

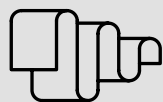


Exceed™ Tough+ performance polymers

## Alico revolutionizes the market with innovative, customizable shrink barrier bags, locally produced



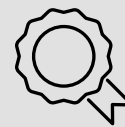
Strength



Flexibility



High performance



Material integrity

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

#### Locally create shrink barrier bags with the same or better performance as imported solutions

In the Colombian market, food brands face challenges in sourcing locally produced shrink barrier bags, an essential packaging component across various food product segments. This gap has compelled many brands and converters to import these packaging materials, resulting in increased logistical costs, inventory management issues, prolonged response times to emergencies or spikes in demand, and limited customization flexibility.

Alico, a converter with over forty years of national and international experience in providing innovative, versatile comprehensive solutions at the forefront of global trends in the design, manufacture and marketing of packaging for different industries, needed a solution that could meet three key requirements:

1. Packaging that provides an effective oxygen barrier and meets the stringent specifications of the fresh meat and sausage markets, while also avoiding the use of materials such as PET and PVdC.
2. Developing a high shrinkage range to ensure proper presentation, and preservation of the product.
3. Achieving an optimal balance between mechanical properties such as toughness and flexibility, and optical properties, including gloss and transparency, that is translated into performance and material integrity comparable to current available products.

Brand owner SuperCerdo, a family business located in the municipality of Barbosa Antioquia, Colombia, has over 60 years of experience in selling pork meat and pork processed products. They offer quality pork cuts and services such as processing, deboning, and packing. "We turned to Alico to enhance our market visibility and strengthen our brand identity," said Alejandra Raigosa, Procurement Manager, SuperCerdo. "Enhanced packaging printing boosts brand recall, keeps the brand top of mind, and fosters customer familiarity for future purchase."

### Solution

#### Value chain collaboration leads to high-quality product

To address this gap, Colombian packaging manufacturer Alico collaborated with ExxonMobil and Kuraray to develop Termoflex +B barrier shrink bags, specifically designed for the meat packaging sector.

The formulation is a co-extrusion in a triple bubble barrier line that includes the latest developments in performance polyethylene for barrier packaging, ExxonMobil **Exceed™ Tough+ m 0512**; coupled with a barrier solution from EVAL™'s unique orientable EVOH grades. (EVAL is a registered trademark or trademark of Kuraray Co., Ltd.)

"It was a privilege to engage in collaborative efforts on this innovative project," said Diana Maya, Senior TS&D Engineer, Kuraray. "Involving the entire value chain significantly boosted the likelihood of success. With SuperCerdo as the brand owner, Alico's exceptional converting capabilities and trusted resin suppliers like ExxonMobil and Kuraray, we formed a highly effective team developing a more sustainable and efficient solution like Termoflex +B."

The new barrier shrink solution, Termoflex +B, was tested to confirm it provides food safety features and balanced mechanical performance comparable to the incumbent solution.

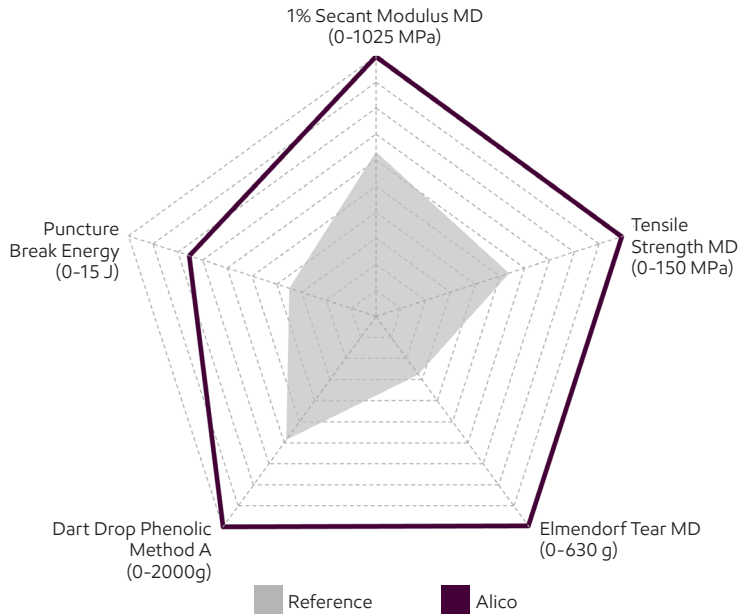
Field trials included shelf life tests carried out on packaging pork and beef in Termoflex +B and compared with same cuts packaged in the incumbent solution. These samples were refrigerated at 39.2°F (4°C) where microbiological, physicochemical and sensory parameters were assessed weekly.

