



Prime Films 101

All you need to know for
improved film selection





AVY Insight:

*High Pressure Pasteurization **extends shelf life of cold pressed juices to 45 days** by not using heat or preservatives in the bottling process**

*Orlov, Alex. "The Cold-Pressed Truth: What Juice Drinkers Need to Know," Dailyburn.com, March 10, 2014

Prime Time With Prime Films

Avery Dennison's Prime Film Portfolio is a family of films purpose-built for the specific marketing and packaging decoration needs of the home and personal care, food, beer, beverage and more segments.

Our prime films family is engineered to stand up, stand out.

Falling into three major product categories — **Fully Conformable**, **Semi Conformable** and **Rigid Film** — our Prime Films offer a range of performance benefits like:

- Exceptional conformability / squeezability
- Superb clarity
- Water whitening resistant
- Balanced release properties
- Stiffness for dispensing
- Topcoated for robust printability, including UV Inkjet compatibility

The bottom line:
Products with Prime Film labels generate greater shelf appeal with lower total applied cost, lower production input cost, lower waste and lower risk of lost run time.



Prime Film Selection

Choosing the Right Film Facestock

It's just not as simple as white or clear. When choosing a film facestock for a pressure sensitive label application, every aspect of the labeling process can impact performance. Understanding the facestock material, thickness and conformability is one way today's converters make sure their jobs run smoothly.

Film Material: Is it PP, PE or MDO?

These choices can significantly impact label aesthetics as well as performance. Over time, certain films have evolved as "the film of choice" for particular performance requirements. For example:

- **Polypropylene (PP)** is one of the most rigid film materials and is frequently used in beer and beverage applications where high clarity is needed.
- **Polyethylene (PE)** is another common film type often used in applications like tubes where conformability or squeeze is a performance requirement.
- **Machine Direction Oriented (MDO)** is a blend of PE/PP combined with Avery Dennison's purpose-built machine direction oriented manufacturing to create semi conformable and fully conformable products that offer a balance of the properties found in PP and PE films.

Film Thickness

The "stiffness" of a film, especially critical in the dispensing/application environment, is directly related to the thickness of the film. In general, the thicker the film the stiffer the film. In fact, the stiffness of a film is affected exponentially by changes in thickness! Sound technical? It is. But we've broken down the math to show the significance of this relationship. This is important to understand because there is a trend toward thinner materials, but this can impact performance and should be considered when choosing the right product for an application.

Darting or wrinkling of a label are common defects that occur in applications when adjustments are required or when the right material is not chosen for a substrate or application. If a label is too thin and not stiff enough, or the container is more complex and requires conformability, selecting films with a balance of properties can help decrease the likelihood of defects or poor aesthetics.

AVY Insight:

With as little a reduction in film thickness as 2.6 to 2.4 the film stiffness is reduced by 10% and when the film thickness decreases from 2.0 to 1.6 the film stiffness is reduced by 71%!

2.6 Mil White BOPP

- Stiffness: Machine Direction 50mN

2.4 Mil White BOPP

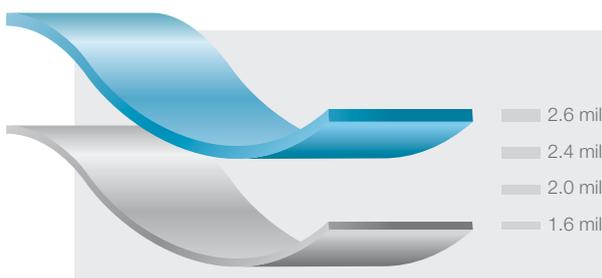
- Stiffness: Machine Direction 45mN

2.0 Mil White BOPP

- Stiffness: Machine Direction 45mN

1.6 Mil Clear BOPP

- Stiffness: Machine Direction 13mN



Technical Tip:

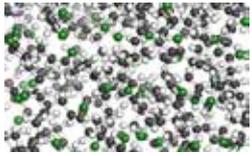
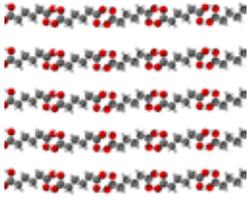
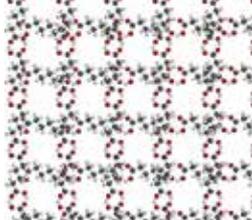
With available thicknesses and a broad range of calipers offered from 3.5 to .92, stiffness decreases as the product becomes thinner. Selecting the proper product thickness is critical for performance measures, and also at dispensing as an overlaminate may be necessary.

