

Borealis & Mobility

Fiber reinforced polypropylene

Light, integrated, and high performing solutions

Keep Discovering

 BOREALIS

بروج
Borouge





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We help you excel in mobility



Reduce weight

Innovating for lightweight solutions

Borealis strives for sustainable mobility by innovating to reduce vehicle weight and enhance its energy efficiency. We collaborate with OEMs, TIERS, and value chain partners to deliver tangible benefits to the industry, drivers, passengers, and the environment. Our cutting-edge innovation comes with unparalleled quality control assurance.



Improve sustainability

Promoting circular economy solutions

Polyolefins provide a lower environmental footprint compared to many conventional materials. Recognizing that plastics are too valuable to waste, Borealis drives the transition to a circular economy for plastics with our advanced mechanical recycled Borcycle™ M, chemical recycled Borcycle™ C, and bio-sourced Bornewables™. They focus on recycling post-consumer waste, reducing CO₂ emissions, and decoupling from fossil-based feedstocks while maintaining high-performance standards.



Save costs

Delivering cost-efficient high-performance alternatives

The polypropylene (PP) compound solutions offered by Borealis and Borouge are cost-efficient and high-performance alternatives to conventional metal and engineering plastics. Our tailor-made materials are easy to process, even in complex geometries and surface textures. Enabling design freedom and highly functional parts across a wide range of process parameters. They create robust surfaces with excellent aesthetics, paintability, and high scratch resistance.



Access globally

Growing global footprint and local presence

With operations in over 120 countries, the Borealis and Borouge footprint is truly global. Our presence on the ground enables us to provide dedicated support to automotive OEMs and Tiers all over the world. Highly skilled and experienced teams in our development centers and operations in Europe, the Americas, and Asia are re-inventing plastics for sustainable mobility.

Borealis Fibremod™

Fiber-reinforced polypropylene

Fibremod™ technology consists of high performance short and long fiber reinforced polypropylene materials, produced by Borealis' proprietary technologies and process. Borealis and Borouge has designed its Fibremod compounds to meet the specific requirements of automotive, appliances and building and construction applications. They provide a complete spectrum of mechanical and chemical resistant properties, to offer cost efficient solutions through weight saving, parts integration, processing efficiency, good surface appearance aligned with reduced energy and material consumption.

Fibremod PP short glass fiber (SF)

Fibremod short glass fiber is the material of choice for static loads, with the widest processing window and excellent surface aesthetics. It offers the best balance of performance to cost and is available with glass fiber content ranging from 5% to 50%, providing stiffness of up to 13,500 MPa and tensile strength of up to 160 MPa. Fibremod SF is produced as a compound on co-rotating twin screw extruders. The final material properties are defined by the combination of specific length of short glass fiber, the PP matrix, the chemical coupling and a proprietary technology to preserve the fiber length. Fibremod SF is usually converted to parts using injection-molding technologies, including more complex processes such as injection compression molding and injection foam molding.

Recently Borealis has launched the Fibremod halogen-free flame retardant SF compound product portfolio focused on E&E and automotive applications (e.g. Lithium-Ion battery module housing, cell holder or insulation plate)

Borcycle™ M: Fiber reinforced compounds with PCR content (SY)

Is a new lightweight high-performance product family, offering sustainable solutions. Aligning CO₂ footprint reduction with excellent mechanical performance (Stiffness and Toughness). Developed for the new generation of different high-end applications for all different automotive market areas (Interior, Exterior and e-Powertrain / UTB).



Fibremod PP long glass fiber (LF)

Fibremod long glass fiber meets the requirements for high dynamic loads and low creep behavior. The pellets' long fibers lead to tensile strength of up to 170 MPa, excellent creep resistance and high impact strength, combined with an excellent performance to cost balance. Borealis has developed proprietary technology for producing Fibremod LF. This technology uses the pultrusion process to increase fiber length in pellets and final parts, leading to high quality products in terms of fibre impregnation and a broad range of fibre and matrix combinations for tailor-made solutions. The product portfolio covers glass fiber contents ranging from 20% to 60%, with custom grades to provide the greatest stiffness and strength at elevated temperatures, with outstanding energy absorption in high-speed deformation combined with good surface appearance for visible parts. Fibremod LF compounds typically have excellent flowability for smooth processing and low anisotropy shrinkage (warpage).

Recently Borealis has launched the Fibremod halogen-free flame retardant LF compound focused on e-vehicle applications (e.g. Battery module housing)

Dilution Concept for Long Glass fiber Applications

As an alternative to ready-to-use Fibremod LF compounds, Borealis offers a highly filled PP long glass fiber grade (Fibremod™ GB601HP) that can be diluted with Borealis' unreinforced polypropylene grades directly on the conversion machine. The converter can easily adjust the glass fiber content to the individual application's requirements. When producing parts for a few different applications, the use of dilution technology enables flexibility while reducing product complexity. As the converter is responsible for combining the dilution materials, close collaboration with Borealis is recommended during both application development and production. To achieve optimal performance, use of Fibremod high-filled glass fiber compounds in combination with Borealis polypropylene base resins (fossil based and BioPP - Bornewables) is strongly encouraged. Recommended dilution base resins for Fibremod GB601HP

Material Properties

Properties	Reactor elastomer modified PP	PP Copolymer	PP Homopolymer
Stiffness		+	++
Impact	++	+	
Flowability		++	++
Energy absorption	++	+	

Fibremod™ and Borcycle™

Superior properties and benefits

Borealis fiber reinforced technologies combines expertise in product development, its unique production process for glass fiber reinforced materials and tailored customer support. This combination maximizes the fiber length in both pellets and the final part providing the optimal balance between strength and energy absorption.

Comparison of expected stiffness and impact balance

Borealis fiber rein

Unreinforced PP Compounds and PP Reinforced with SF and LF

comparison of stiffness and impact performance of different PP reinforced grade families shows that Borealis' Fibremod and Borcycle portfolio offers significantly higher stiffness for a given level of impact performance, compared with unreinforced PP compounds.

