

Exceed™ Tough+

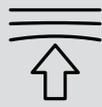
Exceed™ Flow+

Exxtra™ Seal

## Help brand owners protect their food products using extreme performance packaging



Extreme toughness and flex-crack resistance



Enhanced stiffness



Excellent seal performance



High melt strength

Exceed™ high performance polymers offer a new benchmark for a variety of high integrity food packaging applications that require extreme performance. This portfolio of products enables converters to cost-effectively fabricate extremely damage-resistant film to protect and preserve food products with high integrity packaging — from production to consumption.

### High package integrity

The Exceed family of high performance products provides a number of options for enhanced flexible food packaging solutions. Exceed enables converters to fabricate films that deliver excellent performance: exceptional toughness, very high dart impact, aged property retention and sealability (including low seal initiation temperature and broad hot-tack range). Films made with these polymers offer extreme performance for flexible food packaging, including pouches and bags, that needs to withstand demanding environment, like freezers, or be capable of holding large quantities or heavy contents. This includes frozen food, dry food and meat and cheese applications.

### Innovation opportunities

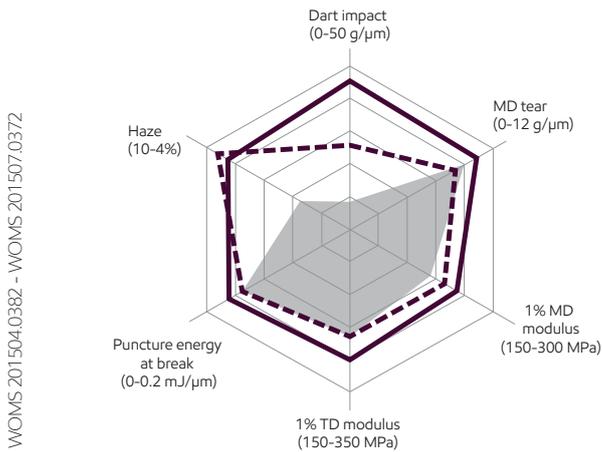
Sharing knowledge and working together to harness collective expertise across the value chain helps us create differentiated solutions. The melt strength and toughness of Exceed allows the fabrication of films with extreme performance or to reduce

film thickness, while maintaining performance. Films made with Exceed resin do not require traditional melt strength enhancers which may deteriorate the desired performance properties of the film. This creates opportunities for converters to enhance the performance of their structures, while also providing possibilities for downgauging. Exceed is also well suited for use on mono-layer lines, providing performance on a wide variety of extrusion configurations.

### Cost optimization

Exceed high performance polymers allow converters to increase output and optimize film formulations. These polymer grades offer a range of options for high melt strength and ease of extrusion to optimize solutions and deliver opportunities for high output. The extreme toughness combined with the melt strength allows converters to tailor film solutions through linear polyethylene blends or downgauging. The high versatility of these Exceed grades, in terms of performance and processing capabilities, allows converters to simplify their inventories which can lower costs.

Figure 1: Selected film property data for Exceed formulated films and the reference film.



Data from tests performed by or on behalf of ExxonMobil

Figure 2: Selected film property data for Exceed formulated film and the reference film.

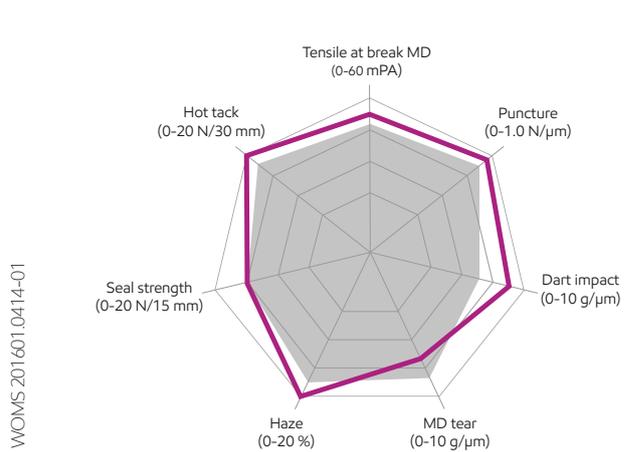


Table 1: Product data for Exceed formulated films and the reference film.

	Melt index (g/10 min)	Density (g/cm <sup>3</sup> )	Exceed coextruded 3-layer 40 μm film	Reference coextruded 3-layer 40 μm film	Reference coextruded 3-layer 40 μm film
Exceed Tough+ m 0516	0.5	0.916	●	●	
HDPE	0.7	0.961	●	●	●
C4LLDPE	1	0.918		●	
C8LLDPE	1	0.916			●
LDPE	0.75	0.923			●

Table 2: Product data for Exceed formulated film and the reference film.

