



Exceed™ Stiff+

Scientex achieved impressive stiffness and toughness in MDO films using Exceed™ Stiff+ performance polymers



Excellent
stiffness,
toughness



Low
gel



Easy
processing



Good
optics

Challenge

Scientex, a leading player in flexible plastic packaging with headquarters in Malaysia and plants in Malaysia, Vietnam, Myanmar and the US, had been testing various solutions for its machine-direction orientation (MDO) films for some time. In MDO film production, a polymer is heated to a temperature slightly below its melting point and stretched in a particular orientation. Stretching film in machine direction accentuates its properties many times over and makes two or three times more product with the same amount of plastic.

However, the MDO process is highly demanding as the stretching operation to make thin films requires an easy-to-process resin with low gel, good bubble stability and low melt pressure characteristics to prevent intermittent production stoppage or turbulence. For Scientex and other film manufacturers using MDO technology, process stability is critical and key to maximizing production rate and minimizing production wastage.

Scientex was looking for a solution that reduces gel and film breakage, which is the main issue faced during the MDO process, as well as maintains good stiffness, toughness, and optical properties in the MDO films.

Solution

Knowing the requirement from Scientex with its MDO film, the ExxonMobil team introduced Scientex to its latest and most advanced performance polyethylene, Exceed™ Stiff+ Signature Polymers, before it was commercially available in April, 2022. Scientex was one of the first in the world to trial and test the new resin in their MDO film. After intensive and prolonged trials, Scientex knew they had found a solution by using Exceed Stiff+ m 0926.

The Scientex team was impressed by the Exceed Stiff+ m 0926 trial results. They found they could run the Exceed Stiff+ MDO solution continuously without much issue. The start-up was easy; the operation was smooth with no time wasted on any film breakage. Processing stability featuring good melt strength, excellent bubble stability, acceptable melt pressure, and less gel in the film resulted in significant cost savings to Scientex from a reduction in film wastage and man-hours. The team was also impressed with the significant boost to stiffness and high tear performance they saw with the Exceed Stiff+ solution.

Yong Chee Ming, Scientex Great Wall General Manager, enthused: "The key advantage of Exceed Stiff+ is process stability with good melt strength and bubble stability during the extrusion process. We have achieved much better yield in the MDO process due to improved stretchability, lesser gels and better stiffness compared to our existing film."

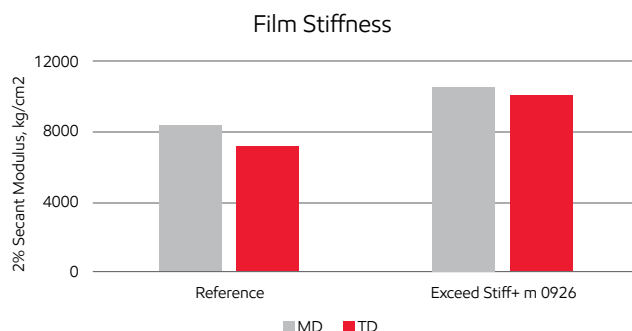
Results and gains

Stiffness is a critical requirement in MDO film as it allows Scientex to market its MDO films more competitively against traditional PET or other oriented non-PE-based laminates. Currently, flexible packaging films are mostly composite laminates comprising a PE sealant film with PA/PET substrate films. These multi-material structures can be difficult to recycle with mechanical processes. A PE-based MDO film can replace PA/PET substrate films to make full-polyethylene packaging suitable for liquid and solid contents.

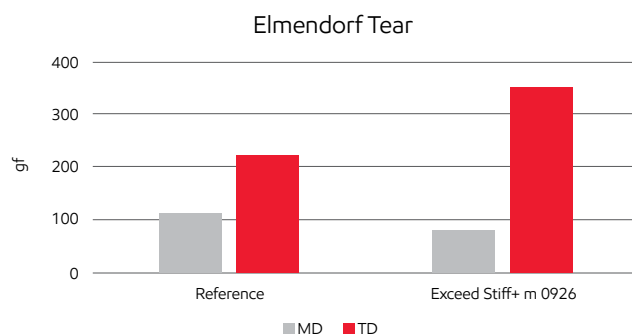
By combining state-of-art converting technology from Scientex with an innovative Exceed Stiff+ platform from ExxonMobil, both companies are pushing the boundaries of MDO full-PE packaging design by offering mono-material packaging solutions with sustainability benefits.

Due to successful trials and Scientex' confidence in the new Exceed Stiff+ MDO solution, they are leveraging it in end applications such as frozen food packaging, stand-up pouches for shampoo, detergent and pet food and glove packaging.

Exceed Stiff+ m 0926 stiffness performance vs incumbent film by Scientex*



Tear performance of Exceed Stiff+ m 0926 vs incumbent film by Scientex*



* Tests/test results performed and provided by Scientex

About Scientex

Scientex started out as a PVC sheeting factory in 1968. Today, Scientex is a leading player in flexible plastic packaging. Its businesses cover the packaging value chain from stretch films, base films and printed films to bags and multi-layered flexible plastic packaging solutions for both industrial and consumer packaging. From a local Malaysian enterprise with headquarters and plants in Malaysia, the company has expanded with additional manufacturing facilities in Vietnam, Myanmar and the United States. The company was publicly listed in 1990 and has since diversified into property development in Malaysia. As a leading manufacturer in flexible plastic packaging, Scientex is always looking to work closely with resin suppliers to deliver value to brand owners and society with a focus on providing sustainability benefits.

Contact us for more information: exxonmobilchemical.com/pe

ExxonMobil
Signature Polymers

Bring your impossible



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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™ S 9243	Exceed™ Stiff+ m 0926

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](https://www.exxonmobilchemical.com/sptransform)