

# Value-added heavy duty sacks film

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Exceed™ and Enable™ performance polymers provide outstanding operational efficiency and offer improved overall packaging integrity resulting in significant downgaging opportunities for heavy duty sacks film. Excellent sealing characteristics and enhanced machinability allows for line speed operations of over 2000 bags per hour.

Delivered attributes	Derived benefits & potential value
Outstanding processability	Reliable operation and machinability
Superb seal strength and seal through contamination (powder, liquid)	Faster bagging line speeds by using FFS (Form, Fill & Seal) technology - in excess of 2000 bags/hour* Greater output and higher production efficiency
excellent puncture resistance, dart impact and bag drop performance	Outstanding packaging integrity Fewer broken sacks - less product loss Superb transportation and storage
Downgaging opportunities	Downgaging for thinner, stronger films at reduced costs
Improved gloss and clarity	Excellent product image and print quality for superb branding opportunities

Exceed and Enable can be tailored to derive maximum benefit at all steps of the value-chain – from film converters to end-users – in a variety of heavy duty packaging applications including:

- chemicals and polymers
- agricultural commodities and fertilizers
- building materials such as cement premix
- food products

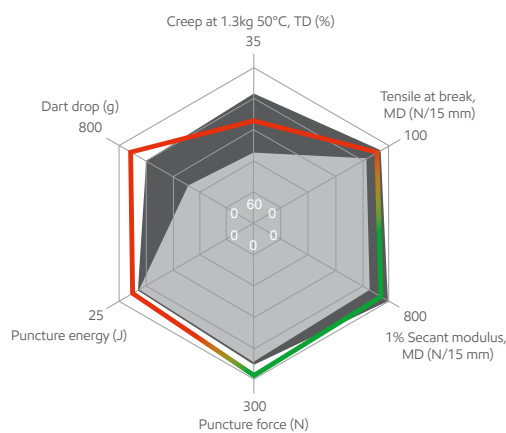
\* High-speed packaging machine of 2000 bags/hour technical data: MAC 200701.0169

## Alternative to replace paper sacks

Exceed™ and Enable™ performance polymers offer the potential to replace paper-based heavy duty sacks because they provide:

- tougher sacks for reduced sack damage and less product loss
- less potentially hazardous dust for a safer, tidier workplace
- option for outdoor storage as they can withstand weather and humidity conditions

Figure 1: Selected property for an Exceed and Enable formulated film and reference film



If you are looking for thinner, stronger heavy duty sacks and for operational efficiency gains, please try Exceed and Enable from ExxonMobil Chemical, the global leader in metallocene technology innovation.

Exceed and Enable for three-layer heavy duty sacks film deliver lower weight, similar or enhanced mechanical properties, excellent sealing performance, and improved processability with higher output at reduced cost.

Table 1: Product data for an Exceed and Enable formulated film and reference film

	Exceed and Enable formulated film 125 µm coextrusion	Reference 140 µm coextrusion	Reference 155 µm coextrusion
Layer ratio	1 / 2 / 1	1 / 2 / 1	1 / 2 / 1
Printable skin	Exceed 1018 (1.0MI, 0.918 density) Enable 2005 (0.5MI, 0.920 density)	C6-LLDPE (0.8MI, 0.926 density)	C4-LLDPE (1.0MI, 0.918 density) LDPE (0.33MI, 0.922 density)
Core layer	Enable 2005 (0.5MI, 0.920 density) HDPE (0.15MI, 0.952 density)	C6-LLDPE (0.8MI, 0.926 density) HDPE (0.15MI, 0.952 density)	C4-LLDPE (1.0MI, 0.918 density) HDPE (0.15MI, 0.952 density)
Sealable skin	Exceed 1018 (1.0MI, 0.918 density) Enable 2005 (0.5MI, 0.920 density)	C6-LLDPE (0.8MI, 0.926 density)	C4-LLDPE (1.0MI, 0.918 density) LDPE (0.33MI, 0.922 density)

Technical data reference: MAC201002.0003

Data developed by or on behalf of ExxonMobil Chemical

Enable for monolayer heavy duty sacks film deliver improved mechanical properties, formulation simplification and lower weight at reduced cost.

Figure 2: Selected property for an Enable formulated film and reference film

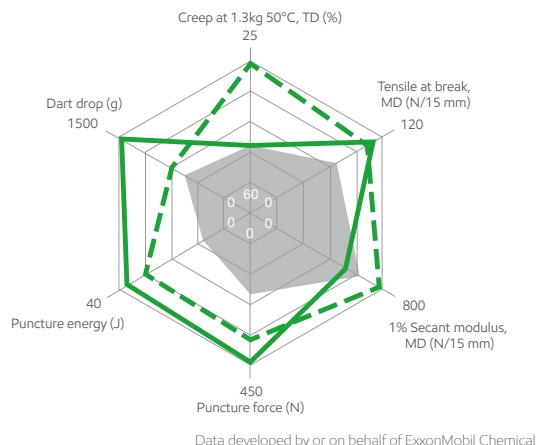


Table 2: Product data for an Exceed and Enable formulated film and reference film

	Enable formulated film 140 µm monolayer (1)	Enable formulated film 140 µm monolayer (2)	Reference 185 µm monolayer
Monolayer	Enable 2005 (0.5MI, 0.920 density)	Enable 2705 (0.5MI, 0.927 density)	LDPE (0.3MI, 0.922 density) C4-LLDPE (1.0MI, 0.918 density)

Technical data reference: MAC200808.0171

Test	Based on test method
Tensile strength at break	ASTM D-882
Secant modulus - 1% secant	ASTM D-882
Puncture force	ExxonMobil (MEZ 047-03 and 143-03)
Puncture energy	ExxonMobil (MEZ 047-03 and 143-03)
Dart drop impact	ASTM D-1709A
Creep resistance	ExxonMobil (MEZ 146)

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