CASE STUDY

# A Cleaner Tear for Mono-Material MDO-PE Packaging

How Dow and American Packaging Corporation addressed a widespread consumer challenge with mono-material packaging designed for recyclability

## Context

Flexible packaging helps protect food, extends shelf life and makes products easier to store, carry, and use. As brands work to comply with emerging extended producer responsibility (EPR) regulations and respond to consumer preferences for recycle-ready packaging, many are looking to replace traditional structures made from multiple materials with simpler, all-polyethylene alternatives that comply with existing design guidelines and recycling infrastructure.

For consumer packaging, those alternatives still need to look good, feel sturdy, and perform reliably.




## Challenge

Consumers expect packages that open easily and tear cleanly from edge to edge, creating a simple, smooth, and satisfying experience. Meeting this expectation has been difficult to achieve with a mono-material PE film.

Machine direction orientation (MDO) has emerged as a technology that allows polyethylene (PE) films to deliver the clarity, strength and print quality brands expect, while supporting a simpler material structure that can align with packaging and sustainability goals. To date, conventional MDO-PE films can tear unevenly, require more force to open or leave jagged edges, creating a frustrating experience for consumers. In some cases, scissors are needed to open the package cleanly. For brand owners, that usability challenge has become a key barrier to broader adoption of mono-material polyethylene packaging.

American Packaging Corporation (APC), a long-standing flexible packaging converter and Dow customer, heard this challenge directly from brand owners. Brand owners wanted packaging designed for recyclability without compromising the intuitive, frustration-free opening experience consumers expect. APC shared this market need with Dow, and together the teams worked to develop an MDO-PE film capable of providing the same clean, controlled tear associated with conventional polyester laminate packaging.

*"For years, the industry has been working to make flexible packaging more sustainable, but consumers were often asked to accept a less satisfying opening experience. APC brought us a challenge they were hearing directly from customers, and together we found a promising approach to solve it. As extended producer responsibility policies, like California SB 54, continue to accelerate demand for packaging designed for recyclability, collaborations like this can help the industry create innovations that work for brands, consumers, and the broader packaging value chain."*

**Michelle Sauder**

Marketing Fellow,
Dow Packaging & Specialty Plastics

## Solution

Dow brought the challenge to its Pack Studios, where customers collaborate with Dow specialists to accelerate packaging innovation through commercial-scale development and testing. There, the team set out to solve a problem that had limited broader adoption of mono-material polyethylene packaging.

Using the Pack Studios MDO line, Dow's scientists developed a proprietary film formulation that builds easy-tear functionality directly into the film itself. Rather than relying on costly and labor-intensive laser scoring or perforation after production, the film is engineered to offer a clean, controlled tear while maintaining the strength and performance required for flexible packaging. By eliminating the need for laser scoring or perforation, the technology can simplify converting and reduce manufacturing complexity, making it easier to integrate into existing production workflows.

To validate the technology, Dow produced a roll of the easy-tear MDO-PE film for APC to evaluate. APC laminated the film, converted it into representative packaging and evaluated its performance after lamination. The laminated film offers a clean, controlled tear with performance comparable to conventional PET laminate structures, while offering the clarity, dimensional stability, and package durability required by most product applications.

This effort highlights how long-standing collaborations can help solve industry-wide challenges and create new opportunities for packaging innovation. By combining Dow's materials science and application development capabilities with APC's converting capabilities and customer insight, the teams have created a promising pathway for film manufacturers, converters, and brand owners to advance packaging designed for recyclability while offering the easy-open experience consumers expect.

*"While innovations in PE materials have significantly improved performance, challenges remain in some packaging applications, particularly around package opening. Working with APC, Dow analyzed existing solutions and developed a cost-effective, drop-in film manufacturing enhancement that delivers the desired performance without requiring more expensive, specialty materials."*

**Jeff Travis**

Senior Manager of Innovation & Sustainability,
American Packaging Corporation

### Comparable tear performance



Tear force is comparable to conventional PET laminate structures.

### Performance maintained



Seal integrity and package durability were maintained during evaluation.

### Validated post lamination



APC confirmed clean, linear tear in a representative finished package.

### Designed for recyclability



Mono-material polyethylene structure designed for recyclability.

### Scoring not required



Easy-tear functionality is incorporated into the film formulation, reducing secondary processing.

### Commercial-scale development



Pack Studios supported formulation development and rapid prototyping on a commercial-scale MDO line.




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