

PACKAGING & CLOSURE DESIGN E-BOOK



PACKAGE AND CLOSURE DESIGN can have enormous impact on consumer buying habits. When you use packaging that grabs attention, it directly impacts purchasing behavior. Additionally, the consumer is likely to buy the same product again if the closure helped to create a positive user experience. It's clear that package closure design, innovation, and technology can influence sales. The challenge is understanding which aspects of package and closure design are most attractive to buyers.

One way to do this is to anticipate the questions that consumers ask themselves about a product when they consider buying it. Many of the questions that shoppers ask are about packaging and closures and how they will affect the user experience of the product.

These questions most often relate to functionality. Will the product be easy to access? Will the closure keep the product fresh and stable? Is it child resistant or tamper evident? If it is child resistant, can an older person still open and close it? If the product must be measured, will the cap make that easy? Will the product pour, sift, sprinkle, or dispense conveniently? In general, the questions all come down to whether the closure will make the product easy and economical to use.

Aesthetics also play a major subconscious role in the ways that consumers make buying decisions. For purchases, the product must catch the buyer's eye in a sea of products. Color, shape and size are among the most important qualities. These vary widely, depending on the product and the product category. Closure functionality is one of the most cost-effective characteristics.

THIS HANDBOOK COVERS THE ESSENTIALS OF PACKAGE DESIGN AND SELECTION.

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CLOSURE ANATOMY

Closures are available in an immense variety of styles: shaker tops, hinged closures, smooth, ribbed, slotted... the list goes on and on. Despite this, package closures have several basic common components and physical characteristics. They include things like cap diameter, thread diameter, and cap height.

If the cap height is too large, the cap can't mate properly with top of the threaded neck of the bottle and won't seal the liner. If the cap diameter and thread diameter are too large, closing it on the bottle can cause it to strip the threads when the user tightens the cap. Too small and the cap won't fit the bottle. If the E dimension is too large, the threads won't engage. If the inside height of the cap (H dimension) is too short, the inner and the outer parts of the cap will separate, and the user won't be able to remove the cap once tightened. Designers can adjust for this by varying the liner thickness.



T – is the inside diameter wall of the closure without the thread (the largest inside diameter)

E – is the diameter inside the closure across the face of the threads (the smallest inside diameter)

H – is the inside height of the closure

Finish T – diameter across thread faces (largest diameter)

Finish E – Diameter of the wall from which the threads protrude (smallest diameter)

Finish H – height of the finish

CLOSURE SELECTION CONSIDERATIONS

Consumer influence: Is the consumer interested in convenience or sustainability? If convenience, you need to consider how consumers want to interact with the product – are they pouring, shaking, etc.?

Retail considerations: Retailers need to consider a variety of issues. How is it going to be transported and stored? Will it need to be stacked? How much shelf space will be required?

Choosing the right closure liner is also critical for the designer. The type of liner and its characteristics will control the user's access to the product. It may also serve as a safety mechanism, provide evidence of tampering, and control the manner and rate in which the user dispenses the product. Closures can be used with or without a liner. Liner-less closures seal packages very tightly. This technique offers a very tight seal and can be valuable for a variety of reasons, depending on what is inside the package.

Brand influence is also a major consideration in closure design. The manufacturer may want to emboss the top of the closure or use it as part of the advertising. It may be important to communicate the product brand message and claims to the consumer. Even so, there will be functional requirements to bear in mind: Does the closure need to be child resistant? Is the filling process hot or cold? The designer must bear in mind all aspects of the filling process when designing the closure.

To maximize sales, the designer should think about the consumer's purchase experience. The package and closure must attract attention for the first-time buyer to consider purchasing it. Will it make buyers want to pick it up or zoom in online to see how the closure functions? Attracting buyers' attention to the package will increase sales. Studies have shown that if people focus on a product on the shelf for more than three seconds, they are 63% more likely to buy it. If the person picks up the item, a sale becomes 96% more likely. If the closure design encourages consumers to pick up the product, the likelihood of them buying it increases significantly.