Fibremod SF

High stiffness & high strength for static loads
Best performance / cost balance

Fibremod LF

High energy absorption for dynamic loads
Higher strength
Less creep
Excellent performance / cost balance

Compounding

Proprietary technology

Borealis SIRIUS catalyst technology



Fibremod SF

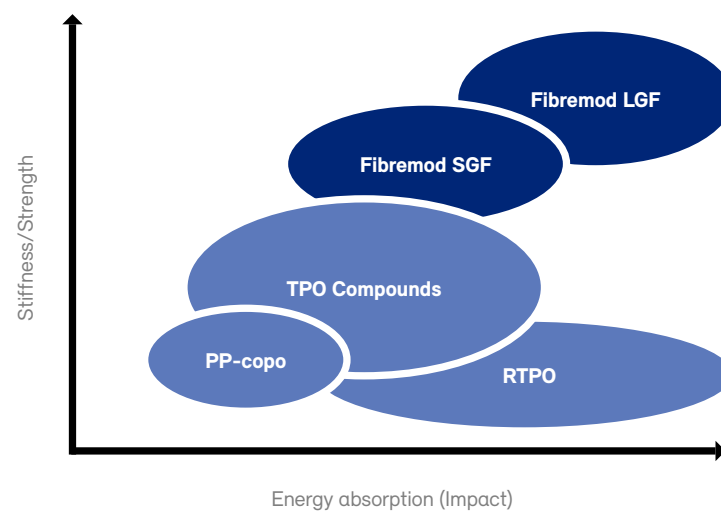
High mechanical performance
High CO2 footprint reduction potential

Material Modeling

Fiber orientation / length
Full field strain testing
Integrative simulation
Full 3D approach
Expertise
Computational power

Borstar® PP

Multimodal High Purity



Fibremod™ in E-powertrain and UtB

Enhanced strength, durability, and performance

Introducing our line of polyolefin materials for under-the-bonnet and e-powertrain applications in the automotive industry. Polyolefins are known for their excellent chemical resistance, low density, and high strength-to-weight ratio. This makes them ideal for use in the demanding environments found in automotive under-the-bonnet and powertrain applications.

Our long-glass fiber reinforced polyolefin materials provide exceptional stiffness and impact resistance, while our short-glass fiber reinforced materials offer improved dimensional stability and increased strength.

We have extensive experience in supplying polyolefin materials for a wide range of automotive applications, including engine covers, oil pans, transmission cases, and more. Our materials have been rigorously tested to meet the highest industry standards, ensuring that they perform to the highest levels in your vehicles.

Choose our polyolefin materials for your next automotive project and experience the benefits of enhanced strength, durability, and performance. Contact us today to learn more about our materials and how they can help you achieve your goals.

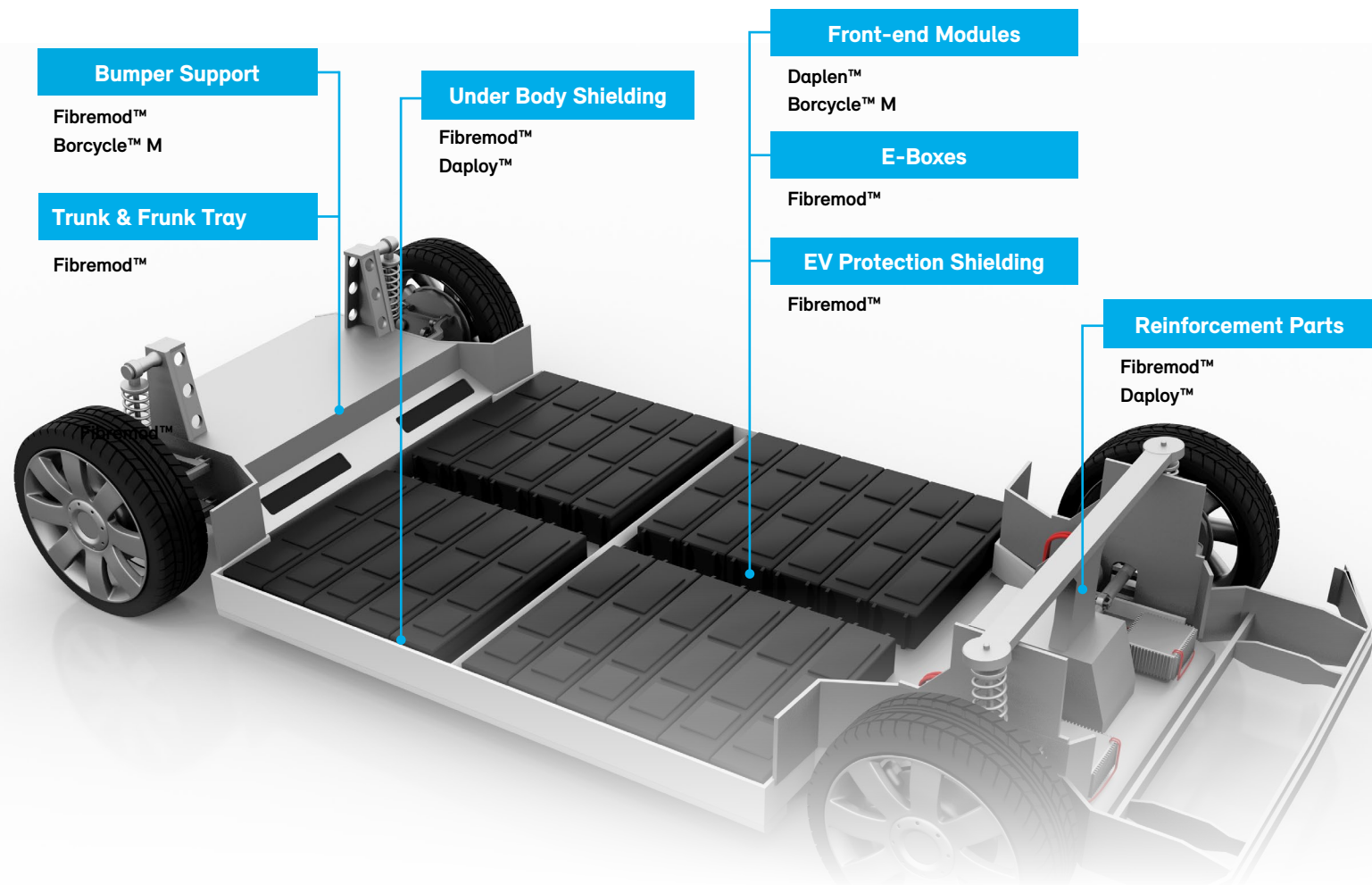
Halogen-free FR PP for improved safety, affordability and flexibility of your parts

Halogen-free flame retardant polypropylene enables you to:

