

To shield against pollution and viruses – take cover with protective face masks – made possible with plastics



The demand for face masks is only intensifying, whether for the healthcare industry, protecting against air pollution, or in offering a barrier against any bacterial and viral threats, such as for instance the currently ongoing coronavirus outbreak. The role that advanced plastics solutions, such as [meltblown fibres](#) play in face mask applications is not widely known, however.

Diverse applications for meltblown fibres

Face masks are just one of the many product applications where meltblown fibres are used. These materials can also be found in baby diapers, feminine hygiene products and incontinence products for example, where the advanced use of plastic is providing functionality and a nice touch. In the case of diapers, the key role of these fibres is to ensure that the product is breathable, while still featuring a strong enough barrier to prevent leakage.

The diverse applications of meltblown fibres is a further reminder of the benefits of plastic polymers. Plastic is a highly advanced technical material that is lightweight and resistant. When used in a smart way it can raise and improve the living conditions and health of many people around the world.

Using meltblown fibres in face masks

Advanced plastics solutions play a vital role in face masks. This is where polymer innovators, such as Borealis, are offering the optimised meltblown polypropylene (PP) grades featuring the dense material barriers required to protect public health.

“Face masks should provide protection, but still allow for easy breathing, and be optimised depending on the required filtration properties,” says Gustaf Tobieson, Application Marketing Manager at Borealis, the market leader in Europe for these high-end PP quality grades designed for fibre use. “Our meltblown grades are used in several hygiene and filtration applications, where they provide barrier and capture particles. During periods of viral outbreak, these polymer solutions play an essential role in the face masks that protect against their spread.”

The role for face masks goes far beyond protection against viral threats. They are also used by medical workers who are dealing with quarantined patients, as well as by people living in cities with poor air quality levels. While the use of facemasks to protect against air pollution has been commonplace in some major Asian cities for years, it is now happening in the heart of Europe too. For example, their use in the Bosnian capital of Sarajevo is becoming more and more frequent, as a result of excessive coal burning. Pollution levels resulted in protests in the city on 20 January 2020.

How meltblown fibres perform

Typical face masks contain a layered laminate combination of the coarser spunbond polypropylene (PP) fibres (≈ 75 percent) and the very fine spun meltblown PP fibres (≈ 25 percent). The functionality comes from the meltblown fibres, which are just 1–2 microns in width. To place their thin width into context, just 4kg of meltblown PP fibres placed in length would be enough material to reach the moon.

Innovation is continuing within this space, with Borealis taking it to an even higher level with the 2017 launch of an advanced meltblown fibre grade HL912FB, which enables the production of even finer fibres with greater barrier and filtration properties.

“This innovative material can be processed at slightly higher temperatures (15-20°C) which then leads to finer fibres. This means more surface and an even denser web, so the protection should be even better as a result,” says Henk van Paridon, Application Development Engineer at Borealis. In Borealis laboratory trials, the HL912FB grade results in a 25% improvement in quality factor (QF) and an around 40% higher filtration efficiency, when compared to reference grade polymer.

“Borealis has now started to supply up to 100% certified renewable PP spunbond and meltblown grades in 2020, which offers the same characteristics as the material produced until now. This will allow users, brand owners, converters of hygiene products including wipes, filters and face masks to reduce their CO₂ footprint significantly in their strive toward a more sustainable future”, continues Tobieson. This product is created with renewable feedstocks produced primarily from waste and residue streams, and serves as a major contributor to reducing Borealis’ reliance on fossil-fuel based feedstocks. True to its [EverMinds™](#) approach, which unites the wide range of Borealis activities and initiatives aimed at making plastics more circular, the company is a frontrunner in helping build a circular economy for plastics.

But whatever the grade used, it is important to stress that the use of face masks requires proper handling, whereby common sense, including handwashing is prioritised. To maintain good quality therapy and provide appropriate protection it is important that the mask and components are replaced regularly.

About Borealis

Borealis is a leading provider of innovative solutions in the fields of polyolefins, base chemicals, fertilizers and melamine. With its head office in Vienna, Austria, the company currently has more than 6,800 employees and operates in over 120 countries. Borealis generated EUR 8.3 billion in sales revenue and a net profit of EUR 906 million in 2018. Mubadala, through its holding company, 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 globally, in collaboration with Borouge, a joint venture with the Abu Dhabi National Oil Company (ADNOC) and with Baystar™, a joint venture with Total and NOVA Chemicals in Texas, USA. www.borealisgroup.com

About Borealis EverMinds

Launched in 2018, EverMinds is an umbrella brand uniting the wide range of Borealis activities and initiatives aimed at making plastics more circular. As a dedicated platform, EverMinds promotes a circular mind-set among all Borealis stakeholders. The platform encompasses proprietary Borealis technologies as well as established brands such as Purpolen™ and Dipolen™. It facilitates deeper collaboration between Borealis and its partners in order to develop innovative and sustainable polyolefins solutions based on the circular model of recycling, re-use and design for circularity. EverMinds also extends to pioneering corporate programmes such as Project STOP, and engagement in industry initiatives like the Polyolefins Circular Economy Platform (PCEP), and Project CEFLEX.

www.borealiseverminds.com



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