



How to Meet Consumer Packaging Preferences and Improve Converting Processes

SMART SOLUTIONS FOR CLEAR, EASY TO USE, RECYCLABLE FLEXIBLE PACKAGING



As consumers increasingly prefer fresh foods and convenient packaging, converters and brand owners must take note. With the right packaging, they can address consumer preferences for transparency, ease of use and recyclability, building brand loyalty and increasing revenue as a result.

This is because packaging alone plays an extremely important role in purchasing behavior¹:

- First impressions of a product are made in 7 seconds
- 2/3 of consumer purchasing decision is based on product packaging
- ~52% of consumers will purchase another product from the same company if the company uses premium packaging
- Businesses that put a strong emphasis on packaging that resonates with consumers report a 30% increase in consumer interest

However, creating packaging that meets these preferences is proving difficult.

The following pages describe what those challenges are and opportunities to overcome them.

KEY TAKEAWAYS

- 1. Learn about shifting consumer preferences and how they impact packaging**
- 2. Identify challenges with existing flexible packaging coating options**
- 3. Discover how to solve those challenges, achieve clear, fog-free packaging and simplify converting process at the end.**

CURRENT MARKET STATE

Page 2

- Where consumers are shopping and what they are shopping for
- What consumers look for in a product's packaging
- What this means for converters and brand owners

CHALLENGES WITH MEETING CONSUMER PREFERENCES

Page 3

- Fog formation in food package
- Limitations with current anti-fog options
 - Transparency
 - Package integrity
 - Blocking
 - Complexity
 - Compatibility

ACHIEVING CLEAR PACKAGING WITHOUT CHALLENGES

Page 5

- Solution for achieving:
 - Transparency
 - Package integrity
 - Low blocking
 - Reduced complexity
 - Compatibility

CONCLUSION

Page 6



¹Jarski, Verónica. How Product Packaging Affects Buying Decisions - Infographic. Marketing Profs, 6 Sept. 2014.



INTRODUCTION

As consumer preference and behavior continue to evolve in today's increasingly-connected, environmentally-conscious world, companies strive to understand this shift and capitalize on it. For example, studies show that 48% of millennials and 36% of baby boomers now prefer to shop for products sold along grocery store perimeters than in center aisles. Tied directly to an increase in health consciousness, this new shopping behavior means consumers are buying more fresh foods than pre-packaged goods, causing perimeter-of-store product sales to likely account for over \$100 billion more than center-of-store product sales by 2020².

Prefer the Perimeter

Millennials 48%

Baby Boomers 36%

Given this shift, it has become imperative for brand owners to sell the types of food products consumers want to buy and place them in locations along the perimeter where they shop. Doing so becomes an easy way for them to meet consumer needs while also boosting product sales and building brand loyalty.

Yet achieving this task is not as simple as it seems. In an effort to package fresh foods along store perimeters, converters and food packers face challenges associated with:

- End-use packaging transparency
- Package integrity
- Complexity and compatibility
- Cost and time for converting products

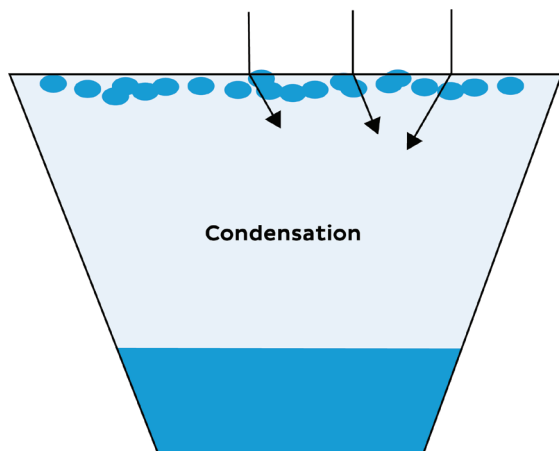
Fortunately, innovative anti-fog heat seal coatings address these challenges and make it easier to meet consumer needs while improving processes and reducing costs overall.

²Escobar, Michal Christine. "Make the Most of the Perimeter." Store Brands, Store Brands Magazine, 6 May 2016.