- Achieve 50-75% lower CO₂ emissions (*)
- Save up to €260 per tonne on potential carbon tax (**)
- Contribute to a circular economy and become part of a PP recycling stream

(*) vs. other used plastics such as PA or PC/ABS (*) Source: Plasticseurope

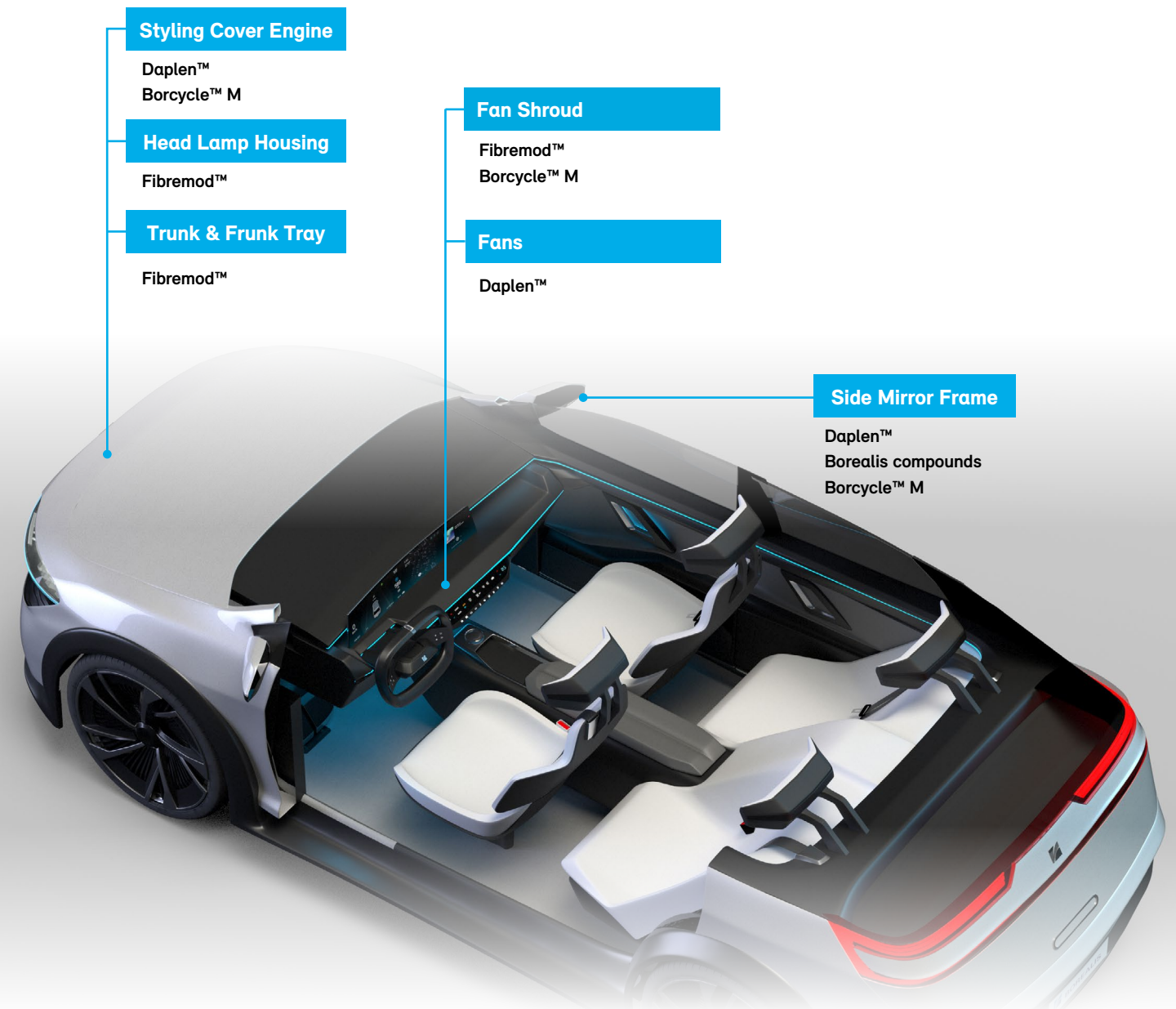
(**) Example: Based on planned CO₂ price of 55€/t by 2025 in Germany. Based on CO₂ footprint of virgin PP vs. virgin PA (6,6)



Fibremod™ in Interior

A cost efficient and high-performance alternative

Fibremod™ glass fiber reinforced PP compounds are a cost efficient and high-performance alternative to conventional metal-based materials, and are particularly suited for structural interior applications such as instrument panel carriers, door modules, and tailgate frames. Fibremod resins offer the required strength and durability for complex parts; their easy processability also gives Tier Ones and OEMs greater design freedom. Using Fibremod makes it easier to integrate more functionalities into one part. This reduces the complexity of both the part and assembly, thus saving system costs.

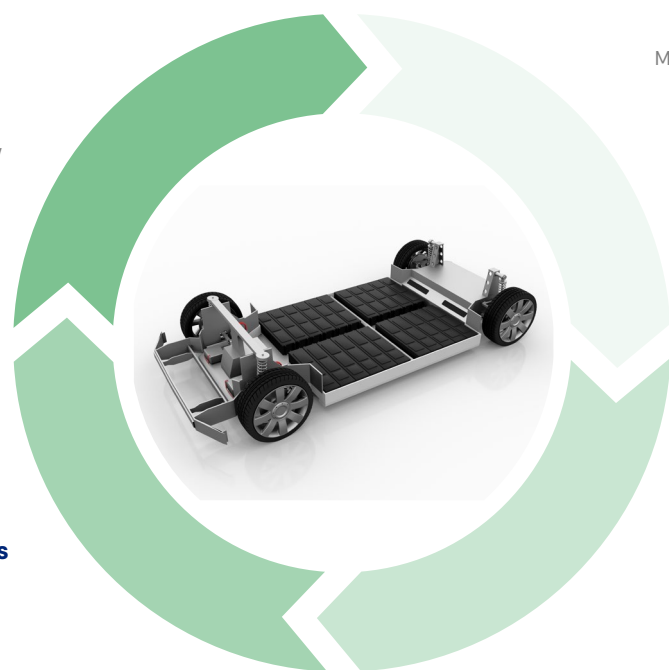


Powered by Innovation

The automotive industry is undergoing one of the largest transformations in decades. The convergence of trends such as electrification, connectivity, shared mobility, and autonomous vehicles are turning cars into intelligent computer-driven systems rather than an assembly of mechanical parts. Borealis and Borouge are dedicated to delivering innovative material solutions to meet the changing mobility needs of today, and to anticipate those of tomorrow.

