

Cutting-Edge Packaging Solutions for Milk Products

1. Could you briefly describe PolyOne, and the products it offers?

At PolyOne, our business is structured to provide customers with the specialized polymer materials, services, and solutions they need. We are a premier provider of specialty polymer formulations, color and additive systems, plastic sheet and packaging solutions, and polymer distribution. Our five customer-focused business units are distinguished by the breadth and depth of their offerings and expertise. Combined, they serve a diverse array of end markets and hold industry-leading positions.

2. As Senior Product Manager, what are some of your responsibilities?

I'm responsible for managing a portfolio of technologies that provides barrier and scavenging solutions for PET packaging applications. These solutions including ColorMatrix™ Amosorb™ oxygen scavengers, ColorMatrix™ Ultimate™ UV for content protection, ColorMatrix™ Triple A™ AA scavenger and ColorMatrix™ Lactra™ SX Light Blocking Additive.

3. What is monolayer packaging, and how has it improved in recent years?

Monolayer packaging is produced from a single layer of packaging material. In PET bottles, two or more layers are often used to provide the required performance. These multi-layers often provide a functional enhancement, such as light blocking or oxygen barrier, but can also be used to create special cosmetic effects.

For milk, particularly UHT long shelf-life milk, blocking light is extremely important to avoid early light-induced degradation of the milk. Typically UHT milk is packaged in paperboard laminate cartons or multi-layer HDPE or PET bottles. Recently, companies have introduced UHT milk in mono-layer PET bottles; however, most of the solutions do not provide full light blocking across the whole visible light spectrum of wavelengths, which can be defined as 99.9% or greater light blocking from 400-700 nm. Additionally, the layers negatively affect the mechanical properties of the final bottle, such as burst pressure and top load. PolyOne's ColorMatrix™ Lactra™ SX Light Blocking Additive can provide up to 99.99% light blocking across the entire visible light spectrum with lower usage rates than competing products. Additionally, it offers better mechanical performance and adds less weight due to its lower density.

4. At previous events you have spoken about light-blocking additives for UHT milk. Are there challenges associated with obtaining regulatory approval for such additives? What's their current status in the market?

While there is a certain level of challenge in obtaining regulatory approvals for light blocking additives in PET bottles, based on current research, the main challenge is that most commercially available technologies are not able to offer full visible light blocking.

5. How does improved packaging technology benefit consumers of milk? Could improvements in packaging reverse the ongoing decline in milk consumption in developed countries?

Bottles are easier to grasp for better ergonomics, and they offer a greater design options than laminate paperboard cartons. Consumers appreciate the feel of a rounded bottle versus a box. Consumers also prefer the convenience of a resealable PET bottle for later consumption, particularly in smaller pack formats. These improvements in choice of packaging enable today's busy consumers to choose packaging that fits their on-the-go

life-style. Regardless of how well the packaging protects the contents, the consumer has to want the product; so I don't believe packaging by itself can change market dynamics. However, it is an important part of a brand's marketing mix, which typically involves a combination of packaging, portion size, and product mix.

6. How do you foresee future technological improvements in dairy packaging? Are there new paradigms, or will research continue to improve upon existing technologies?

Dairy is a very diverse market, and I can't comment on all dairy packaging. If we focus on dairy beverages, though, I believe PET bottles will emerge as an extremely important packaging option. This growth would be at the expense of the incumbents such as laminate paperboard cartons and HDPE multi-layer bottles. I also see digitally printed bottles growing as the technology matures.