ExxonMobil

Help brand owners protect their food products using eXtreme Performance packaging

Energy lives here™

Exceed™ XP 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.

Delivered attributes	Derived benefits & potential value
• Extreme toughness • Exceptional flex-crack resistance	• High package integrity – minimizes waste through the value chain • Potential to optimize film formulation solutions via linear blends /downgauging • Outstanding aged property retention
• Enhanced stiffness	• Enhanced stiffness at given density levels • Up to 30% average modulus increase at 0.916 g/cm^3 density
• Excellent seal performance	• Enhanced sealing capability with excellent machinability • Potential for improved shelf life and product safety
• High melt strength	• Improved bubble stability for optimized converter performance • High output without the need for LDPE
• Very low hexane extractables	• Good organoleptics • TNPP-free[1]

High package integrity

The Exceed XP family of performance products provides a number of options for enhanced flexible food packaging solutions. Exceed XP 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

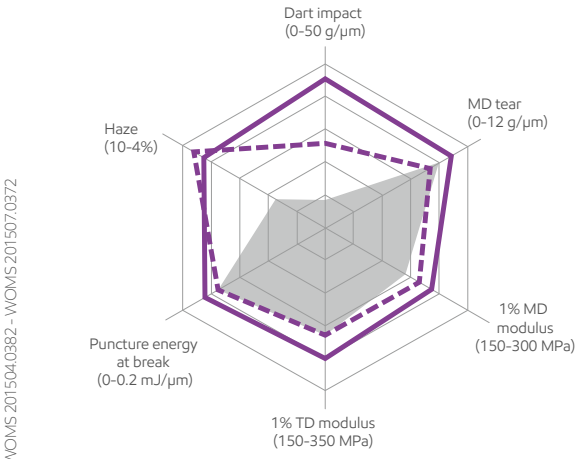
Sharing knowledge and working together to harness collective expertise across the value chain helps us create differentiated solutions. The melt strength and toughness of Exceed XP allows the fabrication of films with eXtreme Performance or to reduce film thickness, while maintaining performance. Films made with Exceed XP 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 XP is also well suited for use on mono-layer lines, providing performance on a wide variety of extrusion configurations.

Cost optimization

Exceed XP 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 XP 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 XP formulated films and the reference film.



Data from tests performed by or on behalf of ExxonMobil

Figure 2:

Selected film property data for Exceed XP formulated film and the reference film.

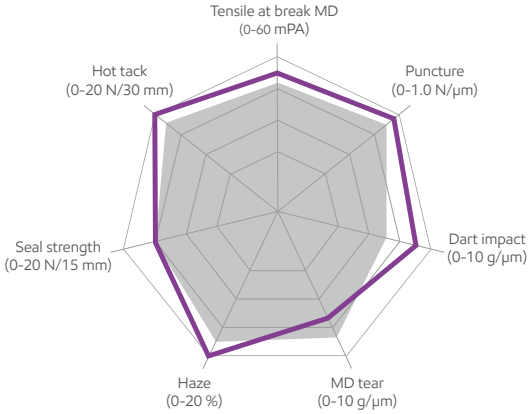


Table 1: Product data for Exceed XP formulated films and the reference film.

	Melt index (g/10 min)	Density (g/cm³)	Exceed XP coextruded 3-layer 40 µm film	Reference coextruded 3-layer 40 µm film	Reference coextruded 3-layer 40 µm film
Exceed XP 8656	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 XP formulated film and the reference film.

	Melt index (g/10 min)	Density (g/cm³)	Exceed XP coextruded 3-layer 50 µm film	Reference coextruded 3-layer 50 µm film
Exceed XP 6056	0.5	0.916	●	
C8LLDPE	1	0.916	●	●
2 MI LDPE	2	-	●	●
C8mLLDPE	-	-		●

Exceed™ 2012 performance polymer

Exceed 2012 performance PE 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/cm³)	Melt flow ratio (I_{21}/I_2)	Slip/ anti-block	Distinguishing features for eXtreme Performance
Exceed XP 8784ML	0.8	0.914	28-32	No	Easy extrusion and good bubble stability, step-out mechanical performance, excellent sealing performance
Exceed XP 8656ML	0.5	0.916	28-30	No	Extreme toughness, exceptional flex-crack resistance with high melt strength
Exceed XP 8358ML	0.5	0.918	28-30	No	Extreme toughness, high flex-crack resistance with enhanced stiffness
Exceed XP 8318ML	1.0	0.918	28-30	No	Extreme toughness with enhanced ability to extrude
Exceed XP 6056ML	0.5	0.916	36-38	No	Excellent balance of melt strength, toughness, sealing and ability to extrude
Exceed XP 6026ML	0.2	0.916	48-52	No	Extreme melt strength and toughness combined for lamination and thicker films
Exceed 2012MA	2.0	0.912	-	No	Excellent sealing performance and extrudability

[1] 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-882	ExxonMobil test method
ASTM D-4703	ASTL D-1709	
ASTM D-1505 / ISO 1183	ASTM D-5748	
ASTM D- 1746	ASTM F-1921	
ASTM D-1003	ASTM F-2029	
ASTM D-2547	CEN 14477	

Exceed™ XP performance polymers — when eXtreme Performance matters.

SCAN IT 2 GET IT

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