Processability

- Flowability
- Reduced cycle times
- Reduced shrinkage
- Wide processing window



Surface Quality

- Metallic and special effects
- Scratch resistance
- Class-A surfaces
- Translucence
- Paintability

Physical Properties

- Thermal expansion
- Impact strength
- Stiffness
- Density

Stabilisation

- UV resistance
- Heat resistance
- Chemical resistance

To drive innovation in the mobility sector, we draw on expertise gained over the past five decades. We collaborate with customers and partners along the entire automotive value chain, and co-operate closely with Tier 1 and 2 suppliers. At our in-house R&D facilities, including three world-class Innovation Centers, our innovation teams assist in the development of novel material solutions. We offer a range of technical services: from ideation to part design, prototype simulation and testing of batch samples, and even to support in initiating series production. In addition to optimising our own processes and methodologies, we offer specific services in mobility-related testing.

As mobility is transformed, so are the demands placed on automotive exteriors. Materials must be robust yet lightweight; tough and durable, yet aesthetically pleasing. Our PP and TPO compounds can be tailored to meet the unique material requirements for each respective application, and are engineered for peak performance.



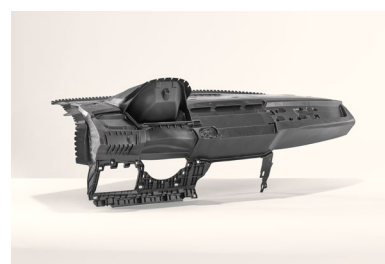
Reduce weight

Innovating for lightweight solutions

Fibremod and Borcycle compounds offer outstanding density to property ratio, the potential for significant weight reduction, and increased component functionalization and modularization. Fibremod and Borcycle compounds also combine extremely low density with stiffness up to 15,000 MPa.. This means lighter components can be developed, while maintaining or increasing stiffness. The geometry of structural parts can also be adapted to best utilize the greater stiffness, resulting in further weight-saving potential.

Fibremod and Borcycle compounds are a cost-effective alternative to engineering plastics, high performance plastics and conventional lightweight construction materials, while offering clear benefits such as no contact corrosion or moisture absorption, and their suitability for economic injection processes. Compared to PA6, the Borealis fiber reinforced portfolio can offer weight saving potential up to 30%.

Fibremod™ GB601HP + EE002AE



Instrument panel carrier in foamed PP long glass fiber 20% made from Fibremod GB601HP, a 60% long glass fiber reinforced PP compound diluted with EE002AE, a high impact strength elastomer modified PP resin.

EE002AE can be provided with 100% renewable-based or chemically recycled polymer content by weight

- Weight reduction
- Lower system costs
- Very good dimensional stability
- Dilution process enhances flexibility

Fibremod™ GB416LF



Fibremod™ GB416LF is a 40% long glass fiber reinforced PP that exhibits outstanding mechanical properties such as high strength and excellent impact behavior. It has been further optimised to allow for the production of visible structural parts with pleasing aesthetics as well as high scratch and mar resistance. Its low emissions and fogging values make it compliant with stringent OEM interior air quality requirements.

GB416LF can be provided with 50% renewable-based or chemically recycled polymer content by weight.

- Allows for filling of complex parts with low injection pressure
- Makes aesthetic trims redundant, thus reducing complexity
- Ready-to-use mass-coloured material meets narrow OEM colour tolerances on final injection moulded part surface

Fibremod™ GE409SFB



ibremod™GE409SFB is a 40 % chemically coupled high performance glass fiber reinforced polypropylene compound intended for injection molding.

This material shows excellent mechanical properties also at elevated temperatures. The product is available in black.

- Good performance to assembly final component
- Yields pleasing surface aesthetics
- Easy to process
- Weight-saving benefits when compared to PA-GF

Reducing weight through foaming

Fibremod and Borcycle offer excellent performance to density ratio allows for significant weight reduction. However, new regulations and efficiency standards are pushing some industries to seek further weight saving technologies. Borealis and Borouge took up this challenge more than a decade ago and developing Fibremod compounds suitable for physical and chemical foaming. The tailor-made combination of proprietary Borstar Polypropylene with carefully selected fibre qualities leads to a very homogenous cell structure and ideal mechanical properties for the foamed part, with the recent Borcycle fiber reinforced compounds it is not different.

Creating foamed applications with Borealis Fibremod and Borcycle compounds result in parts with reduced warpage, fewer sink marks, better melt viscosity (enabling a reduction in clamping force), faster cycle time an overall improvement in design freedom aligned with, low CO₂ footprint. These benefits culminate in improved economics during production and support our customers to achieve the sustainability targets. Borealis has many examples of foamed parts in series production realised with business partners in automotive. These parts have used both chemical and physical foaming, and both short and long fibers.

Fibremod™ GE277AI



Fibremod™ GE277AI is a 20% chemically coupled, high flow fiber reinforced PP compound which allows for the production of complex part geometries in standard and foam injection molding processes.

The material can be provided with 50% renewable-based or chemically recycled polymer content by weight.

- Enables high flow lengths and low wall thickness
- Easy to weld using different welding technologies
- Results in good foam structure and homogeneous cell sizes in foam injection molding technology



Save costs

Fibremod and Borcycle technologies are not just a synonym for engineering polymers. Borealis has developed sophisticated application testing methods and standards, which combined with its modeling and simulation methodologies, allow Borealis to offer comprehensive support to customers in developing and implementing applications. This minimizes the need for the customer to undertake expensive prototyping and physical testing. Fiber reinforced polypropylene compounds have complex structures and require sophisticated capabilities to engineer successful solutions.

