Barrier film technologies protect food from deterioration by reducing or eliminating oxygen and water vapor permeation. Barrier films are becoming more widespread, in part because of increasing popularity of prepackaged food, which help supermarkets reduce the labor costs of on-site packaging. Packaging that delivers extra-long shelf life depends upon high barrier performance in trays and film, especially combined with modified atmosphere technology. To achieve better performance for these applications, as well as support new creative packaging designs, the packaging industry uses multi-layer constructions. These sophisticated films utilize many different materials with specific properties to provide a precisely engineered barrier solution against water vapor, oxygen, or even ultraviolet light.

Now DSM Engineering Plastics and DEXPlastomers, collaborating with Windmöller and Hölscher, have employed an innovative concept in multi-layer barrier packaging that can give synergistic properties that go beyond the individual layers. The sandwich structure of the film features 16 layers ranging from 1 µm to 25 µm – each with a specific function. Materials include Akulon polyamide 6 resin for oxygen barrier performance and mechanical properties, Yparex grafted polyethylene resin as extrudable adhesive resin, Stamylex polyolefin resin as moisture barrier and Exact ethylene copolymer as high-performance sealing layer.

This nano-layer construction is made possible due to the exceptional quality and purity of each component material, and is produced on a specialized FILMEX cast film line from Windmöller and Hölscher.

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Eco+ solution
A new nano-multilayer barrier film shows extending shelf life of food products, helping to avoid food waste and reduce total environmental costs.

“Combining the right machine technology with proper resin selection gives the potential for significantly enhancing film properties. Therefore, W&H always emphasizes the benefits of a close and trusted collaboration between resin supplier, converter and equipment manufacturer. Together with the experts from DSM and DEX, we developed and produced a brilliant barrier film on our FILMEX cast film line. The resins showed perfectly matched flow behaviour and the resulting film revealed a so far unsurpassed transparency.”

Dr. Torsten Schmitz
Division Manager Cast Film at Windmöller & Hölscher:

Nano-multilayer barrier film for food packaging
Unique nano sandwich structures showing extended shelf life

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