CHALLENGES

CHALLENGE #1: PACKAGE TRANSPARENCY

Fresh foods are an increasingly popular purchasing choice among consumers. Yet packaging moisture-containing foods that require refrigeration while maintaining package functionality and performance can be difficult. In particular, the package is susceptible to fog formation, which impacts product visibility and diminishes food quality. This is because fresh food products typically expel moisture when packaged. The moisture then gets trapped on the underside of the packaging lid, creating a hazy, fog-like effect.



Micro water droplets create scattering and haze

When a package's haze percentage gets too high (above 15%), visibility becomes poor. At this point, consumers are unable to view a package's contents and assess food quality, becoming less likely to purchase the product in the future.

To improve product visibility and extend food freshness, converters and packers have started to use anti-fog coatings in their package manufacturing and assembly processes. These coatings are designed to reduce fog formation and its negative effects.

However, the current flexible heat sealable lid stocks or substrates containing anti-fog properties pose other issues. For example, many of these lid stocks are PE or PP-based, which offer a poor oxygen barrier. Note how their oxygen barrier capabilities compare to PET-based flexible lid stocks in the following chart.

SUBSTRATE	OXYGEN TRANSMISSION RATE*
OPP / CPP	1550 to 3000
LDPE	7000 to 8000
HDPE	2300 to 3100
PET	31 to 93

* These values are at 73°F (23°C) and 0% relative humidity. Units are cc/m²/24hr.

While using a tray stock from PET-based materials such as APET (amorphous PET) offers improved oxygen barrier and food freshness, it is incompatible with available anti-fog containing PE or PP-based lid stocks. Therefore, converters and packers must compromise on oxygen barrier performance in order to achieve anti-fog capabilities.

CHALLENGE #2: PACKAGE INTEGRITY

Additionally, many current anti-fog coating options can pose package integrity challenges. For example, they may form a bond that is too weak, which causes the seal to break during package production, assembly or transportation. On the other hand, the seal strength also can be too strong, rendering it difficult for consumers to open the product and reducing their desire to purchase it going forward. As a result, achieving ideal seal strength around 800 to 1000 grams per linear inch (4.6 to 5.8 N/15 mm) can be difficult.

CHALLENGE #3: BLOCKING

Another common challenge when dealing with anti-fog coatings is their susceptibility to blocking. To avoid blocking at 122°F (50°C), these coatings must be refrigerated during transportation and storage. This creates additional shipping logistics as well as increased costs. Furthermore, even though the anti-fog performance may be sufficient, the film can be rendered unusable due to severe blockage.

