

Media Release
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Driving sustainability today

Borealis and Borouge, leading providers of innovative, value-creating plastics solutions, are providing pioneering solutions to the automotive industry that support efforts to achieve greater sustainability. Borealis and Borouge polypropylene (PP) innovations result in premium products that help original equipment manufacturers (OEMs) and Tier One suppliers reduce component weight without compromising performance. Whether exterior, interior or under the bonnet, lighter parts mean lighter vehicles, improved fuel efficiency and reduced CO₂ emissions. Thanks to continued investment in the expansion of cutting-edge compounding and production facilities around the world combined with the presence of dedicated local teams, Borealis and Borouge can guarantee global material supply of innovative PP solutions while supporting local customer and partner needs.

Innovative PP grades offer new potential for more sustainable auto parts

Sustainability plays an increasingly significant role in automotive manufacturing, particularly in developed markets such as Europe. Key drivers of sustainability in the automotive industry are lightweight solutions: replacing metal parts with energy efficient and lighter weight plastics leads to improved fuel economy and lower CO₂ emissions. Pioneering Borealis innovations in the area of natural fibre modified PP as well as Borealis and Borouge Fibremod™ and Daplen™ PP compounds, among others, are helping make vehicles lighter.

One area in which Borealis is leading the way is in the development of natural fibre modified PP, a renewable and lighter material which shows great potential for replacing conventional material components. **Two pioneering natural fibre grades, NJ200AI and NJ201AI**, have been developed and are now being introduced specifically for the European market. Their intended **use is in automotive interiors, including trims and trunk claddings among other applications**. As 20% natural fibre reinforced PP compounds, these grades offer excellent cost efficiency, weight reduction and the added appeal of being more sustainable than

1 (5)

conventional materials. Specific product features and concrete customer benefits include:

- 9% lower density compared to mineral-filled materials results in weight savings and lower CO₂ emissions
- Good stiffness and excellent processability
- Lower processing temperature leading to reduced cycle time and energy savings
- Superior heat deflection temperature (HDT) performance also resulting in lower cycle time
- Lower scratch visibility and depth
- The "green" benefits of the natural fibre filler

Another example of PP innovation involves two grades developed in collaboration with a leading European automotive OEM. In the first instance, the OEM sought a new material to replace an existing long glass fibre reinforced PP solution for a front-end carrier application. The alternative grade had to fulfil extremely stringent worldwide material specifications. Borealis engineered its **Fibremod™ GB477HP**, a member of the Fibremod family of short (SGF) and long glass fibre (LGF) compounds, to meet these sophisticated demands. This new generation 40% SGF PP compound offers excellent stiffness (in excess of 10,000 MPa), impact performance, dimensional stability and long-term heat ageing resistance. As a ready-to-use grade, it offers easy processing in combination with the manufacturer's existing tools and delivers lower overall system costs. In cooperation with the same OEM, Borealis also developed a new PP grade for use in lightweight bumper applications for two new automotive platforms. High flow **Borcom™ WH107AE** reduces the thickness of parts and density of materials used for bumpers, thus making a significant contribution to overall vehicle weight reduction while maintaining the high performance levels demanded by the OEM.

2 (5)

Fibremod and Daplen grades engineered in Brazil and Italy extend global reach

"One of our main goals as a provider of innovative plastics solutions is to help our OEM partners around the world extend their vehicle range by offering lightweight product concepts for interior and exterior applications," explains Harald Hammer, Borealis Vice President of Engineering Applications. "Outside of Europe, another main stage for cooperation is Brazil, where Borealis has operated two plants since 2000."

The Borealis plant in Itatiba, near Sao Paulo, Brazil, is currently undergoing a EUR 50 million expansion. The construction of a new state-of-the-art production building including extruders, support silos and warehouse facilities is scheduled to be fully on stream by the end of 2014. Its output will augment the current annual production in Brazil of 60 kilotonnes of high-performance PP compounds. The Itatiba expansion marks another important step on the way to becoming the leading supplier to the South American automotive industry, making it possible for Borealis to expand its customer base with new OEMs and deepen relationships with existing customers.

