Media Release

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Borealis embraces the new era of electric vehicles with innovative, lightweight Fibremod™ and Daplen™ solutions

Borealis and Borouge, leading providers of innovative, value-creating plastics solutions, announce the launch of several new polypropylene (PP) compounds in the Daplen™ family of PP thermoplastic olefin (TPO) compounds, and the Fibremod™ range of PP fibre reinforced compounds. These innovative new additions to Borealis' proven range of lightweighting solutions for interior, exterior, and under-the-bonnet (UTB) automotive parts offer even more lightweighting potential.

Importantly, these solutions also allow for design freedom and flexibility for vehicles with hybrid or electric powertrains. While the automotive industry strives to improve the environmental performance of internal combustion engine (ICE) technology, alternative powertrains are gaining in importance. Borealis and Borouge are leveraging their polyolefins expertise to develop value-creating and innovative solutions that offer more design freedom and enable vehicular weight savings, whilst requiring no compromises when it comes to mechanical properties.

Retooling automotive design for the electric vehicle era and greater sustainability

Lightweight design, including the use of robust yet lightweight materials, has become an industry imperative. Lightweighting helps reduce vehicular CO_2 emissions and thus plays a crucial role in enabling manufacturers to adhere to regulatory standards. Yet some experts predict that alternative powertrains, like those for electric vehicles, will gain significant market share by 2030. At the same time, an exciting new gamut of design possibilities can be realised with electric and autonomous vehicles.

For example, components in battery electric and fuel cell electric vehicles can be fundamentally redesigned for low-density PP compounds due to lower operating temperatures versus ICE powertrains. Components such as tailgates and front end modules can be executed in monomaterial PP solutions that are not only lighter weight, but are more easily recycled. And where metal and higher-cost engineering plastics were once the material of choice for structural elements, PP-based compounds can now be considered for such applications.

Borealis AG | IZD Tower | Wagramer Strasse 17-19
A-1220 Vienna | Austria
Tel +43 (0) 1 22 4000 | Fax +43 1 22 400 333
www.borealisgroup.com | reg no FN 269858 a

“As we explore the new frontier of electric vehicles together with leading OEMs and their Tier 1 partners, we are committed to developing value-creating polyolefins that enable our customers to think about the material science of cars in a different way,” says Nicholas Kolesch, Head of Automotive Marketing at Borealis. “But even more, we can see the potential for fundamentally rethinking automotive design, thanks to the wealth of PP-based solutions available today, and on the immediate horizon.”

Several new grades from the Daplen PP TPO and Fibremod PP fibre reinforced compound families that unite robust performance properties with easy processing will be launched at the International Plastics in Automotive Engineering conference, held by VDI in Mannheim, at the end of March this year.

New lightweight Fibremod and Daplen grades for automotive exteriors

The proprietary Fibremod long glass fibre reinforced polypropylene (PP-LGF) technology is known for its excellent fibre impregnation and flexibility in allowing for use of various polypropylene matrices, and the production of grades in customised colours. With the commercial launch of LGF Fibremod™ GB416LF with 40% filler content, Borealis is further differentiating its product offer by offering a new, lighter weight solution for a full polyolefin tailgate module as a lower-density replacement solution for conventional metal or engineering polymers. As a high-flow material, Fibremod GB416LF fulfils both emission requirements and mechanical performance criteria. With excellent surface aesthetics, the grade can be used for visible parts. Its sustainability is enhanced not only by its lighter weight, but by eliminating the need for one or more paint layers, or additional aesthetic parts.

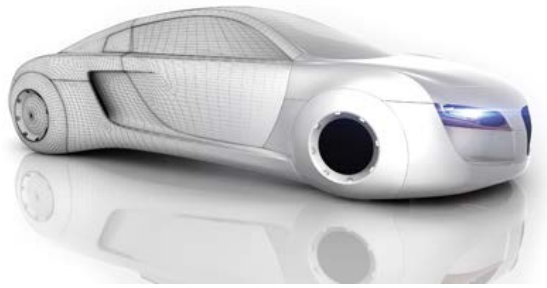

Image: Borealis Fibremod™ and Daplen™ solutions for future automotive lightweight design
Image: © Shutterstock - elsar

Fibremod™ GD577SF, a new short glass fibre (SGF) grade with 50% filler, is another important extension of the Fibremod portfolio. In addition to its outstanding mechanical performance – even at higher temperatures – the grade also offers pleasing surface qualities for visible structural parts. As a potential replacement solution for demanding metal and polyamide (PA) applications, GD577SF is suited for a diverse range of exterior, interior and UTB applications, including full plastic front end modules, clutch and gas pedals, external mirror structures, and more.