## Results

### A strong alternative to imported bags

The Termoflex +B solution exhibited Water Vapor Transmission rate (WVTR) within the optimal range for this application when tested at 38°C @ 90% RH. Oxygen Transmission Rate (OTR) measured at high humidity (85%), improved compared with the incumbent as can be seen in the chart below.

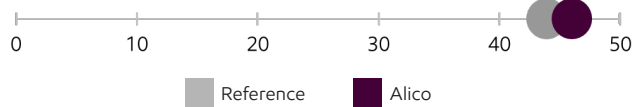
The results demonstrated that the shelf life of fresh meats packed in Termoflex +B barrier bags is comparable to products packaged in traditional shrink barrier bags available on the Colombian market.



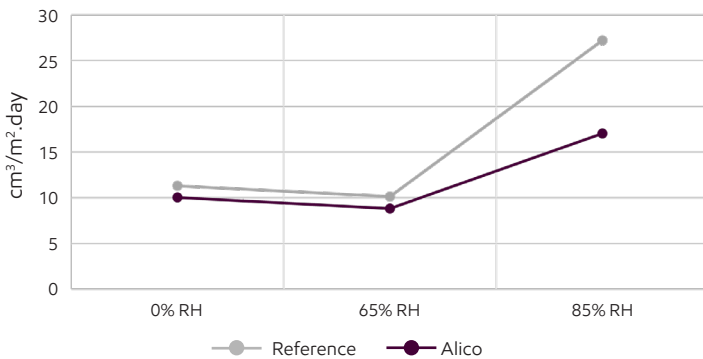
Shrink MD (%) at 90°C (3s, wet bath)



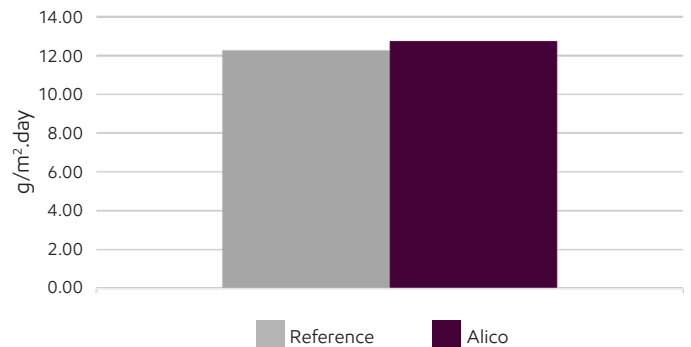
Shrink TD (%) at 90°C (3s, wet bath)



OTR at 23°C



WVTR at 38°C and 90% RH



The balanced shrinkage and outstanding mechanical properties of Termoflex +B bags effectively provide package integrity and excellent presentation, while its effective barrier provides optimal protection against external factors such as oxygen and moisture. The combination of above factors also allowed the removal of polyester (PET), which was used in the incumbent solution, and didn't require the use of PVdC. All these advantages are combined in Termoflex +B, a more nimble yet effective locally sourced solution that preserves freshness, taste, and quality of its content.

"By partnering with ExxonMobil Signature Polymers and Kuraray, we leveraged our expertise, market knowledge, and advanced triple bubble technology know-how to become one of the first converters in Colombia to produce this type of film," said Ovidio Salazar, Research & Development Manager, Alico. "Developing this film in-house enhances our market competitiveness and helps our clients become more productive".

These results highlight how close collaboration across the value chain can lead to the creation of affordable, effective, and cost-efficient materials.

Test item	Test method
Tensile at break	Test method based on ExxonMobil method
1% Secant Modulus	Test method based on ExxonMobil method
Dart Impact	Test method based on ExxonMobil method
Elmendorf Tear	Test method based on ASTM D-1922
Puncture Resistance	Test method based on ASTM D-5748
WVTR at 90% RH and 38°C	Test method based on ASTM F-1249 (Kuraray laboratory)
OTR at 0-85% RH and 23°C	Test method based on ASTM D-3985 (Kuraray laboratory)
Shrink at 90°C (3 seconds, wet bath)	Test method based on Alico method

## 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. The composition of the products are unchanged, it is only the names that updated. We will be making these modifications over the next few months, through mid 2025, 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 will be changed in this document:

Legacy Commercial Name	New Commercial Name
Exceed™ XP 7052	Exceed™ Tough+ m 0512

Want to see what's changed in our portfolio? Go to [exxonmobilchemical.com/sptransform](https://exxonmobilchemical.com/sptransform)



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.



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