PBT for USB Connectors

Smaller, Faster, Lighter

Alternative powertrains, autonomous driving and the urge for more sustainability impact the vehicle design and driving experience. Particularly, the car interior is experiencing a unique transformation. It is changing into a mobile office and living room. Applications such as the instrument panel are transformed into entertainment units with screens for video conferencing. Electronic devices with additional functions require ever higher data rates. This represents immense requirements for the high-performance equipment and, thus, for the electronic components and materials used. In addition, it is necessary to reduce weight and to use smaller components due to less space.

MD Elektronik has taken on these challenges and presented the new connector system C-Klic based on USB Type-C standard. It is suitable for use in vehicles and enables space saving of up to 60 % compared to standard USB ports. Moreover, the device shows a data transfer rate of >10 GB/s. For the system, the electronics manufacturer uses BASF's glass fiber-reinforced polybutylene terephthalate (PBT) Ultradur B 4300 G4.

The USB connector system enables space saving of up to 60 %. The used PBT allows tight tolerances regardless of the ambient conditions. © BASF

"Our goal was to produce as many individual parts of the connector system as possible with one identical material. This simplifies processing, is much more efficient and contributes to sustainability by reducing material changes on the production machines", said Johannes Trä, Director Development at MD Elektronik.

The PBT is used in the Connector Position Assurance (CPA) element, coding housing and internal overmolding. Especially in the internal component the PBT displays its full strength, according to BASF. Thanks to excellent electrical properties and superb dimensional stability, the engineering plastic protects the sensitive electronics from external influences like humidity and dirt.

Moreover, the PBT fulfills another important aspect. "Due to the very good dimensional stability and low humidity absorption, the tight tolerances can be maintained regardless of the ambient conditions in the vehicle", explains Volker Zeiher, Senior Specialist Technical Development at BASF. Compared to a standard USB charging module with integrated electronics, the new connector system can be produced in much smaller dimensions which saves installation space and weight.

www.basf.com
www.md-elektronik.com

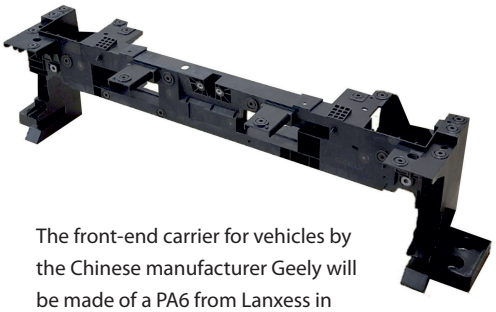
Easy-Flow and Heat Stabilized Polyamide 6

PA for a Front-End Carrier

The Chinese automotive manufacturer Geely will in the future use a polyamide 6 (PA6) from Lanxess for front-end (FE) carriers in its vehicles. The component's design concept is a hybrid design solution going beyond the traditional square/rectangular form FE structure. While the lower cooler mounting is in sheet metal, the complex upper member was developed using the highly filled and heat stabilized Durethan BKV50H2.0 EF, a material well suited for structural components that require high stiffness and strength. The full plastic design for the upper section caters to a wide range of requirements of this multi component assembly. As stated in a press release, using high modulus thermoplastic material also provides a cost effective solution.

Lanxess engineering plastics are designed to support customers in achieving maximum component performance and efficient processing. To meet these objectives, the company established the Pocan and Durethan EF and XF product lines, a broad range of easy-flow polybutylene terephthalates (PBT) and polyamide 6 and 66 grades. "EF" stands for "EasyFlow," "XF" for "XtremeFlow."

Apart from thermoplastics, Lanxess offers experience concerning design and simulation methods, part evaluation and testing. According to the company, its experts actively contribute their engineering know-how to customer projects. HiAnt, the integrated service package for lightweight solutions, aims to help the customers achieve maximum performance while minimizing weight. To pursue optimized design, mathematical simulation methods are outstanding instruments for the design and optimization of parts and they deliver fairly accurate statements on part behavior. When it comes to making a definitive statement on the functional capability of parts, however, it is generally still necessary to conduct practice-oriented tests on prototypes. For this reason, most OEMs prescribe stringent corresponding acceptance tests and specifications. Lanxess has a test laboratory and can offer an extensive range of testing facilities.



The front-end carrier for vehicles by the Chinese manufacturer Geely will be made of a PA6 from Lanxess in the future. © Lanxess

Geely Holding Group is a global technology group engaged in the design, R&D, production, sales, and service of vehicles, powertrains, and key components, as well as mobility services and digital technologies. The technologies comprise new energy, shared mobility, vehicle networks, autonomous driving, vehicle microchips, low orbit satellites, and laser communication.

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