Film Stretch

When films are stretched, or “oriented,” during manufacturing, their polymer chains are aligned and different performance characteristics are created.

- **Unoriented films (unstretched)** — like PE — are soft and very conformable, but can be challenging when converted and dispensed.
- **Machine direction oriented (MDO) films** offer a balance of properties, with excellent conformability, convertibility and dispensability. All of our fully and semi conformable films are MDO films.
- **Biaxially oriented films** — such as BOPP — are stretched in both the machine direction and the cross direction, making them quite rigid. They offer excellent convertibility and dispensability.



Polymer Chains	Orientation	Conformability	Convertability	Dispensing	Film Product
	Un-oriented				Polyethylene
	Machine Direction Oriented (MDO)				Global MDO
	Biaxially Oriented (BO)				BOPP

The orientation of the film helps determine its conformability, convertability and dispensing performance.

Rigid Films

Clear BOPP | White BOPP | Metallized BOPP

Our rigid films offer high tensile strength in both directions for excellent converting, and a stiffness and rigidity that allow thinner labels to be dispensed. But that's not all:

- Solid white BOPP offers undeniable shelf impact, with label graphics that almost pop off the package
- Cavitated white BOPP delivers high opacity and a pearlescent look
- Metallized BOPP gives labels a bright, lustrous look
- Clear BOPP is a hands-down favorite for the no-label look
- Often used to decorate PET and glass containers

That's an impressive performance range from the most economical of our prime films.

Typical Applications

Rigid films can be quite versatile for a wide range of packaging solutions. The most common BOPP applications are for PET and glass containers used for beverages, beers and spirits, food and HPC.

Converting Advantages

- High converting speed and resistance to liner ruptures
- Reduced adhesive "bleed" and enhanced stripping performance with ClearCut™ Adhesive Technology
- Excellent stiffness in dispensing
- When used with ClearCut, excellent water whitening resistance, good repositionability and wet-out

AVY Insight:

*The use of PET for bottled water is expected to grow **5.5% in the next 4 years****

**2015 View on Opportunities for PET: PET Position in Key Categories Shows Ample Opportunity for Growth," [Euromonitor International](#), ©2015





AVY Insight:

***7% of brand owners/
packaging buyers will only
source labels from vendors
with digital presses today.****

*Avery Dennison offers a
comprehensive portfolio of
products designed for inkjet
receptivity and compatibility.*

Conformable Films

Global MDO | High Performance Primax® and FasClear®

Delivering a package that gets the attention needed in today's crowded retail spaces has always involved a delicate balancing act between innovative shapes, surfaces and substrates, cost and label decoration quality. Our conformable films deliver the best of all worlds – sharp, clear label appearance across a wide range of shapes and surfaces with the productivity benefits that come from high quality printing and high-speed dispensing. But that's not all. For instance:

- Our Global MDO films are excellent for semi-squeezable containers — where continued flexing during end use is expected.
- Engineered for a variety of packaging types, High Performance Primax® and FasClear® can be used with full-squeeze applications, irregular bottle shapes and larger sizes, as well as containers that expand and contract, and more.

Global MDO. One Film That Delivers It All: Performance and Sustainability.

Similar to our rigid films, Global MDO delivers strength and stability with clear shelf appeal. Its improved conformability significantly reduces darts and wrinkles in high speed converting and application. Global MDO uses less material, producing 40% less solid waste and requiring 37% less energy to manufacture when compared to thicker films.

High Performance Primax® and FasClear®: Expanding the MDO franchise

The newest additions to our portfolio, High Performance Primax and FasClear utilize the clearest, most conformable facestock to maximize the decoration space on a variety of complex shapes. High Performance Primax and FasClear feature a scuff resistant surface that allows for improved aesthetics for deeper images that pop on the container. This is the first fully conformable film that leverages ClearCut™ Adhesive Technology for thinner constructions, less adhesive ooze and improved clarity and wet-out performance.



