

Snack Packaging

One-half of eating occasions involve snacks instead of full meals. Snack-size meals appeal to consumers who want to experiment with a different flavor or texture profile while not committing to a full-size meal. Packaging snacks in multicomponent mini-meals provides a balanced nutrient profile in lower calorie counts. Snack-food packaging also serves low-income populations because of their smaller, more affordable size.

Snack Packaging Enables Experimentation

The small scale of snack-size packaging allows consumers to experiment with new flavors and textures associated with novel

cuisines. Flavor and odor barriers in packaging maintain the unique organoleptic features and product texture. For example, *Dishi* prawn crackers maintain their shrimp flavor via a multilayer flexible pouch that masks product from light to limit lipid oxidation, which would alter the flavor profile. Likewise, maintaining the light green-paprika flavor of *Fashion Food* crackers requires a packaging barrier. *Biena Baked Chickpea Puffs* also have a unique flavor that demands a high flavor barrier. The consumer demand for unique flavors creates an opportunity for the addition of clean label ingredients that are also inherently antimicrobial on the food-contact layer of packaging. Antimicrobials embedded in snack-size packaging for foods with a water activity above 0.60 stalls the growth of yeasts and molds. Ingredients that are natural antimicrobials include cinnamon, cumin, garlic, lemongrass, and rosemary. More efficient release of delicate flavors often can be achieved when antimicrobial ingredients are embedded within the packaging itself. Further, integrating different packages with antimicrobial flavors increases production. Specifically, production changeovers associated with the conversion from one product formula to another are reduced when the product is the same but the packaging varies. Moreover, this eliminates the need for resorting and repacking of packages to offer product variety in display cases at retail. This value chain solution has created unique opportunities.

Packaging design and materials also alleviate the unique problems of

snacking while engaging in other activities. For example, the reusable and machine-washable *Doritos* towel bag appeals to the gaming community. Additionally, the Amcor *PushPop* has a wide bowl-like opening that facilitates ease of opening, eating, and resealing. The product is gravity-fed using a vertical form-fill-seal machine and sealed in polyethylene, polypropylene, and polyethylene terephthalate pouches.

Snack Packaging Facilitates Combos

A well-balanced and nutritious small meal or snack is a priority for many. Ready-to-eat product combinations in one package accommodates snacks in the form of mini-meals. For example, *Babybel* offers a cheese and crackers package, and *Hormel Natural Choice* snacks provide meat, cheese, and/or nut snack combinations. These and other similar products are packaged in multilayer high-barrier or polyethylene terephthalate thermoform trays with heat-sealed lidstock.

Packaging snacks in pouches is popular for food manufacturing startups because film and horizontal form-fill-seal equipment represents a low cost of entry. For example, non-stock thermoform molds typically cost \$3,000 to \$5,000, and rotary fillers with a sealing platen specific to the package dimensions range from a low of \$60,000 to about \$150,000. Product creativity for entrepreneurs manufacturing snack foods is more expansive since multiple formulas can be tested with consumers. Pouches containing mini-meal mixes also offer less packaging and more portability for

The Amcor PushPop creates a wide bowl-like opening that facilitates easy unsealing, snack sharing, and resealing. Photo courtesy of Amcor



consumers. For example, *Kraft Stacked Cheese and Meat* is within a minimalistic pouch produced on a horizontal form-fill-seal production line. Frozen food products can also be mini-meals in snack-size packages. The rate of many degradative reactions declines in freezers, so fewer preservatives and less packaging are necessary; this appeals to consumers who desire less preservatives and packaging. The high cost and environmental impact of frozen storage and distribution are unseen trade-offs for less packaging and less preservatives. For example, *José Olé Nacho Bites* and *José Olé Taquitos* are minimally packaged in resealable folding cartons, and *Brazi Bites* snacks are packaged in multilayer resealable pouches for ease of dispensing and portioning. An array of frozen snacks packaged in low-barrier polyethylene-based pouches include *Tai Pei Pork Potstickers*, *Tyson Anytizers*, and *Totino's Pizza Rolls*. *Udi's* snackable muffins maintain their shape because they are packed in a black base and clear top made of polyethylene terephthalate. Addressing sustainable frozen snack packaging more clearly are *Amy's Spinach Feta Pocket Sandwiches*, which come in a clear pouch within a 100% recyclable folding carton.

