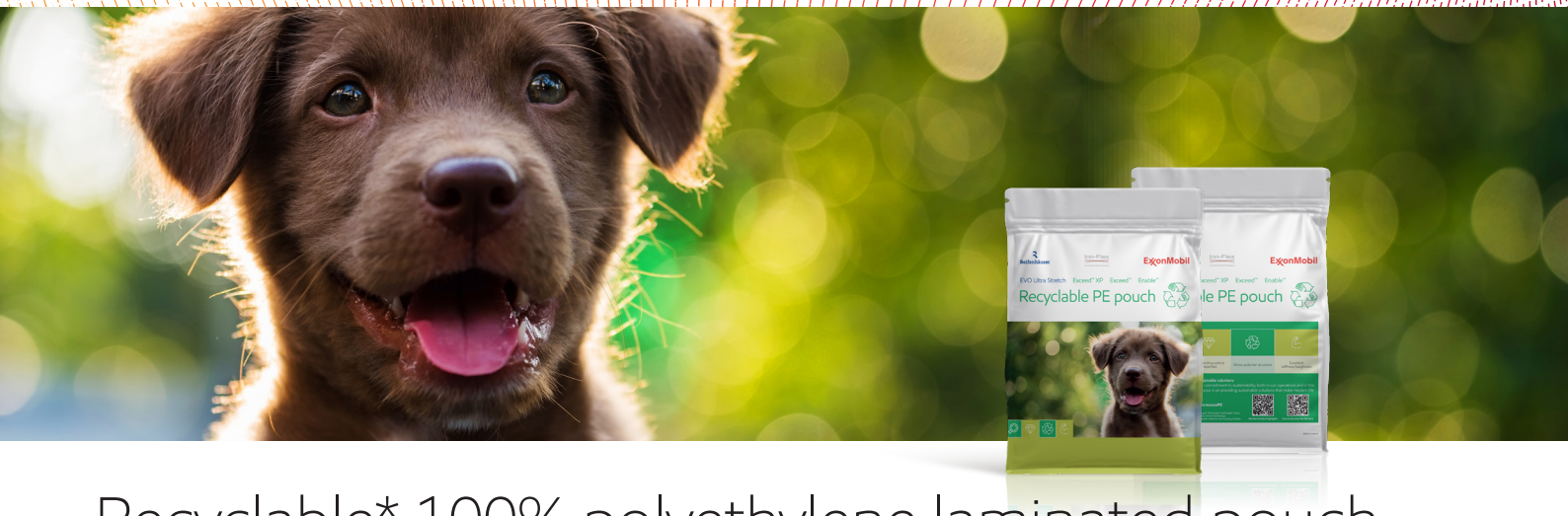


Recyclable* 100% polyethylene laminated pouch with excellent stiffness and optical properties

Single polymer packaging structure for a sustainable solution

100% PE laminated pouch can be recycled*

High stiffness

Excellent optical properties

Challenge:

Single polymer packaging structure with high stiffness and excellent optical properties.

Conventional laminated structures, often comprising a mix of materials such as polyethylene and PET, PA, EVOH or OPP can be challenging to recycle, due to difficulties separating the materials. Packaging made from a single polymer structure is easier to recycle, where programs and facilities to collect and recycle plastic films exist.

As part of its commitment to helping customers create sustainable solutions, ExxonMobil wanted to develop 100% polyethylene (PE) pouches that can be recycled to create new pouches.

Solution:

Performance PE polymers and EVO Ultra Stretch technology.

A collaboration between **ExxonMobil** and **Reifenhäuser** has developed a PE substrate that offers high stiffness with excellent optical properties for 100% PE laminated pouches.

Exceed™ XP, Exceed™ and **Enable™ performance PE polymers,** in combination with EVO Ultra Stretch machine direction orientation (MDO) technology from **Reifenhäuser,** boosts optical as well as stiffness properties, allowing non-PE substrates to be replaced in laminated packaging.

Processing ExxonMobil's performance PE polymers on MDO technology enhances both tensile modulus and optical properties significantly, while delivering outstanding MDO processability. The MDO positioning in the haul-off unit is a key factor in the production of an

Reifenhäuser

* Recyclable in communities that have programs in place to collect and recycle plastic film

oriented PE film, as it allows the plastic to be stretched using initial heat on the four to six-fold extent for a much higher process stability and lower shrink values due to the longer cooling path.

Results:

100% PE film with excellent optical properties and stiffness for a recyclable pouch.

Exceed™ XP, Exceed™ and Enable™ performance PE polymers allow the fabrication of 100% PE laminated films that are easily recyclable where programs and facilities to collect and recycle plastic films exist. They are well-suited for general purpose primary packaging like food, pet food and non-food pouches because they deliver:

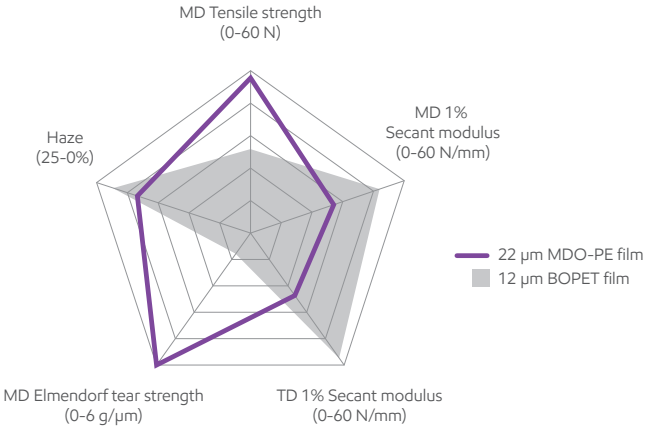
Optical properties

comparable to non-PE substrates.

Stiffness properties

suitable for flexo and rotogravure printing.

MDO-blown processing to replace non-PE substrates with highly oriented PE film that offers outstanding optical and stiffness properties.



All data from tests performed by or on behalf of ExxonMobil.

Oriented PE film formulation

22 µm 5-layer MDO-PE substrate, MDO ratio=6	
Skin layers	Medium density Enable (>70%)
Sub-skin layers	Exceed 1327MA + ExxonMobil HDPE
Core layer	Exceed XP 8784ML

Recommended Performance PE		
Grade name	**Density (g/cm³)**	**Melt index (g/10 min)**
Exceed XP 8784ML	0.914	0.80
Exceed 1327MA	0.927	1.3
Enable 4009MC	0.940	0.90
Enable 4002MC	0.940	0.25
ExxonMobil HDPE HTA108	0.961	0.70

Contact us for more information:
exxonmobilchemical.com/SUP

ExxonMobil
Energy lives here™