SPOTLIGHT ON LINER SELECTION

Liner selection is similar to overall closure selection and design. The main consideration is that of the consumer: What are the consumer's demands and perceptions, and how is the product going to be used? Does the product necessitate a higher-end liner solution?

Here are the recommended best practices/combinations for specific industries:

	Induction Foil Seal	Standard Foil	Pressure Sensitive	Paper- Backed	Foam- Backed	Clean Peel	Lift 'n' Peel	Vented
Pharmaceutical	•		•	•	•	•	•	•
Dry Food	•	•	•	•	•	•	•	
Liquid Food	•		•		•	•	•	•
Chemical	•	•	•	•	•	•	•	•
Personal Care	•		•		•	•	•	

You also should consider the functionality and value the liner brings to the overall package:

- Leak protection – especially during transportation
- Extended shelf life
- Safety/security
- Assurance of active ingredient effectiveness
- Product contamination prevention
- Aroma/fragrance retention
- Product tampering prevention/indication

If your customers are unsure of the type of liner they need, these questions can help them determine the best option:

- What kind of product is it?
- What kind of bottle/package are you using?
- What material is the bottle/package?
- What kind of equipment are you using?
- What kind of interaction will the consumer have with it?
- Do you want tamper-evident or clean peel?



CLOSURE CUSTOMIZATION

Closure customization has become an essential part of product branding. Designers face a multitude of choices when developing a product design. The designer chooses the physical characteristics such as size and color, but other considerations come into play as well. The number of choices is a result, in part, of the range of techniques that can be used to decorate the closure. These methods enable package designers to conceive and create a nearly infinite number of variations on the package's appearance.

Decorations and surface finish options further expand the designer's tool set. Multiple techniques and processes are available to add decoration to a closure:

COLOR

Color choices and decoration are among the most important aspects of closure customization. Color is an essential way to help a buyer spot a product on a very crowded shelf, to create a brand within a brand, and to promote overall brand identity. A prominent, eye-catching color helps draw the attention of the shopper and a well-designed closure can make that shopper take the product off the shelf. Color choices can be combined with different printing methods to create closures that attract the consumer's attention. Accents, such as a gold band on a black closure, can also be used to this effect.

FOIL-BASED TECHNIQUES

Using foil as a substrate creates high contrast and high opacity and is effective for fine detail. It is associated with relatively higher quality but is eye-catching. Combining matte and gloss finishes helps a closure stand out and reinforces the brand or emphasizes closure instructions. It is also relatively simple for the closure manufacturer to produce.

Raised letters can be embossed to reinforce brand identity further. Embossing combined with debossing along with the use of matte and gloss is a subtle but effective way to create a stand-out enclosure. It is also possible to add a colored foil to an embossment, a process called tipping. Tipping can be used to present a logo or image brightly on the cap or to emphasize printed instructions. Due to the brightness and opacity that it provides, tipping conveys a strong sense of quality on the closure. One important concern with tipping is that the very bright logos and fonts can be scuffed, scratched and marred during shipping. Because of the high-grade finish, these injuries to the container are more apparent than they would be in with printing techniques that are less bright.

INK-BASED TECHNIQUES

Ink-based solutions can be used to make highly attractive closures. **Offset printing** is likely the most common of these. Offset printing essentially involves transferring ink from a roller to flat surface on the closure. This technique can be used to print images, logos and text using all available colors. Multiple sets of rolls within a decorating machine allow applying multiple colors. One of the main advantages of this decorating process is that it is continuous, faster production and lower costs.

Kiss printing is a somewhat costlier version of tipping that uses ink rather than foil. Kiss printing can be very effective when used with large fonts, logos, and images. It inherently has less opacity than tipping does because no foil is involved. The fine details of words and logos are also subject to varying degrees of boldness because of ink opacity limitations, which is especially true in cases of high contrast between colors. Kiss printing is less effective when very fine detail and high color contrast combine. Designers are wise to use larger fonts, especially when relying on the decoration to highlight protocol such as “push to turn” and “close tightly.”