One such customer, a leading European OEM with manufacturing facilities in Brazil, was recently a partner in the development of several innovative PP grades, including **Daplen™ BE078AIB**, a special PP compound used for door panels on two newly launched models. A very lightweight solution with excellent mechanical performance balance, BE078AIB has a variety of interior trim applications. **Daplen™ RB344**, a 10% mineral-filled PP compound intended for injection moulding, was developed especially for use in interior and pillar trim applications. Here, it was used to replace PPT20 materials and made it possible to achieve weight savings of around 8% while maintaining a good level of stiffness and toughness as well as appealing surface aesthetics. A special dashboard and console PP compound developed in partnership with the automotive industry is **Daplen™ EE188AIB**, offering good balance in impact and stiffness combined with good processability, high scratch resistance and no stickiness after outdoor exposure to the elements. Finally, the grade **Fibremod™ GD301HPB**, a 30% chemically coupled high performance glass fibre reinforced PP was used for the pedal carrier. This lighter weight compound has the potential in future to replace conventional structural engineering plastics such as glass fibre reinforced polyamides.

3 (5)

Another key Borealis production site for highly engineered plastics solutions is Monza, Italy, which is currently being consolidated as a production location for sophisticated PP compounds. "Itatiba and Monza are just the most recent examples of how Borealis is well on its way to driving the industry into tomorrow," Harald Hammer explains. "We look forward to working with our partners and customers to embark on new ways of thinking in terms of sustainability in the automotive industry. This underlines Borealis' commitment to delivering further innovations throughout the entire automotive value chain, and across the globe."

Borealis will highlight its innovative material solutions for the automotive industry at the K 2013 trade fair in Düsseldorf, Germany, Hall 6, Stand A43, from October 16-23.



Borealis and Borouge are providing the global automotive industry with innovative plastic solutions that decrease production cycle times and increase sustainability for both customers and end consumers. Photo: © Borealis.

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4 (5)

About Borealis Engineering Applications

For over 50 years, Borealis has been a leading supplier of advanced polyolefin plastics for engineering applications in the automotive industry and for household appliances. Thanks to its unique and proprietary Borstar® technology, Borealis provides a large portfolio of innovative products and services which create real value for customers and partners around the world. Innovative automotive solutions include materials for exterior, interior and under the bonnet applications, such as bumpers, body panels, trims, dashboard, door cladding, climate control units, air intake manifolds as well as battery cases. The appliance product range includes materials for small appliances and white goods, from coffeemakers to refrigerators and beyond. Borealis offers advanced polypropylene solutions which make engineering applications lighter, more energy efficient, robust and visually appealing.

About Borealis and Borouge

Borealis is a leading provider of innovative solutions in the fields of polyolefins, base chemicals and fertilizers. With headquarters in Vienna, Austria, Borealis currently employs around 6,200 and operates in over 120 countries. It generated EUR 7.5 billion in sales revenue in 2012. The International Petroleum Investment Company (IPIC) of Abu Dhabi owns 64% of the company, with the remaining 36% owned by OMV, the leading energy group in the European growth belt. 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 the unique Borstar® and Borlink™ technologies and 50 years of experience in polyolefins, Borealis and Borouge support key industries including infrastructure, automotive and advanced packaging. The Borouge plant expansion in Abu Dhabi will be fully operational by mid-2014 with a total annual capacity of 4.5 million tonnes. After this Borealis and Borouge will have approximately 8 million tonnes of polyolefin capacity.

Borealis offers a wide range of base chemicals, including melamine, phenol, acetone, ethylene and propylene servicing a wide range of industries. Together with Borouge the two companies will produce approximately 6 million tonnes of Base Chemicals in 2014.

Borealis also creates real value for the agricultural industry with a large portfolio of fertilizers. The company distributes approximately 2.1 million tonnes per year. This volume will increase to around 5 million tonnes by the end of 2014.

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 contribute 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.borealisdrivingtomorrow.com
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www.kfair-openyourmind.com
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5 (5)