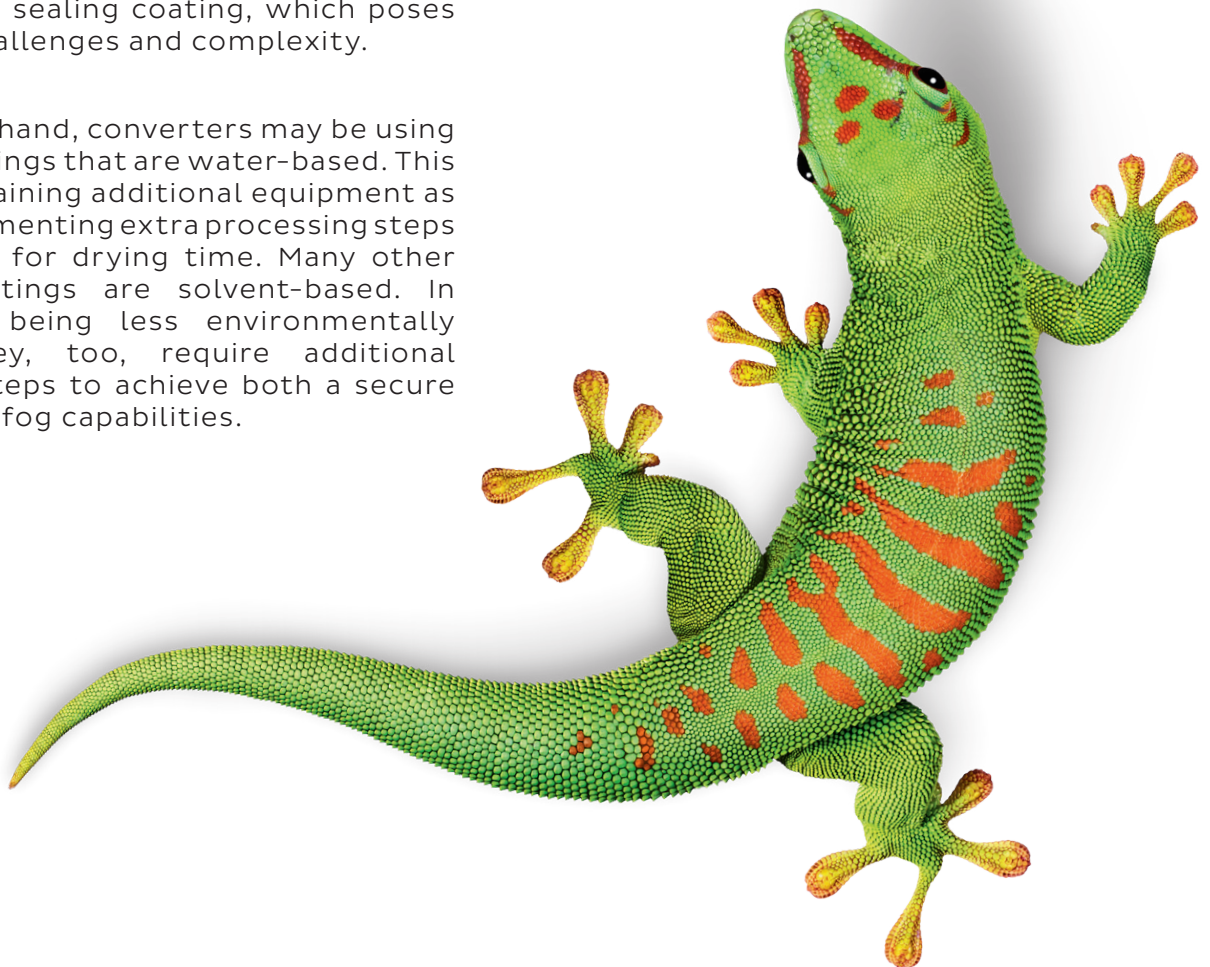
CHALLENGE #4: COMPLEXITY

Incorporating current anti-fog capabilities into flexible packaging films increases production complexity. To achieve both anti-fog and heat seal functionality, converters must use two different products and separate processing methods. They also may be using multi-laminate structures comprised of tie layers to fully achieve an anti-fog heat sealing coating, which poses additional challenges and complexity.

On the other hand, converters may be using anti-fog coatings that are water-based. This means maintaining additional equipment as well as implementing extra processing steps and allowing for drying time. Many other anti-fog coatings are solvent-based. In addition to being less environmentally friendly, they, too, require additional processing steps to achieve both a secure seal and anti-fog capabilities.

CHALLENGE #5: COMPATIBILITY

Furthermore, many current options, such as PE or PP-based solutions, are often incompatible with commonly-used PET tray stocks. This incompatibility means that the flexible packaging cannot be recycled into one simple recycling stream, which impacts recyclability levels and overall sustainability. As consumers become increasingly environmentally conscious, they gravitate toward product packaging that is easy to recycle.





**WITHOUT BOSTIK'S
ANTI-FOG**



**WITH BOSTIK'S
ANTI-FOG**

A SMART ANTI-FOG SOLUTION

Fortunately, there is now a solution that addresses these converting challenges. Bostik's innovative anti-fog heat seal coatings have made it possible to achieve package transparency, package integrity and ease of use while reducing complexity and enhancing compatibility.

HOW SMART ANTI-FOG HEAT SEAL COATINGS ENABLE CLEAR PACKAGING

Bostik has formulated coatings that enable clear flexible packaging without compromising on food quality or heat seal integrity. Copolyester based, this technology can be applied onto PET based lid stocks that offer an improved oxygen barrier (31 – 93 when at 73°F/23°C and 0% relative humidity) over other options, which helps extend food freshness.