Ink-jet printing is one of the best ways to apply inks to closures because it allows fast production runs with good opacity and contrast. It is associated with low costs and is very effective in differentiating products in densely packed retail spaces. Ink-jet printing is highly versatile, allowing the application of photo-quality images; it's frequently used for applications such as alphanumeric coding for promotions. It is suitable for small production runs in an infinite variety of colors. For these reasons, ink-jet printing is one of the commonly used techniques for decorating closures and packaging. Ink-jet printing can be somewhat more expensive than other techniques and can also take longer to produce, depending on the color levels and other technical issues.

Embossing and debossing are specialized techniques that employ specific tool steel to create raised or recessed relief images and designs in plastic. Most closure styles can accommodate this method with the necessary tool modifications. The process lends a tactile and visually distinct finish to closures, emphasizing the brand's logo or any other selected text. Unlike some printing methods, embossing and debossing don't rely on inks, removing issues related to opacity or color contrast. Companies might employ embossing to give products a premium feel, as it is particularly effective for closures that want to showcase unique brand identifiers or instructions.

Hot stamping is an innovative technique where color is transferred to a component using an embossed, heated rubber die. This process is distinct from tipping, where the embossment resides in the cap mold itself. The embossed rubber die carries the logo's design and can transfer color foil directly onto the cap. A key feature of this process is its ability to achieve bright colors and good opacity even when applying a light color onto a darker part, whether a logo, instructions or other printing. It also offers the ability to adapt to curved or dome surfaces.

Pad printing can transfer intricate, two-dimensional designs onto three-dimensional objects. This technique leverages a silicone 'pad' to capture detailed images such as a brand logo. Once the image is imprinted onto the pad, it can be transferred onto closures or jars. This approach ensures that the most complex designs can effectively be applied to varied object surfaces to give them a distinctive look. Pad printing is known for its precision reproducing images on uneven or irregular shapes to achieve consistent brand imagery or enhance product aesthetics.

SERIALIZATION: QUICK RESPONSE (QR) CODES AND PROMOTIONAL CODES

The best partners offer multiple options to apply quick response (QR) codes and promotional codes to enclosures. Ink-jet printing is the technique used most often to do this. It enables the printing of registered codes such as specific alphanumeric combinations or QR codes on the closure. Manufacturers can use these codes for promotions to which customers can respond quickly and easily via the Web or a smart phone.

CLOSURE FUNCTIONALITY: DISPENSING

Different considerations come into play when designing a dispensing closure. Dispensing closures are used most frequently in food and beverage, pharmaceutical and nutraceutical, and beauty and personal care applications. A variety of dispensing enclosures are available:

- Strap caps
- Push-pull
- Dispensing plugs
- Twist-open/twist-close
- Disc tops
- Open spout/snip tip
- Hinged dispensing
- Hinged liquid dispensing
- Hinged single flap dispensing
- Hinged dual flap dispensing
- Hinged large-format dispensing

The diameter of the spout and the size of the orifices are designed to control product flow.

SUSTAINABILITY

As consumers strive to create a plastic-free world, it's important to understand the valuable benefits of plastics and options available to help create a circular economy. The versatility and durability of plastic makes it an ideal material to help secure products, keep them fresh and reduce food waste. Brand owners who understand the options available from PCR can realize the advantage of plastic while encouraging the circular economy with re-use, recycled and recyclable packaging.

POST-CONSUMER RECYCLED (PCR) RESIN FOR GREATER SUSTAINABILITY

Post Consumer Recycled (PCR) resin is readily available to allow customers to add a percentage of PCR to a project, use less plastic, or create an object made entirely from recycled material. A recent consumer survey said that 68% of consumers want a product's packaging to be sustainable. PCR resin suits numerous applications, including child resistant closures.

In 2022, MRP Solutions announced that it would begin to include PCR resin pricing, in addition to virgin resin pricing, on all quotes, where applicable. In an effort to dispel myths about dramatic pricing parity between virgin and recycled resins, MRP strives to offer the comparison as a standard part of the quotation process. And, for those customers looking to begin incorporating recycled content into their products, MRP launched the PCR Getting Started Guide as a first step in creating a more circular product lifecycle. This guide can be viewed by clicking [here](#).

