

CASE STUDY

Borealis extends its Bornewables™ portfolio with the world's first physical content renewable polypropylene (PP) produced on a propane dehydrogenation process (PDH)

First introduced in a reusable coffee cup developed by BE O Lifestyle



In partnership with

NESTE

BE O
LIFESTYLE



BOREALIS

بروج
Borouge



Bornewables™ Polypropylene (PP) with up to 50% measurable renewable content

Borealis made dedicated investments to its PDH production plant in Kallo, Belgium to allow controlled blending production and obtain the new Bornewables PP with measurable physical renewable content. In the controlled-blending process, Neste's RE™ material is blended with the conventional feedstock in concentration up to 50%. After successful trial runs in 2021, this type of production can now be offered to the market, and is launched with this newly developed reusable coffee cup by BE O Lifestyle.

BE O Lifestyle developed a coffee cup, the BE O cup, that is designed for a long lifetime, easy to repair, dish-washer safe and fully recyclable afterwards. On top of that, it is produced with the new renewable-based Bornewables PP. All major parts of the reusable cup are made from a new Bornewables PP, while the close sealing rings are made from renewable thermoplastic elastomer (TPE). The reusable coffee cup of BE O Lifestyle fits perfectly in Borealis' Circular Economy Solutions of design for reuse and support of reuse applications.

Extending the Bornewables portfolio

The new Bornewables PP with measurable physical content is added on top of the mass balance certified Bornewables portfolio of PP and PE. This new process allows the production of PP grades with up to 50% C-14 traceable renewable content, allowing all partners to prove and quantify the renewable content at each manufacturing step towards a final product. Also in the final product, the renewable content can be measured using the C-14 test method. ISCC PLUS (International Sustainability & Carbon Certification PLUS) certification of downstream users is not a requirement to make claims on renewable content for this part of the Bornewables portfolio.

For the production of all the Bornewables, Borealis uses Neste RE™ feedstock, which is made from 100% renewable raw materials such as waste and residue oils and fats. Transparent traceability along the value chain of the renewable feedstock is still enabled by the ISCC PLUS certification of the feedstock.

This cup is a nice result of a cooperation along the value chain between BE O Lifestyle, Borealis and Neste, and marks the introduction of Bornewables PP with measurable renewable content.



Connecting the pieces

Founded in 2019, BE O Lifestyle specializes in the development of consumer products designed for sustainable living and manufactured with renewable materials for a sustainable future. The coffee cup was inspired by the company's earlier success with a climate-positive bottle made from a material derived from sugar cane residue. Both products are designed and produced in the Netherlands and assembled by a workforce made up of people with special needs.

“We are proud to present a reusable coffee cup moulded from a renewable PP that results in a carbon footprint reduction of up to 50% due to the large share of bio-based content in the material. Every day we make choices in our lives that affect the environment. With our products we want to show that everyone can contribute to a better world without sacrifice.”

Damir Perkić
Founder
BE O Lifestyle





“The commercial implementation of the controlled blending process on our PDH to produce physical content renewable polypropylene, marks an important step forward as we progress towards a future where the supply and demand for sustainable feedstock is large enough to make a real difference on our road to circularity. Furthermore, at Borealis, our aim is to maximize and extend the lifetime of existing products by designing for reuse. The cooperation with Neste and BE O Lifestyle has made this possible. We are committed to re-inventing consumer products for more sustainable living, together with our industry partners”, says Christopher McArdle.”

Christopher McArdle

Vice President, Circular Economy Solutions and New Business Development
Borealis

The new Borneables PP is produced by Borealis blending Neste RE with conventional feedstock

Following successful trial runs in 2021, the controlled blending process on our PDH can now deliver commercial PP volumes with measurable renewable content. It enables the production of PP grades with up to 50% C-14 traceable renewable content, allowing all partners to prove and quantify the renewable content at each manufacturing step.

As feedstock for high-quality polymers, Neste RE is a drop-in replacement for fossil-based virgin material. It can play a significant role in the efforts of manufacturers to reduce the carbon footprint of their products and processes by adopting feedstock from renewable sources.

“We are very pleased to join Borealis and BE O Lifestyle in this great project. It demonstrates the drop-in character of Neste RE in an attractive consumer application. Replacing virgin fossil feedstock with our renewable Neste RE leads to more sustainable plastics, significantly reducing greenhouse gas emissions. Exciting to see that besides ISCC+ certification, the PP used for this cup has a high percentage of measurable renewable content. This is achieved using Neste RE hydrocarbons produced via our NEXBTL process, which are always 100% renewable.”

Jeroen Verhoeven
Vice President Value Chain Development
Neste Renewable Polymers and Chemicals





Borealis and Borouge packaging solutions are making everyday life easier

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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).

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All photos courtesy of BE O Lifestyle

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