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FAKUMA in Hall A4, Booth 4117

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Evonik's VESTAKEEP® in Stock Shapes from Vertec Polymers

- **VESTAKEEP® PEEK is used to replace lubricated metal bearings.**
- **The decisive factor in the selection of VESTAKEEP® was its special tribological property profile, which greatly reduces the need for maintenance and lubrication for bearings made from this material.**

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Vertec Polymers of Houston, USA, specializing in polymer formulations for wear and structural applications, is using the high performance polymer VESTAKEEP® PEEK (polyetheretherketone) from Evonik Industries in its new Vertec 5025 stock shape. This shape is used to produce bearings that can replace lubricated metal bearings. The decisive factor in the selection of VESTAKEEP® was the special tribological property profile of the high temperature polymer, which greatly reduces the need for maintenance and lubrication for bearings made from this material. Vertec 5025 bearings are also lighter, more durable, and exhibit minimal counter-surface wear.

Special properties for the most stringent requirements

VESTAKEEP® PEEK is a high performance polymer with excellent mechanical, electrical, and thermal properties for long-term service temperatures of up to 260 °C (500 °F). Vertec Polymers mixes its own fillers into the PEEK compounds to further improve the tribological properties, and thus to further reduce friction, wear, and abrasion against non-abrasive friction partners. Vertec 5025 is used in, for example, pumps, cylinder liners, and industrial machines that are exposed to extreme working environments as corrosive chemicals, hot steam, and sludges.

Stock shapes made from VESTAKEEP® PEEK have properties far superior to those of conventional polymer products, compounds, graphite, and metals. They allow machines to be operated for longer and with less expenditure on maintenance. The result is a significant increase in efficiency.

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Proven advantages of VESTAKEEP®

Vertec Polymers markets its PEEK based products under the series name Vertec 5000. “We have tested our Vertec 5025 stock shapes produced with VESTAKEEP® PEEK for use in bearings, and have found that the coefficient of friction is drastically lower, the limiting P-V (pressure x velocity) is enhanced by a factor of 4, and counter-face wear is significantly reduced as compared with standard PEEK compounds for bearings. The substantial reduction of mating surface renders Vertec 5025 stock shapes produced with VESTAKEEP® PEEK to be successfully used against both hard and soft metals. The VESTAKEEP® compound also has a very high modulus of elasticity,” says Shawn Smith, President of Vertec Polymers. He adds that tests on Vertec 5025 have given impressive results: “A Limiting P-V value higher than 4 MPa x m/s (120,000 psi x fpm) has been measured without any external lubrication on an ASTM-D3702 thrust washer wear test rig.” Highly promising tests are currently being performed in the area of high-speed industrial machines where the material is expected to replace lubricated metal bearings. It offers significant advantages over these in terms of durability, lower lubricant requirements, reduced mating surface wear, and lower weight.

Collaboration for modern product developments

Most PEEK stock shape products consist of PEEK without fillers, or with known standard additives. “The Vertec Polymers products are the response to a market demand for modern bearing materials and reinforced molding compounds that can be processed from stock shapes to finished articles,” says Dirk Heinrich, Global Sales und Marketing Director for VESTAKEEP® at Evonik. He also draws attention to the advanced analytical techniques used: “Vertec’s competitive differentiators also include an outstandingly well equipped lab for analysis of polymer materials and a wear test lab. Both are continuously involved in product development, formulation, and testing. We are very pleased that Vertec Polymers has chosen VESTAKEEP® PEEK as the base polymer for Vertec 5025.”

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Evonik's High Performance Polymers Business Line markets VESTAKEEP® PEEK as a powder and granulate for downstream processing by compounding, extrusion, and other shaping processes.

Company information

Evonik Industries is the creative industrial group from Germany which operates in three business areas: Chemicals, Energy and Real Estate. Evonik is a global leader in specialty chemicals, an expert in power generation from hard coal and renewable energies, and one of the largest private residential real estate companies in Germany. Our strengths are creativity, specialization, continuous self-renewal, and reliability. Evonik is active in over 100 countries around the world. In its fiscal year 2007 about 43,000 employees generated sales of about €14.4 billion and an operating profit (EBITDA) of more than €2.2 billion.

Disclaimer

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