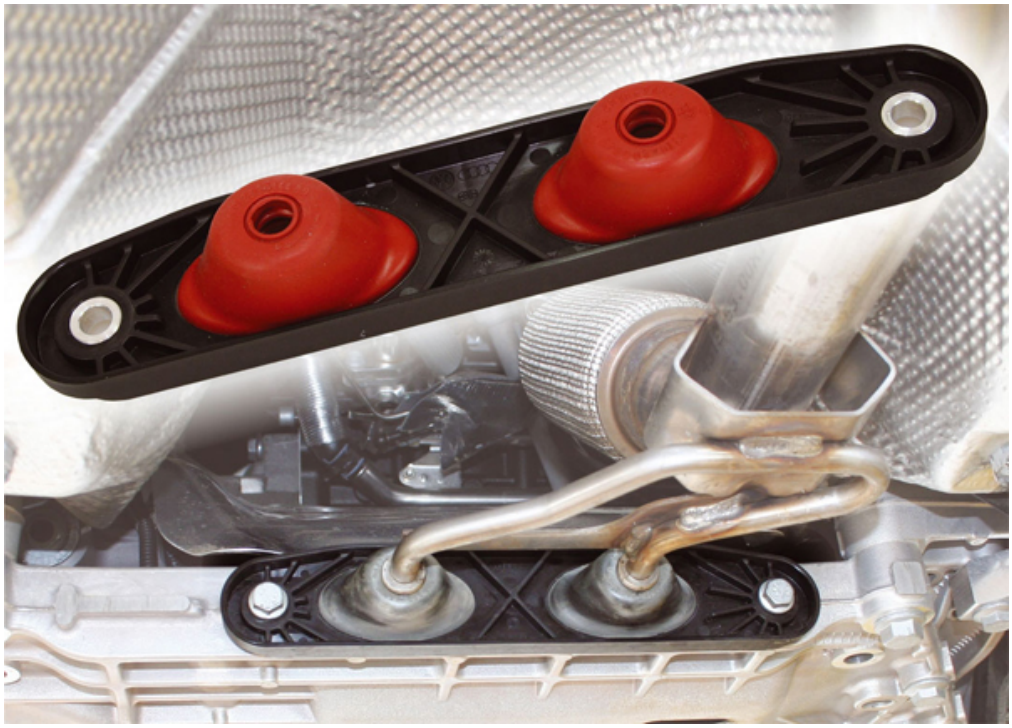
Press Information

A European debut in polymer: Bracket made of DuPont™ Zytel® used for 'hot-end' of exhaust sytems



Stevenage, December 2007. anvisgroup of Bad Soden-Salmünster, Germany, working in cooperation with Volkswagen, has developed the first catalytic converter bracket for cars to be made from an engineering thermoplastic. Due to its position – in close proximity to the engine where temperatures of up to 175 °C, high static and dynamic forces, moisture and chemicals combine – steel plates had previously been considered irreplaceable for such applications. Yet anvisgroup has proven the opposite by developing an innovative, two-component bracket based on glass-fibre reinforced DuPont™ Zytel® nylon and rubber. Since mid-2006, the design has proven itself at the 'hot end' of exhaust systems on all new vehicles belonging to Volkswagen's so-called Golf platform (PQ35).

Manufacture of the newly-designed bracket starts with the injection-moulding of the cross-bar in Zytel®. During a second production phase, the rubber bearings, either made from EPDM (for diesel and smaller petrol engines) or the more heat-resistant silicon rubber VMQ (high-performance petrol engines) are moulded on. Finally the aluminium bushings, required to secure the bracket, are assembled by force fitting. Mounted between the exhaust manifold and the catalytic converter, the two-component part provides flexible and attenuating support for the exhaust system in the x-direction, while absorbing static and dynamic loads in the y- and z-directions. Thus it prevents, for example, the exhaust system from jolting forward in the event of a sudden deceleration, which could otherwise damage the sensitive, flexible metal bellows that decouples load change movements and vibrations between the engine and the exhaust system.

Comprehensive testing, carried out by anvisgroup, showed that Zytel® 70G35HSL,

a hydrolysis-stabilised PA66 with 35 wt. % glass fibres, can meet OEM requirements for dependability for the entire lifecycle of the vehicle. "The component was subjected to the kind of extreme conditions that you would only experience in real life if you were to drive a car and heavy trailer uphill on a potholed road for hundreds of kilometres," comments Gerhard Heckmann, product group manager for exhaust system mountings and decouplings at anvisgroup. "Our test results confirmed that, even then, the cross-bar made of glass-fibre reinforced Zytel® continues to perform faultlessly. Indeed the new catalytic converter bracket offers high levels of safety over its entire lifetime."

In addition, the new design offers further decisive benefits: Firstly, the polymer component weighs only 165g and is therefore considerably lighter than its metal counterpart, which comes in at 300g. Secondly, it provides the opportunity for cost-efficiencies during manufacture because, for example, surface protection is no longer required to prevent corrosion. "With the completion of this project we have been able to implement the first polymer mounting for the 'hot end' of the exhaust module. Hence there is nothing to prevent the development of a polymer alternative for the 'cold end' as well," concludes Heckmann.

anvisgroup develops innovative functional solutions for vehicle dynamics, comfort and safety. Its product portfolio includes chassis components, power-plant suspension systems, exhaust system mountings and decoupling elements/TMD. As a global innovator of acoustic- and vibration-control solutions for the entire vehicle, anvisgroup and its 2200 employees achieved a global turnover of 260 million Euros in 2006.

The DuPont Engineering Polymers business manufactures and sells Crastin® PBT and Rynite® PET thermoplastic polyester resins, Delrin® acetal resins, Hytrel® thermoplastic polyester elastomers, DuPont™ ETPV engineering thermoplastic vulcanizates, Minlon® mineral reinforced nylon resins, Thermx® PCT polycyclohexylene dimethyl terephthalate, Tynex® filaments, Vespel® parts and shapes, Zenite® LCP liquid crystal polymers, Zytel® nylon resins and Zytel® HTN high-performance polyamides. These products serve global markets in the aerospace, appliance, automotive, consumer, electrical, electronic, industrial, sporting goods and many other diversified industries.

DuPont is a science-based products and services company. Founded in 1802, DuPont puts science to work by creating sustainable solutions essential to a better, safer, healthier life for people everywhere. Operating in more than 70 countries, DuPont offers a wide range of innovative products and services for markets including agriculture and food; building and construction; communications; and transportation.

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