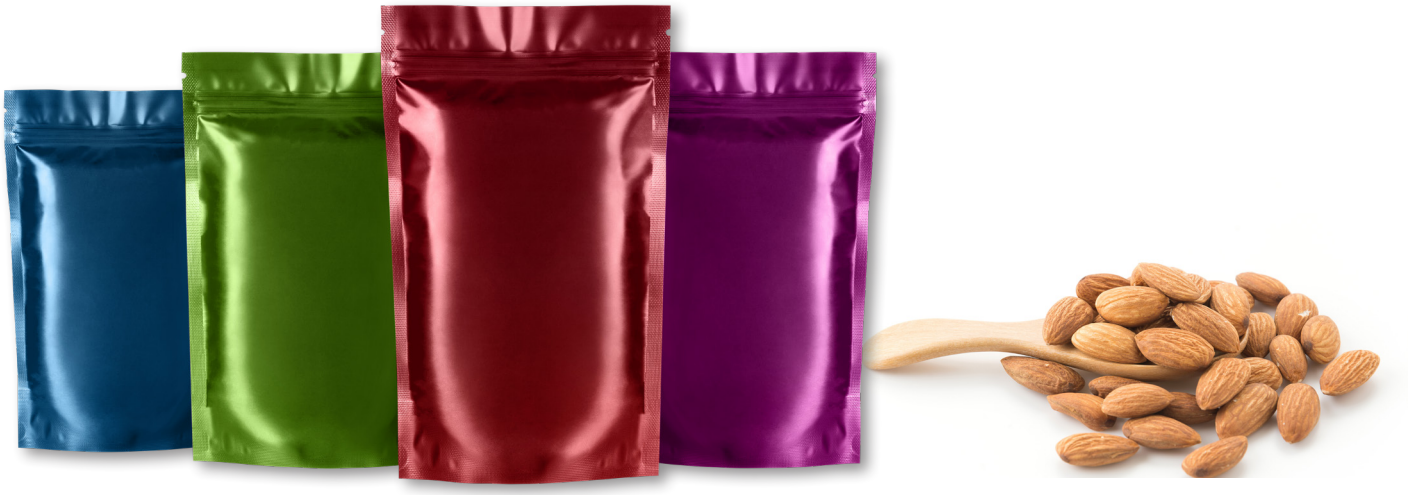
ExxonMobil
Signature Polymers

Case study



Exceed™ Tough+ Exceed™ Stiff+ Exxtra™ Seal

Innovative PE//PE laminated structure provides sustainability benefits while replacing PET//PE in stand-up pouches (SUP)

Improved stiffness | Low SIT | Optical properties | Recyclable*

Data and results presented herein apply specifically to the noted application under this fact sheet.
Your results may differ depending on factors such as operating conditions, equipment and materials used.

Challenge

Replace the PET//PE SUP laminated structure with PE//PE for a solution with sustainability benefits

Trupal S.A., a leading polyethylene (PE) film converter and packaging company based in Peru, wanted to develop a stand-up pouch (SUP) solution that was fully recyclable*. Today, most conventional SUPs are laminated using BOPET//PE or BOPA//PE, which can be difficult to recycle because they consist of multi-material structures and have layers that can be hard to separate. In this instance, Trupal wanted to replace an SUP made with PET//PE.

"With the government in Peru increasingly demanding sustainable packaging it is our responsibility as a converting and packaging company to develop new solutions in response to these needs," said Mateo Palomino, Flexible Packaging Manager, Trupal S.A. "At the same time, we need to ensure that the SUP will maintain its functionality by ensuring packaging performance is not compromised. Through collaboration we have created a high-quality packaging solution that can be less complex to recycle compared to conventional structures, delivering benefits across the value chain."

Solution

A PE//PE solution using Exceed™ Tough+, Exceed™ Stiff+ and Exxtra™ Seal that maintains SUP performance and provides sustainability benefits

Trupal and ExxonMobil combined their expertise in film converting/packaging and polymer technology to develop a new PE//PE laminated structure for the SUP. Working collaboratively, a laminated structure of two PE plies was developed, resulting in an all-PE fully recyclable pouch*. ExxonMobil provided performance PE polymer recommendations, film formulation advice, and technical support. Trupal used their film converting expertise before printing, laminating, and assembling the layers of the SUP.

"We have experienced good results in other applications in Peru with ExxonMobil," said Palomino. "So, we had no hesitation in collaborating with them again for the development of an SUP with sustainability benefits."

The PE sealant ply comprises a blend of Exxtra™ Seal m 1012.MK and a plastomer to decrease the seal initiation temperature (SIT) and help prevent machinability issues on the SUP assembling line. Exceed™ Tough+ m 0518.ML delivers the necessary mechanical properties, while HDPE provides the required stiffness.

TRUPAL
PROFESIONALES DEL EMPAQUE

*Recyclable in the few communities with programs and facilities in place that collect and recycle plastic film

Layer	PE sealant (70 micron)	PE substrate (40 micron)
A	Exceed™ Tough+ m 0518.ML	Exceed™ Stiff+ m 0238.MC HDPE (0.960 g/cm^3)
B	Exceed Tough+ m 0518.ML HDPE (0.960 g/cm^3) Slip additive	HDPE (0.960 g/cm^3) Exceed Stiff+ m 0238.MC Slip additive
C (internal)	Exxtra™ Seal m 1012.MK Plastomer	Exceed Stiff+ m 0238.MC Antiblock additive

Results

PE//PE laminated SUP solution based on performance PE polymers that is easier to recycle than a PE//PET structure

The collaboration has resulted in a laminated PE//PE solution for SUPs which is recyclable in communities with programs and facilities in place that collect and recycle plastic film.

"The all-PE solution meets growing demand from the government of Peru for the packaging industry to develop sustainable packaging solutions," said Elmer Vargas, R&D Manager, Trupal. "Offering the necessary mechanical and optical properties, combined with low SIT, we are confident we have a solution that the value chain will embrace. We are confident that our existing customers will welcome this opportunity, while we also believe it will help attract new customers both domestically and internationally." Trupal has a robust R&D Department dedicated to develop new packaging solutions to respond to end user demands.

The PE substrate, which includes Exceed™ Stiff+ m 0238.MC, has a high average density to provide the required heat resistance, as this film is replacing the PET substrate. Heat resistance is important on the SUP production line as it helps avoid machinability issues caused by film stickiness on the sealing bars. The high density of this ply also increases the stiffness of the final SUP for the required standability. Exceed Stiff+ m 0238.MC also provides improved processing and high melt strength allowing for better output and bubble stability.

ExxonMobil Signature Polymers

Bring your impossible

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.

What's new: ExxonMobil Signature Polymers

All our polymers are now positioned under a single portfolio brand: 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 8358ML	Exceed™ Tough+ m 0518.ML
Enable™ 4002MC	Exceed™ Stiff+ m 0238.MC
Exceed™ 1012MK	Exxtra™ Seal m 1012.MK

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** or contact your ExxonMobil representative to know more.

Want to see what's changed in our portfolio? Go to **exxonmobilchemical.com/sptransform**