Predict your mechanical properties upfront

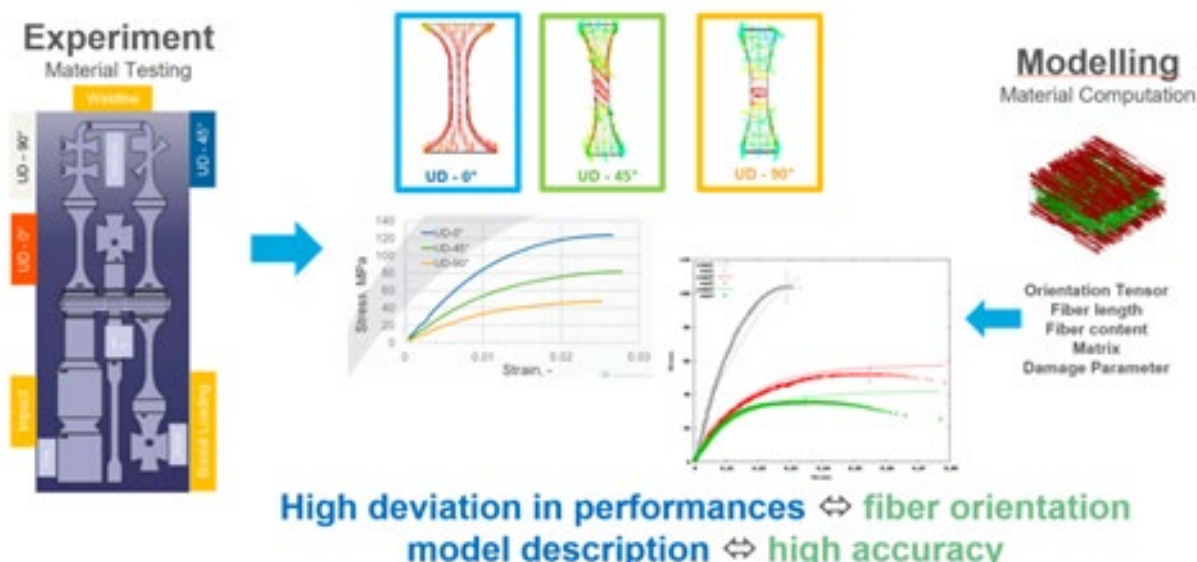
Borealis has developed computerised methods to predict fiber orientation and distribution enabling integrated simulations of the final application's performance. Borealis has also established state-of-the-art testing methods and standards for fiber reinforced polypropylene and is committed to enhancing modeling and simulation methodologies. This capability supports Borealis' customers and helps them to develop and implement new lightweight solutions based on Fibremod at low cost, by minimizing expensive testing and prototyping.

Extended simulation support to create accurate simulations

The first step is to characterize the Fibremod compounds with the Borealis' proprietary Fibre Tool. This allows to test materials with 0°, 45° and 90° fiber orientation, providing the basis for highly accurate material models. Next, these material data are used in the simulation of a complex part design, resulting in a fully-fledged 3D resolution of the orientation tensor. The orientation tensor is determined in more than ten layers across the part's wall thickness, delivering detailed information on a scale of less than 1 cm. These material models are validated by microstructure measurement using micrometre (µm) computer tomography. As a final step, the output from the model is fed into finite element analysis software to predict the behavior of Fibremod compounds under load. With this profound technical capability in experimental testing, modeling and simulation, Borealis and its business partners have realized countless projects, proving Borealis' very deep understanding of the materials and the excellent accuracy of the material models.

Technical services provided especially for fiber reinforced compounds

To predict the performance of applications, extensive testing is carried out to obtain the fiber orientation dependent short and long-term behavior of the material. The experimental data is utilized to generate and validate micromechanical material models and to apply the integrative simulation approach. Borealis offers extensive engineering support, applying both process and structural simulation to optimize current and new applications.



Improve sustainability

Whether for interior, exterior, electric powertrain, or UTB: Borealis and Borouge offer a range of more sustainable mineral-filled and glass fiber reinforced solutions. These enable the use of higher amounts of recyclate in the respective part; produce more easily recyclable applications; and enable the substitution of circular materials for conventional polyolefins, thereby enhancing the environmental footprint of the final product.

GRADES

Glass fiber reinforced PP compounds

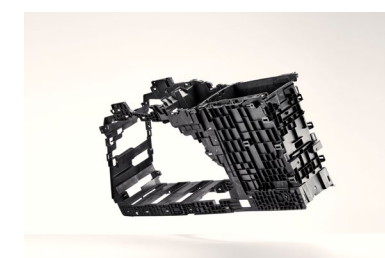
Borcycle™ GE2331SY



Borcycle™ GE2331SY is a 20% glass fiber reinforced PP compound containing 40% PCR. Intended for use in injection molding of non-visible interior parts like instrument panel or center console carriers, GE2331SY fulfills premium OEM emissions, fogging, and odour requirements.

- 40wt% [40% PCR content by weight]
- Near-virgin performance properties
- Good flowability enables complex part geometries
- Suitable for foam injection molding