Refrigerated snacks are packaged for convenience as well. Innovations in yogurt packaging have created new snacking opportunities for yogurt. For example, single-serve drinkable ayran yogurts are packaged in polypropylene and polyethylene thermoformed cups with laminated foil lidding. A large resealable opening on Tetra Pak multilayer cartons allows for filling and dispensing of large fruit particles into the ambient yogurt and is designed



The Tetra Top 330 carton bottle with separable consumer paper and plastic elements for ease of recycling is used to contain Skånemejerier drinkable yogurt. Photo courtesy of Tetra Pak

for consumption on the go. Similarly, Tetra Pak's *Tetra Top MiniV* carton bottle, which has separable paper and plastic elements for ease of recycling, is used to package *Skånemejerier* drinkable yogurt. Chobani's nondairy drinkable product is showcased in sage green high-density polyethylene recyclable bottles.

Snack Packaging Promotes Affordability

Snack-size food packaging provides affordable nutrition to low-income populations and enables flexible disaster relief. Snack-size packaging provides food at lower prices than foods in larger packaging. For consumers operating with a limited income, this is critical in their efforts to provide balanced meals each day. And while snack-size packages make food more affordable, snacks that are shelf stable also offer an economical and logistical benefit. Shelf-stable snacks eliminate energy consumption and costs associated with

refrigerated distribution. On the consumer side, it also extends product usability and reduces food waste associated with food spoilage. Extending product shelf life without refrigeration often demands active packaging such as modified atmosphere packaging, oxygen scavengers, or antimicrobial packaging. For example, *Kirkland Organic Roasted Seaweed* is packaged in a polystyrene tray within a foil-laminated pouch and contains an oxygen scavenger that extends the product's shelf life by six to nine months. *Jack Links Original Protein On-the-Go* snacks are in a high-barrier pouch. Applesauce aseptically packaged in single-serve snack-size multilayer cups requires a high barrier to maintain its ambient shelf life.

Snack-size food products can be used as complimentary meals for people who have nutrient deficiencies due to illness, who are dealing with wound recovery, or who are immunocompromised. This is in

Snack Packaging continued...

contrast to oversupplying or under-supplying nutrients to populations in need. Delivering food in response to natural or manmade disasters can be accomplished with snack packaging. Food aid often consists of foods with which people in need are not familiar. Snack-size packaging allows for a variety of flavors and textures to be delivered and means that all calories need not be consumed from one type of food.

Snack Packaging for New Channels

Snack-size packaging is making food accessible to people through e-commerce and vending machines. For example, *Unilever's Graze* offers personalized snacks, and the tray packaging is optimized for delivery to consumers. The growth of *Graze* and similar products, such as *NatureBox*, has been attributed to the long distances between certain neighborhoods and natural-food stores like Whole Foods Market. Packaging for

snacks in vending machines is specific to the machine. Snacks appealing to various consumer types (e.g., health conscious consumers) are increasingly combined within single vending machines, thereby

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offering variety. For example, *Farmer's Fridge* vending snacks, salads, and sandwiches are packaged in returnable and reusable glass jars. Byte Foods provides packages with radio frequency identification tags that are scanned before and after an employee opens the company's vending machines, thereby tracking what is taken and charging employees accordingly.

Companies that seamlessly track sales and charge consumers by measuring the weight lost in a vending machine include MissFresh Bianligou and Ele.me

(Alibaba's food delivery unit). These tracking systems do not restrict the size of packaging within the machine as with standard vending machines. The conventional direct store delivery system used

for many snacks is an opportunity to optimize consumer-facing packaging. Design options that employ this model with more sustainable packaging include the use of returnable high-barrier outer packaging that is removed in stores. **FT**



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