Additionally, when applied to a PET lid stock or similar stock, these coatings are formulated to modify the chemical nature of the film itself, without impairing clarity. While coating weight determines the haze % of the film, a typical haze % of the film after our coating is applied is around 10. The PET film containing Bostik's anti-fog heat seal coating is heat sealed on to the tray stock containing fresh produce or other refrigeratable food. This creates the refrigeratable package

which is then placed in the refrigerator until consumed by the end user. Once the package is in the refrigerator, the anti-fog part of our anti-fog heat seal coating starts migrating to the surface in presence of moisture. Instead of forming tiny water droplets, the anti-fog creates a very thin transparent film of water condensate in the interior of the package. This phenomena allows consumers to more easily inspect the food and judge freshness.

HOW SMART ANTI-FOG HEAT SEAL COATINGS IMPROVE PACKAGE INTEGRITY

Bostik's anti-fog coatings offer ideal seal strength with cohesive failure to the seal, which aids in package integrity, food stability and shelf life. With a low initiation temperature of 200°F (93°C), they can seal within a varied range from 225°F (107°C) to 375°F (190°C) for a smooth peelable seal. In addition to improved package integrity and tamper evidency, this enables the following benefits:

- Dwell times are shorter, usually between 0.5 to 1 second, making processing and packaging faster and easier to do.
- Energy usage is lowered, which offers potential safety and cost savings for converters and packers.

HOW SMART ANTI-FOG HEAT SEAL COATINGS SOLVE BLOCKING

Bostik's anti-fog coatings are low blocking and the converted flexible substrates with our coating do not require refrigeration during transportation and storage. Easier for converters and packers to use, they reduce the likelihood that the coated film will be rendered unusable as well as simplify logistics.

HOW SMART ANTI-FOG HEAT SEAL COATINGS REDUCE COMPLEXITY

Unlike many other options currently available, these coatings possess both the anti-fog capability and heat seal functionality in one product. Currently, many converters are using a two step process to produce an anti-fog film, which increases processing time and complexity. With our two in one anti-fog plus heat seal product, converters are able

to reduce SKU volume and potentially cut processing time in half while achieving high-value, functional films.

HOW SMART ANTI-FOG HEAT SEAL COATINGS IMPROVE COMPATIBILITY

Additionally, Bostik's anti-fog heat seal coatings are fully compatible with PET, APET and RPET (recycled PET) tray stocks. Currently, many converters require an LDPE sealing layer to seal traditional lidding films to PET trays. In addition to increasing complexity, this additional layer poses compatibility issues for end-use recycling. By applying our copolyester anti-fog heat seal coating directly to PET lid stock and heat sealing it to rigid PET trays, Bostik's coatings further reduce complexity while increasing sustainability.

CONCLUSION

By identifying an unmet need in the market and understanding converter and packer challenges, Bostik is able to successfully address consumer preferences for clear, easy to use, recyclable packaging. While other current options can address one or some of these preferences, they are not without their challenges and limitations. Fortunately, Bostik's coatings mitigate these issues and are designed to work on existing converting equipment.

In addition to reducing converting complexity with a two-in-one product, these coatings create new opportunities for brand owners to package other products found along store perimeters, boosting brand recognition and consumer loyalty as a result.

