News Release

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LANXESS now offers two new highly reinforced polyamide 6 compounds

Engineering to the limit

- **Excellent flame retardance**
- **High tensile strength**
- **Good tracking resistance**

Cologne – Specialty chemicals company LANXESS has expanded its portfolio of Durethan-brand, flame-retardant polyamide 6 compounds to include two new product grades that are highly reinforced with glass fibers. In addition to outstanding flame retardance, both display high strength and stiffness combined with good toughness. They are ideal for components subject to high mechanical load, such as structural parts in industrial machines that must meet flame retardance requirements, and molded case circuit breakers (MCCB). “In addition, they are a substitute for die-cast metals and thermosets, when the high stiffness of these materials is not needed,” says Alexander Radeck, applications development expert in the High Performance Materials (HPM) business unit, adding: “Processors benefit from the high design freedom and cost-efficiency afforded by injection molding.”

5VA rating to UL 94

Durethan BKV45FN04 is reinforced with 45 percent-by-weight short glass fibers. Its flame retardance package contains no halogens or red phosphorus. The high-modulus material can therefore also be colored as desired. Its high flame retardance becomes evident in the UL 94 test of the U.S. testing organization Underwriter Laboratories (UL). The material passes the test, achieving the best classification of V-0 with test specimens just 0.4 millimeters thick. “In the even tougher UL 94-5V test, the compound achieves the best rating of 5VA at just 1.0 mm, and that’s entered accordingly on the UL Yellow Card,” continues Radeck.

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With a CTI A (Comparative Tracking Index, IEC 60112) of 600 volts, the material is highly tracking resistant. Electronic assemblies can therefore be positioned closer together without resulting in shorts or device defects caused by leakage current. Another of the material's strengths is its high-voltage tracking resistance to DIN EN 60587 and ASTM D2303 (Inclined Plane Tracking, IPT). The test recreates how strongly the insulating capacity of a surface changes at high voltages outdoors when exposed to moisture and soiling. "The Yellow Card lists a good IPT voltage for our material of 1 kilovolt at 60 minutes tracking time. That means it's also suitable for components used in high-voltage battery systems in electric cars," explains Radeck.

High glow wire resistance

The second new polyamide 6 from LANXESS is on the verge of market introduction and contains over 50 percent glass fibers. With its halogen-based flame retardance package, it likewise achieves V-0 (0.75 millimeters) and 5VA classification in UL 94 testing (UL Yellow Card). The high flame retardance is also evident in glow wire testing to IEC 60695-2-12/13. For example, at 775 °C, the product easily fulfills glow wire ignition temperature (GWIT) requirements. "With these results, the material is destined for components subject to high mechanical stress, such as in household appliances (IEC 60335-1). It also has great opportunities for use in housing parts and covers of circuit breakers," says Radeck. The compound's CTI A tracking resistance is high at 575 V (PLC 0 on UL Yellow Card).

Free-flowing for complex geometries

With their high glass fiber content, both of the new engineering materials display unusually high stiffness and strength. Durethan BKV45FN04, for instance, has a tensile modulus of 16,000 megapascals (freshly molded). Despite glass fiber reinforcement, the melts of both thermoplastics display excellent flow properties thanks to EasyFlow technology. "Components can therefore be designed

with thin walls, complex geometries and relatively long flow paths," says Radeck.

LANXESS is a leading specialty chemicals company with sales of EUR 7.7 billion in 2016 and about 19,200 employees in 25 countries. The company is currently represented at 75 production sites worldwide. The core business of LANXESS is the development, manufacturing and marketing of chemical intermediates, additives, specialty chemicals and plastics. Through ARLANXEO, the joint venture with Saudi Aramco, LANXESS is also a leading supplier of synthetic rubber. LANXESS is listed in the leading sustainability indices Dow Jones Sustainability Index (DJSI World) and FTSE4Good.

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Forward-Looking Statements
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You can find further information concerning LANXESS chemistry in our WebMagazine at http://webmagazine.lanxess.com.

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Picture

Marked specimens of the new, halogen-free, flame-retardant polyamide Durethan BKV45FN04 are clamped in a tensile testing machine. Photo: LANXESS AG

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