

Hygiene and personal care products backsheet films

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Exceed™ and Enable™ performance polymers can create thinner, breathable and non-breathable backsheet films while maintaining excellent mechanical properties for high-quality hygiene products such as diapers, training pants, feminine care and adult incontinence products. Significant cost savings are possible through improved cast and blown extrusion line speeds, higher throughput and downgauging.

Delivered attributes	Derived benefits & potential value
<ul style="list-style-type: none"> ▪ Toughness and stiffness balance 	<ul style="list-style-type: none"> ▪ Downgauging potential ▪ Enhanced film integrity ▪ Improved printability ▪ Enhanced downstream converting on packaging lines
<ul style="list-style-type: none"> ▪ Breathability (WVTR) ▪ Hydrostatic pressure 	<ul style="list-style-type: none"> ▪ Improved comfort
<ul style="list-style-type: none"> ▪ Easy film processing 	<ul style="list-style-type: none"> ▪ Excellent bubble stability and extrudability ▪ Higher line speed and output ▪ Energy savings
<ul style="list-style-type: none"> ▪ Homogenous mixing with CaCO₃ 	<ul style="list-style-type: none"> ▪ Controlled pin hole rate ▪ Reduced film waste

Thinner, high-integrity backsheet films

Exceed and Enable provide excellent toughness and tear-resistant properties allowing converters to fabricate thinner, high-integrity breathable and non-breathable backsheet films. High hydrostatic pressure resistance delivers liquid proof films to minimize leakage. For compounds, these polymers offer homogenous mixing with CaCO₃ for controlled pin-hole rate propagation and smooth processing.

New levels of softness and comfort

Hygiene products displaying new levels of stiffness, softness and comfort can be created using breathable and non-breathable backsheet films made with Exceed and Enable. Solutions with a high water vapor transfer rate (WVTR) are possible. Film stability enables registration printing for high-end aesthetics. Improved hot tack allows faster wicket wrapping for non-breathable backsheet films.

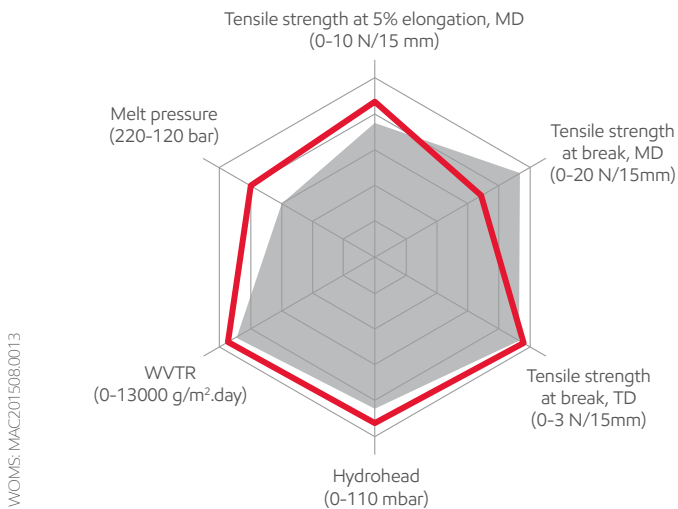
Cost optimization

Converters can optimize breathable or non-breathable backsheet film formulations to meet the performance/value needs of brand owners and end-users. Excellent extrudability and bubble stability deliver energy savings, faster line speeds and higher output, while downgauging can also contribute to cost savings.

Cast backsheet films

Figure 1:

Product data for Exceed™ performance polymers formulated **breathable backsheet film** and the reference film.



Exceed-based solution offers:

- Excellent processability
- High quality end products

Potential value proposition

- Efficient production at high line speed
- Cost effectiveness via energy saving

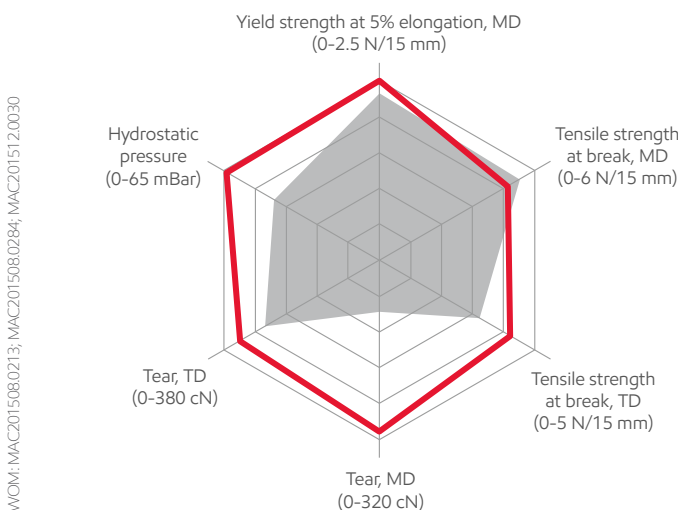
Table 1: Product data for Exceed formulated breathable backsheet film and the reference film.