Borcycle™ GD3600SY



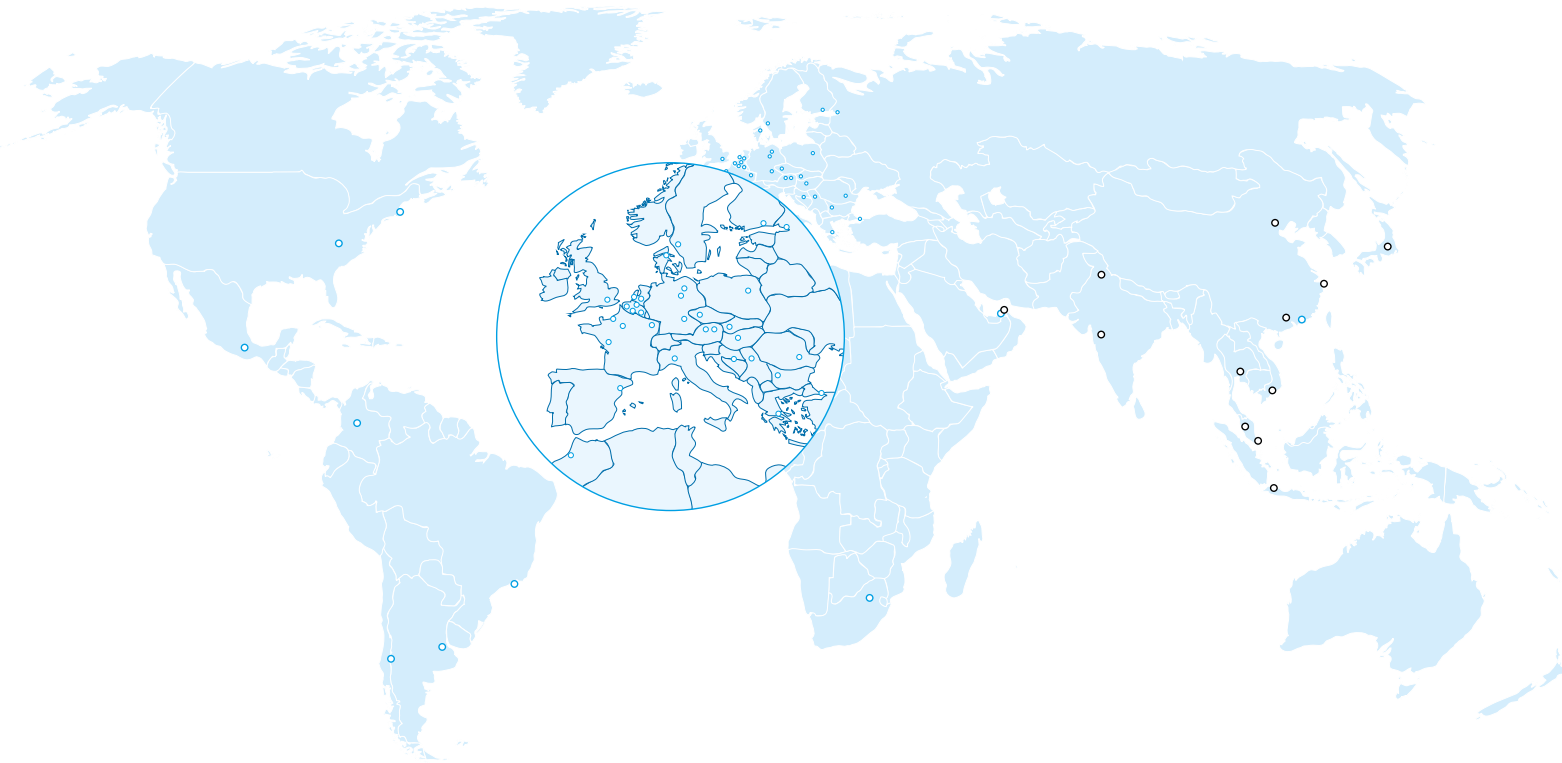
Borcycle™ GD3600SY is a 30% glass fiber reinforced PP compound containing nearly 70% PCR. Intended for use in injection molding of non-visible parts like brackets, headlamp housings or center console carriers, GD3600SY offers an excellent stiffness/impact balance while maximizing PCR use.

- 68wt% [68% PCR content by weight]
- Good flowability
- Good impact behavior

Access globally

In re-inventing essentials for sustainable living, we are building on our commitment to safety, our people, innovation and technology, and performance excellence. We are accelerating the transformation to a circular economy of polyolefins and expanding our geographical footprint to better serve our customers around the globe.

With operations and development centers in the Americas, Europe, Middle East and Asia, we are close to where you are. Offering both, global solutions with aligned performance across regions, and solutions that are tailor made to the specifics of local markets.



○ – Borealis Locations

Head Office Borealis AG

Austria

Customer Service Centers

Austria, Belgium, Brazil, Finland, France, Hungary, Turkey, United States

Production Plants

Austria, Belgium, Brazil, Finland, France, Germany, Italy, Sweden, The Netherlands, United States

Innovation Centers

Austria, Finland, Sweden

Sales Offices/Representative Office

Argentina, Chile, China, Colombia, Czech Republic, Denmark, France, Hong Kong, Mexico, Morocco, Poland, Russia, South Africa, Spain, Turkey, UAE, UK

Borealis L.A.T Locations

Austria, Bulgaria, Croatia, Czech Republic, France, Greece, Hungary, Romania, Serbia, Slovakia

Borealis Rosier Locations

Belgium, The Netherlands

○ – Borouge Locations

Head Offices

Singapore, UAE

Innovation/Application Centers

China, UAE

Production Plants

China, UAE

Sales Offices/Representative Offices

China, India, Indonesia, Japan, Singapore, Thailand, UAE, Vietnam

Logistics Hubs

China, Malaysia, Singapore, UAE

The purpose of the pictures on this page are of representational nature only.



Circular Economy Solutions for Mobility

Join the circular revolution!

We can work together to make mobility more circular. Our ever-expanding range of circular material solutions can help you meet your own sustainability targets – without having to compromise on quality or performance.



Choose material solutions based on circular or renewable feedstock instead of fossil fuel-based feedstock.

As reliable partners, Borealis and Borouge are putting their expertise to work to ensure the secure and ample supply of high-quality circular materials on the market. We are committed to increasing the volume of circular materials and solutions we offer to 600 kilotons (kt) in Europe by 2025, and to 1.8 million kt globally by 2030.



Maintain premium part performance.

Our circular solutions offer high purity standards and are compliant with industry standards with regard to odour, emissions, and fogging. They also consistently deliver when it comes to aesthetics, including paintability, light and dark colour matching, Class-A surfaces, and more.



Use less virgin material but still maintain lighter weight.

Lightweight and low-density materials used in a broad spectrum of mobility applications can be made even more sustainable by replacing virgin materials with grades from our Borcycle™ or Bornewables™ portfolios. Our circular solutions can substitute for virgin materials – both polyolefins and non-polyolefins – in any number of high-end automotive parts. In many instances, the foaming process can be used to reduce weight even further.



Increase the amount of recycled content in automotive applications.

The transformative Borcycle technology is advancing thanks to our innovation expertise in combination with value chain collaboration. By working together, we are unlocking the potential of recycled material by increasing the percentage of post-consumer recyclate (PCR) content by weight in applications while maintaining stringent performance requirements such as impact/stiffness balance as well as paintability and surface aesthetics.



Facilitate easier recyclability of automotive applications.