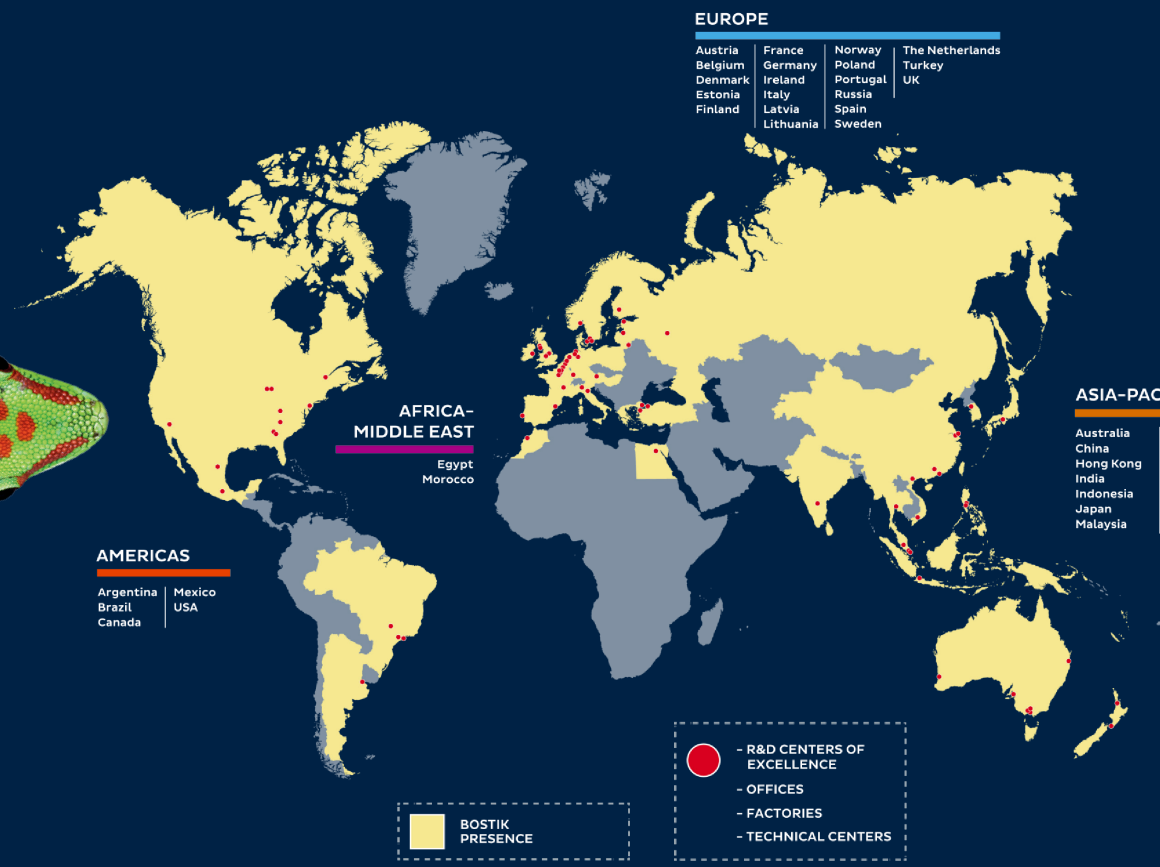
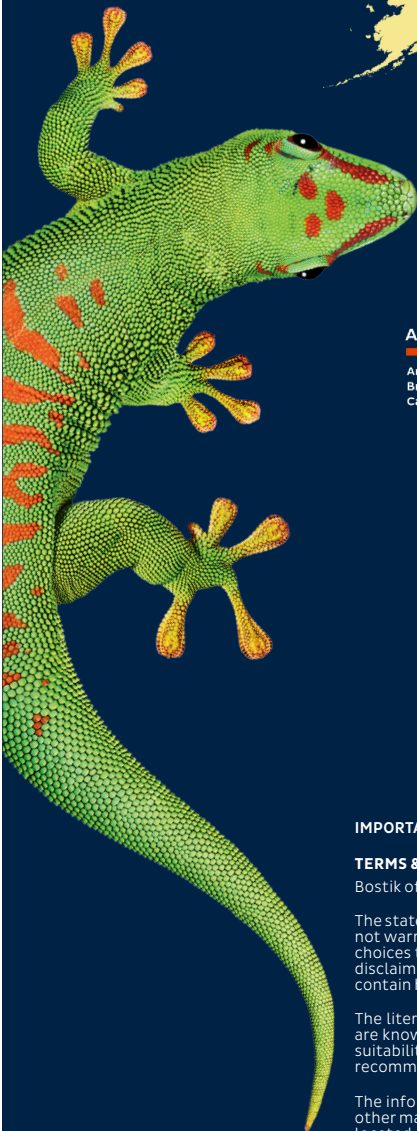
To start meeting consumer preferences while improving processes today, request a technical consult with Bostik's National Sales Manager for the Flexible Packaging market.



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