	Melt index (g/10 min)	Density (g/cm³)	Exceed-based solution 30 gsm	Reference 30 gsm
Exceed 4536	4.5	0.936	●	
CaCO ₃	-	-	●	●
LDPE	7.0	0.918	●	●
C8-LLDPE	2.5	0.936		●

Test method based on: Tensile strength - ASTM D882; Hydrohead - WSP 80.6; WVTR - WSP 070.4R3

Figure 2:

Product data for Exceed formulated **non-breathable backsheet film** and reference film.



Exceed-based solution offers:

- Improved film integrity
- Enhanced hydrostatic pressure

Potential value proposition

- Leakage reduction
- Cost advantage via downgauging

Table 2: Product data for Exceed formulated non-breathable backsheet film and reference film.

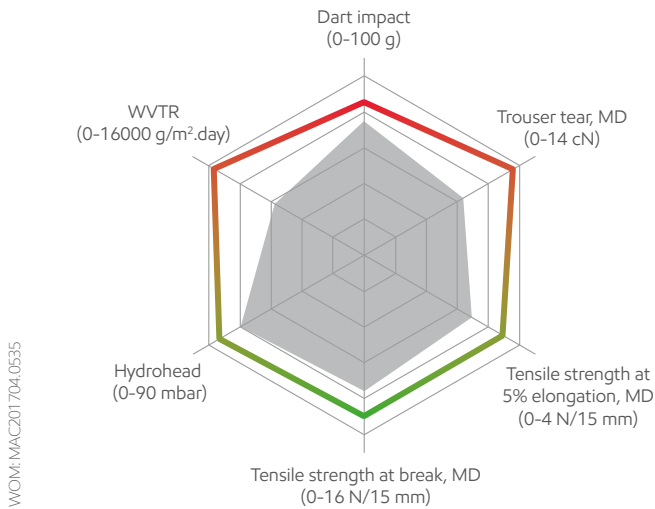
	Melt index (g/10 min)	Density (g/cm³)	Exceed-based 3-layer 16 gsm film embossed	Reference market sample 18 gsm film embossed
Exceed 3527	3.5	0.927	● ● ●	
HDPE	-	-	● ● ●	
LDPE	-	-	● ● ●	
Pigment	-	-	● ● ●	

Test method based on: Tensile strength - ASTM D882; Tear - ExxonMobil method; Hydrostatic pressure - WSP 80.6

Blown backsheet films

Figure 3:

Product data for Exceed and Enable™ performance polymers formulated **breathable backsheet film** and reference film.



Exceed and Enable - based solution offers:

- Improved toughness
- Improved breathability

Potential value proposition

- Performance enhancement
- Cost effectiveness via downgauging

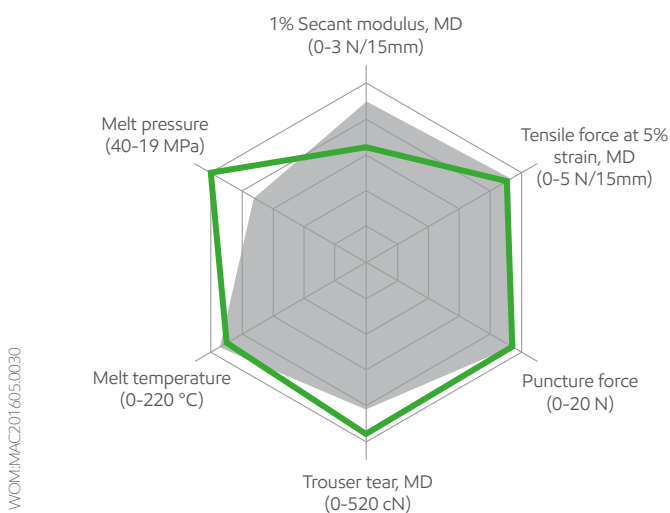
Table 3: Product data for Exceed and Enable formulated breathable backsheet film and reference film.

	Melt index (g/10 min)	Density (g/cm³)	Exceed-based solution 13 gsm film			Reference market sample 14 gsm film		
Exceed 1327	1.3	0.927		●				
Enable 2005	0.5	0.920		●				
CaCO ₃ masterbatch	-	-		●			●	
C ₈ -LLDPE	1.0	0.920					●	
mC ₆ LLDPE	1.3	0.927					●	

Test method based on: Dart impact - ASTM D1709; Trousar tear - ASTM D1938; Tensile strength - ASTM D882; Hydrohead - ExxonMobil method; WVTR - ASTM D6701

Figure 4:

Product data for Exceed formulated **non-breathable backsheet film** and reference film.