New lightweight Daplen grade for automotive interiors

As a new material generation designed to serve as a “drop-in” solution, the highly pure Daplen™ EE001AI boasts excellent mechanical properties and minimal filler content. With the similar shrinkage characteristics typical of grades with higher filler content (such as PP-T15), the new Daplen EE001AI

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can be used in existing tool geometries. It maintains the proven Daplen characteristics of processability and robustness in large-scale series production. While it is a lightweight grade, it certainly pulls its weight when it comes to surface aesthetics, and can be used to achieve class-A surfaces free of tiger stripes and any other visible flaws typically affecting injection-moulded parts. It is highly suitable for a wide range of injection configurations and tool layouts.

**Visit us at VDI Mannheim in Mannheim, Germany,
from 29-30 March 2017 at Stand 54
to learn more about how Borealis and Borouge are further developing
the innovative Fibremod, Fibremod Carbon, and Daplen portfolios.**

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For further information please contact:

Virginia Mesicek
External Communications Manager
tel.: +43 (0) 1 22 400 772 (Vienna, Austria)
e-mail: virginia.mesicek@borealisgroup.com

About Borealis and Borouge Automotive

For over 50 years, Borealis has been a leading supplier of innovative polyolefin plastic materials for engineering applications in the automotive industry. Using its unique and proprietary Borstar® technology and its Fibremod™ post-reactor technology for fibre reinforced polypropylene (PP) compounds, Borealis delivers ideal replacement solutions for conventional materials such as metal, rubber and engineering polymers. Borealis continues to discover new material solutions which help facilitate lightweight construction and thus play an important role in enhancing energy efficiency. In automotive vehicles, Borealis' leading-edge polyolefin plastic materials are used in a wide range of exterior, interior, and under-the-bonnet applications, including bumpers, body panels, trims, dashboards, door claddings, climate control and cooling systems, air intake manifolds and battery cases.

About Borealis and Borouge

Borealis is a leading provider of innovative solutions in the fields of polyolefins, base chemicals and fertilizers. With its Head Office in Vienna, Austria, the company currently has around 6,600 employees and operates in over 120 countries. Borealis generated EUR 7.2 billion in sales revenue and a net profit of EUR 1,107 million in 2016. The International Petroleum Investment Company (IPIC) of Abu Dhabi owns 64% of the company, with the remaining 36% belonging to Austria-based OMV, an integrated, international oil and gas company. Borealis provides services and products to customers around the world in collaboration with Borouge, a joint venture with the Abu Dhabi National Oil Company (ADNOC).

Building on its proprietary Borstar® and Borlink™ technologies and more than 50 years of experience in polyolefins, Borealis and Borouge support key industries with a wide range of applications in the areas of energy, automotive, pipes, consumer products, healthcare, and advanced packaging.

The Borouge 3 plant expansion made Borouge the world's largest integrated polyolefins complex. Now fully ramped up, the additional 2.5 million tonnes of polyolefins capacity yield a total Borouge capacity of 4.5 million tonnes, and a combined Borealis and Borouge capacity of 8 million tonnes.

Borealis offers a wide range of base chemicals, including melamine, phenol, acetone, ethylene, propylene, butadiene and pygas, servicing a wide range of industries. Borealis also creates real value for the agricultural industry, selling approximately 5 million tonnes of fertilizers. Technical nitrogen and melamine products complement the portfolio with applications ranging from mono-nitrogen oxide (NOx) abatement to glues and laminates in the wood working industry.

Borealis and Borouge aim to proactively benefit society by taking on real societal challenges and offering real solutions. Both companies are committed to the principles of Responsible Care®, an initiative to improve safety performance within the chemical industry, and work to solve the world's water and sanitation challenges through product innovation and their Water for the World™ programme.

For more information visit:
www.borealisgroup.com
www.borouge.com
www.waterfortheworld.net

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