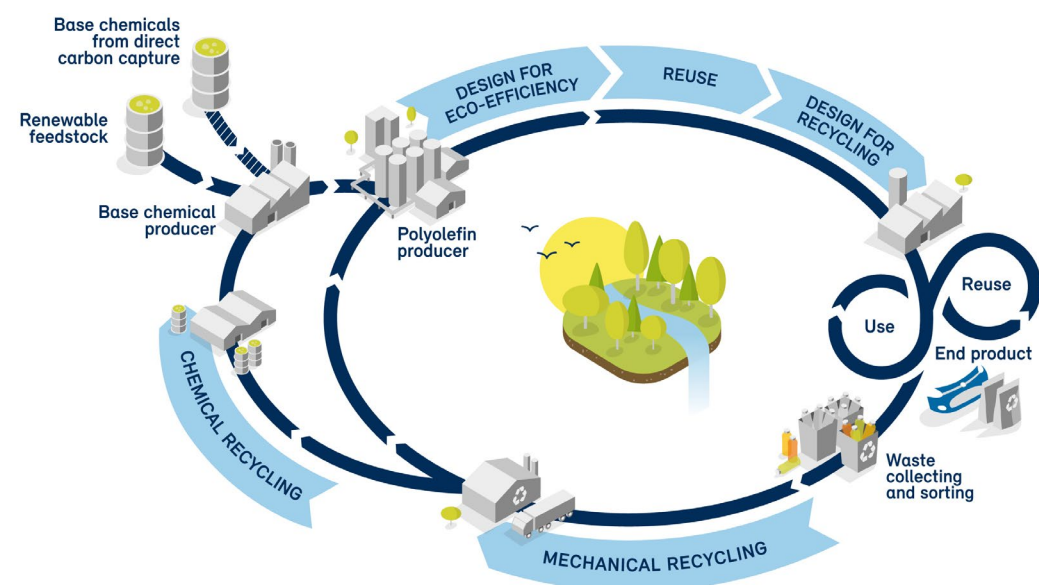
Part of our vision for a circular economy of plastics entails the development of PP monomaterials which are more easily recycled, and produce higher quality recyclate. Our innovation efforts are focused on design for recyclability and efficiency. Advanced testing facilities at our Innovation Headquarters in Linz, Austria, offer state-of-the-art modeling and simulation, and can assist you in testing the limits of circular materials.



The Borealis Circular Cascade Model

Polyolefin plastic materials are versatile resources that should be reclaimed and reused. Because plastics are too valuable to ever be wasted, Borealis is committed to driving the transformation to a circular economy of plastics.

The **Borealis circular cascade model** depicts the diverse ways in which plastics can be kept in the loop: from renewable feedstocks to design for eco-efficiency; from design for recycling, to mechanical and chemical recycling – and then back to renewable feedstocks to close the circle. We use our polyolefins expertise to develop and implement innovative circular economy solutions with added value for our customers in all industry sectors, including mobility.



Borcycle™ - Our technology for recycling polyolefin waste into new plastics

Borcycle™ is one example of how we are accelerating towards circularity. This evolving technology uses recycling processes to transform polyolefins-based, post-consumer waste streams into new and value-adding solutions for demanding applications. **Borcycle™ M** grades are designed to fulfill the most stringent requirements, from stiffness/impact balance to processability, from paintability to good surface aesthetics. In short: our Borcycle™ M portfolio of mechanically recycled grades offers high material quality, but with a lower carbon footprint.



The virgin-level grades found in the **Borcycle™ C** family of chemically recycled solutions are fit for the most demanding applications, including food-contact and healthcare. Borcycle C grades are drop-in solutions and ISCC Plus certified. This means that the origins of these circular materials can be tracked and traced along the entire supply chain.



The Bornewables™ - Premium polyolefin products manufactured with renewable feedstocks

The **Bornewables™** portfolio of circular polyolefin products is another way in which Borealis is providing its customers and partners ever more sustainable alternatives to fossil fuel-based polyolefins. Bornewables grades are made of renewable-based feedstock derived entirely from waste and residue streams such as used cooking and vegetable oil (and thus not in competition with the food chain). The ISCC PLUS accreditation of Bornewables grades is based on the mass balance method that allows the customer to track and quantify the effective renewable content at each manufacturing step. By using Bornewables grades, our customers can replace fossil fuel-based feedstock with an identical volume of sustainably sourced, renewable feedstock – without extra switching costs, and while maintaining the same high application quality.



Materials for Fibremod™ Solutions

Grade	Density [kg/m³] ISO 1183	MFR 230 °C/2.16 kg [g/10 min] ISO 1133	Flexural modulus [MPa] ISO 178	Tensile strength (50 mm/min) ISO 527-2	Impact, charpy notched 23 °C [kJ/m²] ISO 179/1eA	Impact, charpy notched -20 °C [kJ/m²] ISO 179/1eA	HDT B (0.45 MPa) [°C]	Typical applications
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D-LFT manufacturing process polymers for glass fiber reinforced polypropylene

BJ100HP	904	90	1250	25	4	2	72	Matrix with coupling agent for D-LFT process (front end modules, instrument panel carrier)
FJ081HP	1026	88	1980	20	1.4	1.1	107	Matrix with coupling agent for D-LFT process (top cover of the lithium-ion battery pack and similar solutions)
WG068AE	950	110	-	-	-	-	-	Performance MB for D-LFT process

Dilution polymers for long glass fiber reinforced polypropylene

BJ380MO	905	80	1200	25	5	3.5	90	Under body shielding
BJ400HP	908	100	1500	28	4	2	95	Front end modules, instrument panel carrier
EE002AE	905	11	1000	20	65	9	76	Instrument panel carriers
HK060AE	905	125	1550	35	1	0.9	91	Front end modules, door module carrier
Borcycle™ M UJ0583SY	920	80	1400	28	3.5	1.5	-	Under body shieldings, battery supports, front end modules

Flame retardant PP compounds

Fibremod™ FF151HP	1150	16	-	20	20	-	-	Engine cover
Fibremod™ FD121SF	1118	14	-	51	7	-	-	Lithium-ion battery module housing, cell holder or insulation plate.
Fibremod™ FD221SF	1238	5	-	68	10	-	-	Lithium-ion battery module housing, cell holder or insulation plate.
Fibremod™ FF311SF	1243	16	7790	86	9	-	149	Lithium-ion battery module housing, cell holder or insulation plate.
Fibremod™ FE411SF	1426	3	-	106	6	-	152	Lithium-ion battery module housing.

