

News Release



Cactus with buffer zone

- **First-time, extensive use of UV-stable thermoplastic polyurethane (TPU) on the vehicle exterior**
- **Optimum combination of design and safety in the new Citroën C4 Cactus**

As the first manufacturer of thermoplastic polyurethane (TPU), BASF has successfully optimized the material so that it can be applied extensively and unpainted on the vehicle exterior. The automotive manufacturer PSA Peugeot Citroën uses the new TPU grade Elastollan® AC 55D10 HPM (High Performance Material) for cladding the Citroën C4 Cactus with so-called Airbumps®. These are large air-filled cushion bumpers in contrasting colors: They are fitted on the sides as well as on the front and rear of the vehicle, protect the car exterior from impact and scratches and give the vehicle its distinctive look. This world first is the result of many years of development work between the French automotive manufacturer, the supplier Rehau, Switzerland and BASF. Rehau manufactures the side Airbumps®, while the company Faurecia, France produces the bumpers at the front and back.

“With their characteristic Elastollan® surface, Airbumps® embody the philosophy of the Citroën C4 Cactus perfectly – they have style and are multifunctional. Together with BASF and the suppliers of the Airbump® parts, we have shaped material development and the manufacturing process in such a way that the two have resulted in

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Dr. Ulla Biernat
Phone: +49 621 60-42241
ulla.biernat@basf.com

Meet us at Fakuma 2014,
Friedrichshafen,
October 14-18, 2014,
hall B4, booth 4306

BASF SE
67056 Ludwigshafen
Phone: +49 621 60-0
<http://www.basf.com>
Communications Performance
Materials
Phone: +49 621 60-42241
Fax: +49 621 60-49497
www.plasticsportal.eu

models offering the optimum combination of quality, aesthetics and costs”, explains Jérôme Vinot Préfontaine, Purchasing General Manager for the C4 Cactus program at PSA Peugeot Citroën.

The advantage of Elastollan® HPM lies in its freedom of design and long-term durability together with attractive haptics and a high-class appearance. The new material combines the properties of conventional TPU, such as good tensile strength and abrasion resistance, elasticity, excellent impact resistance at low temperatures and high media resistance, with new features: It has outstanding surface properties even at low wall thicknesses, it is scratch-resistant, UV- and weather-resistant, is easy to clean and has a high service temperature of 120 to 150°C.

Good assembly properties

This makes it an ideal surface for the impact-absorbing Airbumps® which give the C4 Cactus its characteristic graphic looks. The injection-molded Elastollan® component is mounted to a polycarbonate and acrylonitrile-butadiene-styrene (ABS) support shell, thus forming flexible cavities that can be dented and bounce back again. The entire structure is fixed to the metal chassis. Because of the good mounting properties of the HPM grade a tight assemblage is possible which conventional trim materials such as polypropylene do not achieve.

Elastollan® HPM can be pigmented, so the Airbumps® do not have to be painted. Thus, they do not require any special maintenance and in case of an accident help reduce the repair costs for the vehicle. The bumpers are available in four contrasting colors (black, brown, light and dark gray) and contribute to the harmonious individual color design with the automotive coatings, primers and clearcoats from BASF's Coatings Division.

Processing: short cycle time and good flow properties

BASF has also further developed the processing properties of the new Elastollan® grade. The material can be injection-molded within a wide process window with a cycle time that is 50% shorter compared with conventional TPU. It has excellent flow properties, which means that low wall thicknesses of 1.5 to 1.8 mm can be produced without affecting the surface quality. “Because of the high demands on surface and color, hardness and flexibility the close cooperation with BASF in material formulation and application development was a decisive factor for us”, explains Bernard Delles, Project Head at the automotive supplier Rehau which manufactures the side Airbumps®. Faurecia uses the new Elastollan® HPM for manufacturing the bumpers at the front and back of the C4 Cactus. “The innovation lay not only in the material but also in the mounting. BASF has developed a plastic that required a new assembly technology. We worked closely to meet the requirements for the industrial mass production of these unusual parts”, says Sébastien Bret, Development Manager at Faurecia.

Up to now, Elastollan® has been used in the automotive industry as cable sheathing, in the engine compartment and in the vehicle interior, e.g. for door handles, gear knobs and cupholder linings. BASF's TPU can be injection-molded, extruded or blow-molded.

Airbump® is a registered trademark of PSA Peugeot Citroën.

More information: www.elastollan.de

About BASF's Performance Materials Division

BASF's Performance Materials division encompasses the entire material 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 close collaboration with customers and a clear focus on solutions. Strong capabilities in R&D provide the basis to come up with innovative products and applications. In 2013, the Performance Materials division achieved global sales of €6.5 bn.

About BASF

At BASF, we create chemistry – and have been doing so for 150 years. Our portfolio ranges from chemicals, plastics, performance products and crop protection products to oil and gas. As the world's leading chemical company, we combine economic success with environmental protection and social responsibility. Through science and innovation, we enable our customers in nearly every industry to meet the current and future needs of society. Our products and solutions contribute to conserving resources, ensuring nutrition and improving quality of life. We have summed up this contribution in our corporate purpose: We create chemistry for a sustainable future. BASF had sales of about €74 billion in 2013 and over 112,000 employees as of the end of the year. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (AN). Further information on BASF is available on the Internet at www.basf.com.