Typical Applications

Conformable films are ideal for semi-squeeze and full-squeeze containers, especially those applications with complex curves and unique shaped containers. Consider these films for containers, bottles and tubes where conformable expansion and squeeze are needed.

Converting Advantages

Our conformable films' unique machine direction orientation (MDO) enable high-speed converting and dispensing especially in the most demanding applications. The right balance of stiffness and conformability results in consistent printing, registration and die cutting, as well as accurate, trouble-free dispensing.



AVY Insight:

*In the make-up and personal care segments, **plastic tubes are forecasted to grow 3%****

**The Future for Plastic Tubes: Opportunities Analysis in Beauty and Personal Care," [Euromonitor International](#), September 2015 Report

McTigue Pierce, Lisa. "Plastic Packaging Dominates the Personal Care Market," [Packaging Digest](#), May 25, 2015

Prime Film Adhesives

The ClearCut Choice for Every Prime Film Construction

The ClearCut™ adhesive platform helps converters and brand owners realize the full production potential of thinner labeling materials—fewer changeovers on press, more labels on a roll, improved die cutting, dispensing and elimination of web breaks.

In home and personal care, food and beer and beverage, the need for shelf impact goes hand-in-hand with the need for efficient production. ClearCut Adhesive Technology answers both needs.

- Excellent water-whitening resistance and wet-out make ClearCut a natural for applications demanding a no-label look. The adhesive gives a 20% haze improvement when used with Global MDO (compared to Global Co-Ex) for dependable, high clarity results.
- Dispensing can be achieved at up to several hundred containers a minute, and with the lower levels of adhesive bleed offered by ClearCut – up to 50% less than S692N – it results in reduced downtime.
- Designed to improve overall operational efficiency and usage of thinner materials without compromising on speed, conversion and dispensing.

The bottom line:

Your product gets higher attention with lower applied cost, less waste and faster time to market.

AVY Insight:

Consumers look at clear-on-clear labels for 20% longer than any other label material on the shelf



ClearCut™ Adhesive Technology

BRANDS WANT
LOWER-COST
MATERIALS
THAT DISPENSE AT
HIGH SPEEDS



Why **PET Liners**?

Driven by an increased demand for clear-on-clear labels, use of film-based release liners is growing more quickly than glassine and other paper liners. Leading the way from 1.5 Mil to .92 Mil, Avery Dennison is actively working to make PET liners a cost-effective alternative in a growing variety of applications.

Why Thinner

The benefits of thinner liners are undeniable. A typical 2.0 Mil Clear BOPP film construction on a .92-gauge film liner is 60% thinner than that same construction on a 1.5 mil PET liner. That translates directly into:

- 15-20% more labels per roll
- Reduced transportation costs
- Less inventory space
- Increased line speeds
- Fewer changeovers

Better Die Cuts

Avery Dennison film liners deliver unbeatable die-cutting quality – this results in reliable and accurate die cuts, along with consistent and cost-effective dispensing at the applicator.

Better Moisture Resistance

Film-on-film products offer improved adhesive coat qualities vs. paper liners for an ultra clear face and adhesive constructions that require maximum clarity and moisture resistance.

- Excellent on-container wet-out and adhesion performance
- Less curl with PET liner vs. paper liner results in better dispensing at peel plate
- Film liner not as reactive to extreme humidity ranges
- Higher adhesion levels for quick stick dispensing

Better Strength

Film liners are less prone to the nicks that result in web breaks. They can run faster because of their strength, which improves productivity.

