



Press Release

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VERTELLUS SHOWCASES AT K 2016 VERSATILE ADDITIVE TECHNOLOGY THAT OPENS UP NEW OPPORTUNITIES FOR AUTOMOTIVE LIGHTWEIGHTING

DÜSSELDORF, Germany — Oct. 21, 2016 — Vertellus, a leading global supplier of additives to the plastics and polymer industries, is showcasing here at K 2016 (hall 5, stand C08-2) its industry-leading ZeMac[®] copolymers for optimizing glass fiber sizing chemistries in resins and composites. By using this technology to improve the mechanical properties of glass fiber-reinforced nylon 6/6, for example, automotive OEMs and tiers can cut weight by replacing heavier materials such as metal in under-the-hood components and other parts. This, in turn, can increase fuel efficiency and lower emissions for greater sustainability. ZeMac copolymers can play a major role in the automotive industry's compliance with the U.S. Corporate Average Fuel Economy (CAFE) and Euro 6 emissions standards.

“As automakers design smaller, more fuel-efficient engines to meet increasingly stringent regulations, one result is extreme under-the-hood operating temperatures where many polymers simply can't compete,” said Ashok Adur, Ph.D., global commercial development director, Plastics at Vertellus. “Vertellus is addressing this challenge by enhancing the properties of glass fiber, which is then used by compounders to produce glass fiber-reinforced nylon for high-heat applications as part of an innovative weight reduction strategy. In short, our ZeMac copolymers make it possible to use lightweight, cost-effective reinforced nylon in highly demanding environments.”

Regulations Demand New Weight Reduction Tactics

In 2012, new CAFE standards were announced requiring automakers to raise the average fuel efficiency of light-duty vehicles to 54.5 mpg by 2025. The U.S. Environmental Protection Agency (EPA) has stated that this program is projected to save approximately four billion barrels of oil and reduce greenhouse gas emissions by two billion metric tons.¹ Manufacturers face a steep challenge: according to Green Car Reports, the latest estimates put the average fuel economy of new cars closer to 25 mpg.² Meanwhile, the Euro 6 emissions standards – which came into force last year – aims to make cars and vans cleaner by lowering exhaust emissions. The updated standard imposes a further, significant reduction in nitrogen oxide emissions from diesel engines (a 67 percent reduction compared to Euro 5) and establishes similar standards for gasoline and diesel vehicles. China plans to implement National VI emissions standards modeled on Euro 6, starting in major cities in 2018.

Although the automotive industry already employs multiple lightweighting approaches – including vehicle design changes such as part consolidation, aerodynamic styling and replacing steel with aluminum – ever-tougher fuel economy and emissions requirements call for fresh ideas. Vertellus' ZeMac copolymers enable the use of glass-reinforced nylon in applications where high temperatures and hydrolysis exposure previously demanded either metal, which are heavy or over-engineered plastics, which can raise costs. This approach offers OEMs a new alternative to aluminum, multi-material options, over-engineered plastics and composites.

Fiber-reinforced nylon 6/6 offers better thermal properties and performance properties compared to other resins such as polypropylene, and cost-effectiveness compared to polyetheretherketone (PEEK), polysulfone (PSU) and other high-performance engineering resins.

Adding ZeMac copolymers to glass fiber sizing emulsions also increases surface reactivity to bond to the nylon matrix, which, in turn, raises the heat deflection temperature (HDT) of reinforced nylon 6/6 composites by 15°C to 20°C. These copolymers also significantly improve hydrolysis resistance, tensile strength, flexural modulus and impact strength. The improved properties allow the composite to withstand mechanical stresses, high heat and chemicals to which radiator parts, air dams and other under-the-hood parts are exposed, enabling these parts to last far longer than in the past – now matching the average lifespan of a vehicle.

The benefits of Vertellus additives extend to other automotive components, as well. For example, virgin and recycled nylon treated with ZeMac copolymers offer enhanced HDT, and tensile and impact properties, enabling a cost reduction through the addition of recycled nylon to virgin nylon auto parts.

Vertellus technology experts are on hand at the company's booth for the duration of K 2016 to answer questions and provide additional details about the company's full line of innovative additives for the plastics and polymer industries.

In addition to under-the-hood automotive applications, ZeMac additives deliver value in the same types of applications in other transportation sectors, including trucks, trains and buses.

About Vertellus

Vertellus is a specialty chemicals company focused on the manufacture of ingredients used in pharmaceuticals, personal care, nutrition, agriculture, industrial and a host of other market areas affected by trends favoring sustainable technologies and chemistries. Vertellus is the largest, global producer of pyridine and picolines, specialty pyridine derivatives, DEET, castor oil derivatives and systems and a world leader in vitamin B3 and citrate polymer additives and systems. Vertellus benefits from a technically advanced global manufacturing base and has approximately 1000 employees. Vertellus is headquartered in the United States in Indianapolis, Ind. More information on Vertellus can be found at www.vertellus.com.

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¹ EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks <https://www3.epa.gov/otaq/climate/documents/420f12051.pdf>

² *Green Car Reports*, "Let's Be Clear: Real 2025 Gas-Mileage Goal Is 40 MPG--Or So--Not 54.5 MPG", April 29, 2015. http://www.greencarreports.com/news/1098068_lets-be-clear-real-2025-gas-mileage-goal-is-40-mpg-or-so-not-54-5-mpg

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PHOTOS: Vertellus' ZeMac® Copolymers Can Improve the Mechanical Properties of Glass Fiber-reinforced Nylon 6/6 Used in Automotive Under-the-hood Components

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