	Melt index (g/10 min)	Density (g/cm <sup>3</sup> )	Exceed coextruded 3-layer 50 μm film	Reference coextruded 3-layer 50 μm film
Exceed Flow+ m 0516	0.5	0.916	●	
C8LLDPE	1	0.916	●	●
2 MI LDPE	2	-	●	●
C8mLLDPE	-	-		●

### Exxtra™ Seal m 2012 enhanced performance polymer

Exxtra Seal m 2012 enhanced performance polymer delivers flexible food and liquid packaging films with excellent sealing performance and outstanding extrudability and enables converters to fabricate films that deliver excellent performance: exceptional toughness, very high dart impact and sealability including low seal initiation.

Grades	Melt index (g/10 min)	Density (g/cm <sup>3</sup> )	Melt flow ratio (I <sub>2</sub> /I <sub>1</sub> )	Slip/anti-block	Distinguishing features for high performance
Exceed Tough+ m 0814	0.8	0.914	28-32	No	Easy extrusion and good bubble stability, step-out mechanical performance, excellent sealing performance
Exceed Tough+ m 0516	0.5	0.916	28-30	No	Extreme toughness, exceptional flex-crack resistance with high melt strength
Exceed Tough+ m 0518	0.5	0.918	28-30	No	Extreme toughness, high flex-crack resistance with enhanced stiffness
Exceed Tough+ m 1019	1.0	0.918	28-30	No	Extreme toughness with enhanced ability to extrude
Exceed Flow+ m 0516	0.5	0.916	36-38	No	Excellent balance of melt strength, toughness, sealing and ability to extrude
Exceed Flow+ m 0216	0.2	0.916	48-52	No	Extreme melt strength and toughness combined for lamination and thicker films
Exxtra Seal m 2012	2.0	0.912	-	No	Excellent sealing performance and extrudability

<sup>1</sup> Tris(nonylphenol)phosphite (TNPP) CAS# 26523-78-4 is not intentionally used by ExxonMobil in this product. Although this product is not routinely tested for its presence, based on product composition knowledge this substance is not expected to be present. However, the fact that this substance is not intentionally used by ExxonMobil in this product does not exclude that trace levels of this substance may be present as a result of the specific characteristics of the raw materials and/or of the manufacturing process.

Food contact compliance: Please contact ExxonMobil Chemical Customer Service for the official food law certificates which provide more detailed information.

#### Test methods based on

ASTM D-1238	ASTM D-1746	ASTM D-882	ASTM F-1921	ExxonMobil test method
ASTM D-4703	ASTM D-1003	ASTL D-1709	ASTM F-2029	
ASTM D-1505 / ISO 1183	ASTM D-2547	ASTM D-5748	CEN 14477	



ExxonMobil Signature Polymers was born from the belief that people fuel progress. From automotive and construction to packaging, agriculture, industrial, and beyond, we leverage the scale and reach of ExxonMobil to deliver the insights and innovations that empower our diverse, global partners to take their businesses to new heights. We continuously work to provide the listen-first, service-driven, game-changing collaboration that unlocks opportunities for our partners and advances and business goals.



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## What's new: ExxonMobil Signature Polymers

All our polymers are now positioned under a single portfolio brand: ExxonMobil Signature Polymers. The aim is to simplify our product architecture and naming to improve portfolio navigation for you. We would like to stress that our commitment to high quality products remains the same, it is the names that change. Everything else remains the same. We will be making these modifications over the next six months so you will see both old and new grade names highlighted during that time.

Here's a quick overview of brands and grade names that have changed in this document:

Legacy commercial name	New commercial name
Exceed XP 8784	Exceed Tough+ m 0814
Exceed XP 8656	Exceed Tough+ m 0516
Exceed XP 8358	Exceed Tough+ m 0518
Exceed XP 8318	Exceed Tough+ m 1019
Exceed XP 6056	Exceed Flow+ m 0516
Exceed XP 6026	Exceed Flow+ m 0216
Exceed 2012	Exxtra Seal m 2012

Some of our existing Exceed, Achieve, Paxon and premium PP/HD grades have moved to Exceed brand; most existing Enable grades have moved to Exceed Flow[+]; most of our existing Exceed XP grades have moved to Exceed Tough[+]; most of our existing Exceed S grades have moved to Exceed Stiff[+]. More details here [https://www.exxonmobilchemical.com/en/brands/signature-polymers/exceed\\_high\\_performance\\_polymers](https://www.exxonmobilchemical.com/en/brands/signature-polymers/exceed_high_performance_polymers) or contact your ExxonMobil representative to know more.

Want to see what's changed in our portfolio? Go to [exxonmobilchemical.com/sptransform](https://www.exxonmobilchemical.com/sptransform)