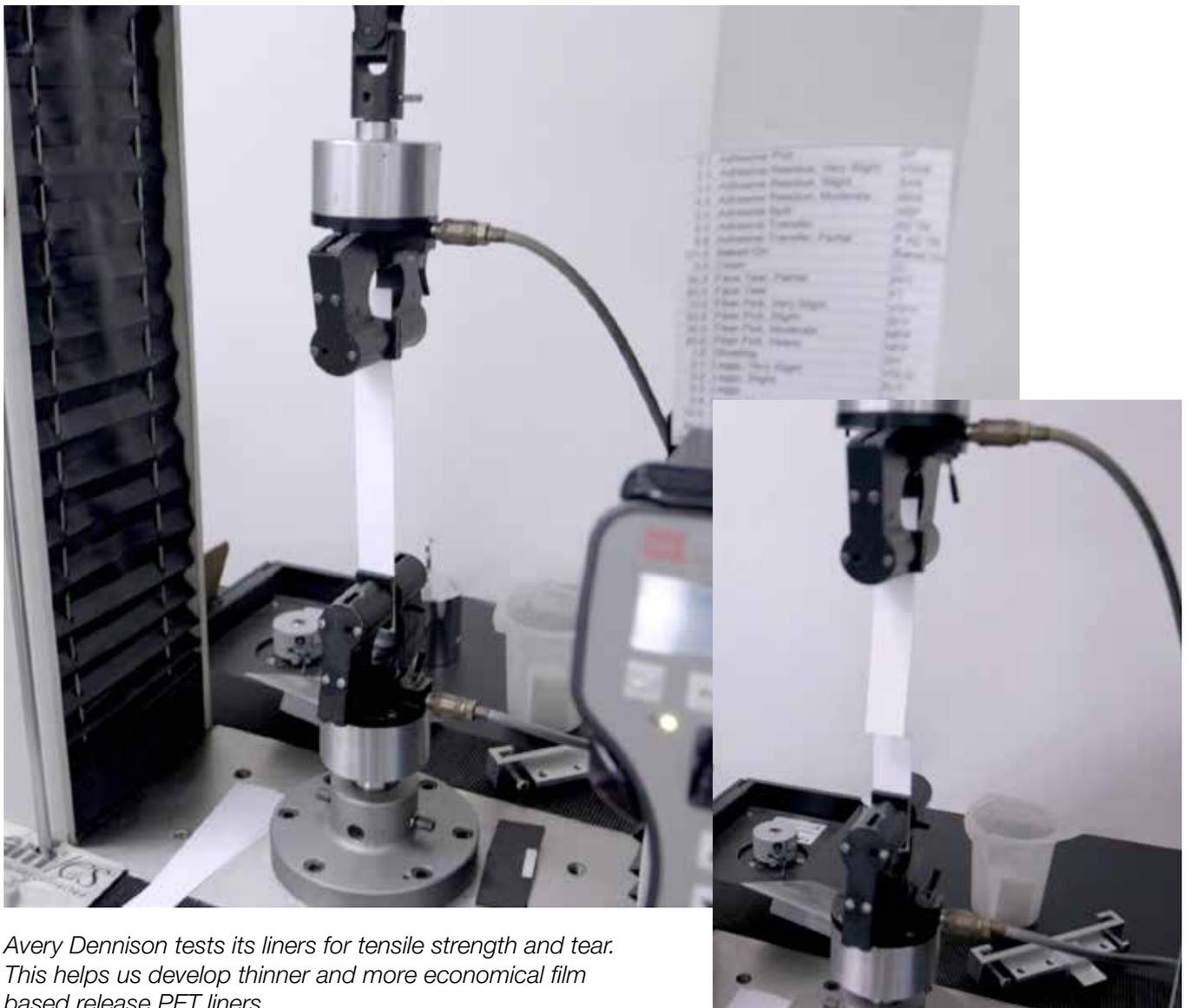
Better for the Environment

More companies are considering the environmental impact of products than ever before. By choosing PET liners, you're doing your part by removing tons of materials from the waste stream. Film liners offer the opportunity for recycling after dispensing. PET liners can be used as ingredients for new materials and eliminated from landfill waste streams.

Better for Brand Owners and Converters

Film liners offer Brand Owners clear advantages. These include:

- Increased operational efficiencies resulting in improved uptime, fewer web breaks and better performance at the peel tip
- More labels per roll
- A reduced number of total rolls in inventory, saving warehouse space
- Improved clarity on containers because of better adhesive wet-out



Avery Dennison tests its liners for tensile strength and tear. This helps us develop thinner and more economical film based release PET liners.



Prime Time

With Prime Films





Label and
Packaging Materials

Avery Dennison **AD**vantage: Technical Excellence

Avery Dennison **AD**vantage is a global technical and customer service platform that helps converters enhance the efficiency of their business and effectiveness of their sales efforts. The service solutions cover a host of key business issues, including trade compliance, sustainability, operations and customer service.

Visit label.averydennison.com/primefilm or contact your sales representative at 800-944-8511.



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ADV# 413, 9/16, 1500



Label and
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