Long glass fiber reinforced polypropylene

Fibremod™ GB215HP	1040	-	4600	105	20	20	154	Instrument panel carrier, door module carrier, structural carriers
Fibremod™ GB303HP	1120	-	6500	125	20	20	165	Door module carrier, structural carriers, technical components
Fibremod™ GB402HP	1240	-	8400	140	28	32	166	Frontend modulus, tailgate carriers, structural carriers
Fibremod™ GB416LF	1230	-	9000	170	28	-	160	Interior structural parts with aesthetic requirements
Fibremod™ GB601HP	1470	-	15000	170	25	25	165	Long glass fiber concentrate for structural components

Grade	Density [kg/m³] ISO 1183	MFR 230 °C/2.16 kg [g/10 min] ISO 1133	Flexural modulus [MPa] ISO 178	Tensile strength (50 mm/min) ISO 527-2	Impact, charpy notched 23 °C [kJ/m²] ISO 179/1eA	Impact, charpy notched -20 °C [kJ/m²] ISO 179/1eA	HDT B (0.45 MPa) [°C] ISO 75-2	Typical applications
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Short glass fiber reinforced polypropylene

Fibremod™ GF027SF	920	18.5	1650	34	7	-	146	Structural interior parts, integrated air ducts
Fibremod™ GB205U	1040	2	4400	80	10	8	154	Center console carriers, technical components exposed to heat
Fibremod™ GE277AI	1040	12	4200	85	11	10	155	Instrument panel carriers, structural interior parts
Borcycle™ M GE2331SY	1050	9	4100	64	7	5	155	Instrument panel carriers, center console carrier and other structural parts
Fibremod™ GB307HP	1180	2.5	8000	115	11	10	160	Air intake manifold, fans and shrouds, parts of cooling systems
Fibremod™ GB311U	1120	2	6200	100	11	9	159	Air filter housings, head lamp housings, technical components
Fibremod™ GB317SF	1120	5	6300	105	10	9	160	Exterior applications in building, construction and automotive
Fibremod™ GB364WG	1120	2	6000	100	12	9	159	White goods, as dishwashers
Fibremod™ GB366WG	1120	2	6000	100	12	9	159	White goods, as washing machine tubs
Fibremod™ WD300UB	1130	5	4700	60	8	6.4	160	Air filter housing, structural interior parts
Fibremod™ WE380HP	1130	10	4400	60	11	9	155	Dashboard, engine covers, structural carriers
Fibremod™ GD310U	1130	10	6200	105	10	9	162	Fans and shrouds, interior structural carriers
Borcycle™ M GD3600SY	1140	6.5	5600	75	8.5	-	-	Bumper brackets, head lamp housing, center console carrier
Fibremod™ GD302HP	1140	4	5100	65	25	15	150	Rear seat structures, structural components
Fibremod™ GD301FE	1140	4	6500	105	12	10	158	Pedal carriers, front-end carriers, lower bumper stiffeners
Fibremod™ GE309SF	1150	14	7000	95	8.5	6	148	Outside rear view mirror, structural aesthetic parts
Fibremod™ GF326SF	1120	15	-	110	10	9	-	Bumper brackets
Fibremod™ GD301HP	1160	5	7400	105	9.5	9	160	Door module carrier, fans and shrouds, pedal carrier
Fibremod™ GC420SF	1140	7.5	6000	80	23	-	160	Dashboard carrier, interior structural parts
Fibremod™ GE409SF	1200	14	9850	100	8	9	163	Outside rear view mirror, structural aesthetic parts
Fibremod™ GB417SF	1230	1.4	9000	-	11	10	-	Exterior applications in building, construction and automotive
Fibremod™ GB477HP	1230	2.5	9000	127	12	11	163	Front-end carriers, gear housings, pedal carriers, tank hinges
Fibremod™ GD577SF	1350	3	11300	160	11	-	-	Front-end carriers, pedals, cross beam, structural parts

Borealis at a Glance

Borealis is one of the world's leading providers of advanced and sustainable polyolefin solutions and a European front-runner in polyolefins recycling. In Europe, we are a market leader in base chemicals and fertilizers. We leverage our polymers expertise and decades of experience to offer value adding, innovative and circular material solutions for key industries such as consumer products, energy, healthcare, infrastructure, and mobility.



Worldwide

Operating on five continents in 120 countries, with head office in Vienna, Austria



Key Financial Figures

In 2022, total sales of EUR 12,342 million and a net profit of EUR 1,396 million



Market Position

Ranked 2nd among polyolefin producers in Europe and 8th worldwide



Mechanical Recycling

Three polyolefin recycling locations in Europe



Employees

Around 6900 employees (full-time equivalents)



R&D

Record-breaking 133 priority patents filed in Austria in 2021



Ownership Structure

OMV holds 75% and Mubadala, through its holding company, 25%



Join Ventures

Borouge (with ADNOC, the Abu Dhabi National Oil Company, in Abu Dhabi, UAE) and Bayport Polymers (with TotalEnergies in Texas, US)



Business Areas

Production and distribution of polyolefins, base chemicals, and fertilizers

In re-inventing essentials for sustainable living, we are building on our commitment to safety, our people, innovation and technology, and performance excellence. We are accelerating the transformation to a circular economy of polyolefins and expanding our geographical footprint to better serve our customers around the globe.

In affirming our aim to be a global leader in advanced and sustainable chemicals and material solutions, the Borealis Strategy 2030 puts sustainability at the core of all our current and future operations. We have set ambitious sustainability targets for our Polyolefins and Hydrocarbons businesses with regard to greenhouse gas emissions, energy use, flaring, and circular economy products and solutions. Borealis is exploring the use of carbon capture technologies for base chemicals production in Europe, and has also formed a partnership, C2PAT, with Lafarge, OMB and VERBUND to plan and construct a full-scale plant in Austria for carbon capture and processing.

As a responsible petrochemicals company, Borouge believes that achieving a zero-waste circular economy of plastics calls for strong and concerted action on the part of the industry, governments, consumers, and society. For more information on how Borouge is accelerating the transition to the circular economy, go to: [Borouge Sustainability Circular Economy](#).



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About Borealis Borealis is one of the world's leading providers of advanced and circular polyolefin solutions and a European market leader in base chemicals, fertilizers and the mechanical recycling of plastics. We leverage our polymers expertise and decades of experience to offer value adding, innovative and circular material solutions for key industries. In re-inventing for more sustainable living, we build on our commitment to safety, our people and excellence as we accelerate the transformation to a circular economy and expand our geographical footprint.

With head offices in Vienna, Austria, Borealis employs 6,900 employees and operates in over 120 countries. In 2021, Borealis generated total sales and other income of EUR 10,153 million and a net profit of EUR 1,396 million. OMV, the Austria-based international oil and gas company, owns 75% of Borealis, while the remaining 25% is owned by a holding company of the Abu-Dhabi based Mubadala. We supply services and products to customers around the globe through Borealis and two important joint ventures: Borouge (with the Abu Dhabi National Oil Company, or ADNOC, based in UAE); and Baystar™ (with TotalEnergies, based in the US).

www.borealisgroup.com | www.borealiseverminds.com

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