and plastics. The companies' portfolio comprises basic and fine chemicals, color pigments, plastics, fibers, synthetic rubber and rubber chemicals, leather, textile processing chemicals, paper chemicals, material protection products and water treatment products.

LANXESS Corporation was formed when the Bayer Group combined most of its chemical businesses and large segments of its polymer activities. The company began operating as a legal entity in the United States on July 1, 2004. LANXESS Corporation is a member of the German LANXESS-Group that was spun-off from Bayer in January 2005.

#### Information for editors:

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#### **Forward-looking statements**

This news release contains forward-looking statements based on current assumptions and forecasts made by Bayer Group management. Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future consolidated results, financial situation, development or performance of the company, and the estimates given here. These factors include those discussed in our public reports filed with the Frankfurt Stock Exchange and with the U.S. Securities and Exchange Commission (including Form 20-F). The company assumes no liability to update such forward-looking statements or to adapt to future events or development.

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