

LANXESS expands product range of highly reinforced thermoplastics

New polyamide 66 with 60 percent glass fibers

- **Extremely strong and stiff**
- **High flowability and chemical resistance**
- **Excellent opportunities for lightweight design and metal substitution**

Cologne – Specialty chemicals company LANXESS is expanding its range of highly reinforced polyamides and polyesters for the design of extremely strong structural components. The polyamide 6 grades Durethan BKV 60 EF and XF are being joined by a polyamide 66 with a glass fiber content of 60 percent, which is to be marketed under the name Durethan AKV 60 XF. The new high-performance thermoplastic combines the benefits of a highly reinforced, easy-flowing compound with the advantages of a polyamide 66 resin. “The material exhibits excellent strength and stiffness. It unlocks a whole new dimension of design freedom for all-plastic parts, plastic/metal hybrid technology and continuous-fiber-reinforced semi-finished thermoplastic composites. What’s more, it can be used as a metal substitute in a whole range of applications,” says Ralf Heinen, a plastics expert at LANXESS.

Thinner walls without sacrificing mechanical performance

At 13,300 MPa (conditioned, room temperature), the material’s modulus of elasticity – an indicator of stiffness – is more than double that of the standard polyamide 66, Durethan AKV 30 H2.0, which has a glass fiber content of 30 percent. As Heinen says: “Our innovative material gives users the opportunity to produce parts that have thinner walls than alternatives made from polyamide 66 with 30 percent glass fiber reinforcement but exhibit similar mechanical performance. Thinner walls offer an additional potential of being able to save weight.”

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Resistance to heat and chemicals coupled with extreme thermal stability

As is to be expected, compared to its polyamide 6 “cousins” with the same glass fiber content, the new highly filled polyamide 66 structural material offers better resistance to chemicals, while its temperature of deflection under load (ISO 75-1,-2), at 250 °C, is almost 40 °C higher. “Moreover, at 180 °C, the maximum long-term service temperature is some 40 °C higher than for polyamide 66 grades with standard heat stabilizer. This exceptionally high thermal stability is a very special feature of the material that significantly expands its range of applications,” explains Heinen.

Shorter cycle times, excellent surfaces

Another advantage of the new material is its excellent processing characteristics. Despite the high glass fiber content, it exhibits the same flowability as polyamide 66 with a 35 percent glass fiber content. It can also be injection molded at the same temperatures. Depending on component geometry, mold cooling and processing conditions, components can often be demolded earlier, because the compound is stiff enough even at high temperatures and also conducts heat better. The thinner walls that can be achieved thanks to the improved material stiffness also help to cut cooling times. “Both can significantly reduce cycle times and help deliver a more cost-effective manufacturing process,” explains Heinen. Despite the high filler content, the resultant components exhibit smooth surfaces, with virtually no protruding fibers. This can be attributed to the excellent flowability of the melt and optimized crystallization behavior.

The new polyamide 66 can also be used as a substitute for metals in components under the hood. Potential applications include valve covers, transmission and engine oil pans, brackets and intake pipes. Engine mountings and coupling rods in the chassis area are also viable applications for the material.

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News Release

LANXESS is a leading specialty chemicals company with sales of EUR 8.0 billion in 2014 and about 16,300 employees in 29 countries. The company is currently represented at 52 production sites worldwide. The core business of LANXESS is the development, manufacturing and marketing of plastics, rubber, intermediates and specialty chemicals. LANXESS is a member of the leading sustainability indices Dow Jones Sustainability Index (DJSI World) and FTSE4Good.

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