

Ultramid[®] in first high load torque rod supports made of plastic

Case Study

Together with the renowned system supplier ContiTech Vibration Control BASF has developed the first engine torque rod support made of plastic that can withstand high mechanical load. This component serves to secure the vehicle engine and transmission assembly as well as to dampen vibrations and to insulate structure-borne noise. Up to now, highly loaded components such as engine mounts, gear mounts and torque rod supports have been made exclusively of aluminum or steel. For the development BASF employed its new special polyamide Ultramid[®] A3WG10 CR together with the instrument of Integrative Simulation. The part weighs 35% less than its predecessor made of aluminum and has gone into serial production for the Opel Vectra and Saab 9-3. The engine mount system is the primary connection member between the engine/transmission unit and the car body. In addition to high loads, these systems are exposed to temperatures ranging from -30°C to 120°C [-22°F to 248°F] as well as to contamination by oils and other chemicals.

In the family of Ultramid[®] CR materials, the dependence of the material properties on the fiber orientation and strain rate has been determined very precisely. Furthermore, the performance level of these plastics is higher and the standard deviation of the mechanical properties is smaller than with commercially available polyamides. The feedstocks are accurately selected and the production conditions are strictly controlled so that components made of these plastics offer a constant quality level and the calculations of their properties match the experiments very well.