Enable-based solution offers:

- Excellent film integrity
- Robust machinability

Potential value proposition

- Formulation simplification
- Cost effectiveness via output increase and energy saving

Table 4: Product data for Enable formulated non-breathable backsheet film and reference film.

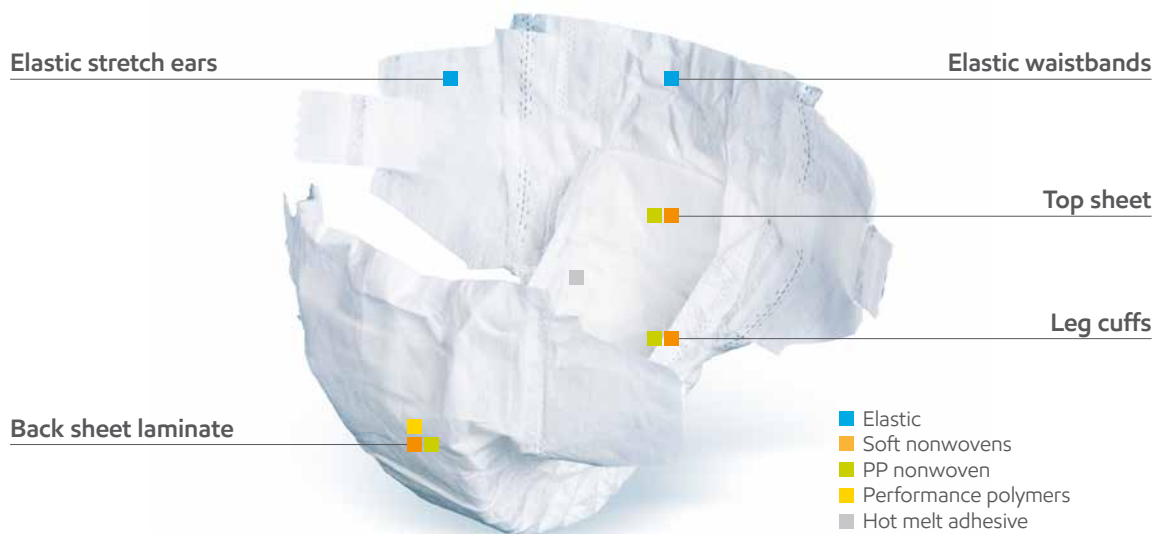
	Melt index (g/10 min)	Density (g/cm³)	Enable 4009 3-layer 14 gsm film			Reference market sample 14 gsm film		
Layer ratio			1	3	1	1	3	1
Enable 4009	0.90	0.940	●	●	●			
HTA108	-	-		●			●	
Pigment	-	-		●			●	
LD 150BW	-	-				●		●
C ₈ -LLDPE	1.0	0.940				●	●	●

Test method based on: Tensile strength - ASTM D882; Puncture - ASTM D5748; Trousar tear - ASTM D1938

Hygiene backsheet films performance polymers

Grade	Melt index (g/10 min)	Density (g/cm ³)	Blown film	Cast film	Breathable backsheet film	Non-breathable backsheet film	Features
■ Exceed™ performance polymers							
Exceed 1018	1.0	0.918	■		■	■	Toughness and sealing properties. High film integrity.
Exceed 1327*	1.3	0.927	■		■	■	Toughness, sealing and optical properties. Stiffness and breathability. Robust operations on blown film lines.
Exceed 3518	3.5	0.918		■	■	■	Toughness properties. Robust operations on cast film lines.
Exceed 3527	3.5	0.927		■	■	■	Toughness and sealing properties. Stiffness and breathability. Robust operations on cast film lines.
Exceed 4518	4.5	0.918		■	■	■	Toughness and sealing properties. Easy processing on high-speed cast film lines.
Exceed 4536	4.5	0.936		■	■	■	Stiffness and toughness balance. Breathability. Easy processing on high-speed cast film lines.
■ Enable™ performance polymers							
Enable 2005	0.5	0.920	■		■	■	Easy processing on blown film lines with enhanced yield strength. Bubble stability. High film integrity.
Enable 2010	1.0	0.920	■	■	■	■	Easy processing on film lines with enhanced yield strength. Neck-in improvement in cast lines. High film integrity.
Enable 4009	0.9	0.940	■	■	■	■	Easy processing on blown film lines: bubble stability and extrudability. Stiffness and toughness balance.

* Grade not available in the Americas.



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