INNOVATION AND TECHNOLOGY

Innovation and technology in packaging originates in one key area: product development. This team is responsible for design, project management and execution of new developments. From research to molding, these are also the people with some of the highest levels of product expertise at the manufacturer. The best manufacturing partners will give you a direct line to product development experts who can provide resources, ideas and services to make your product plans a reality.

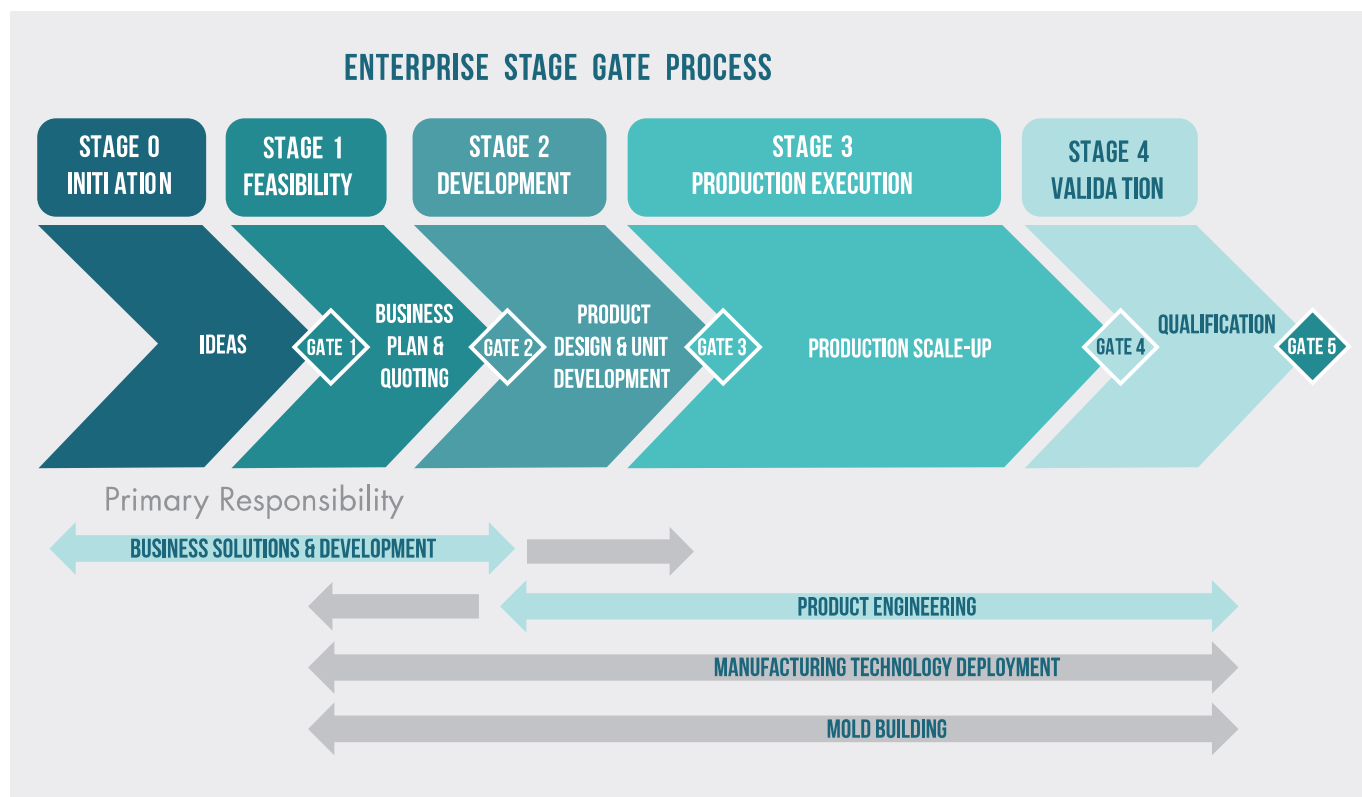
The most successful organizations will have a multi-faceted commitment to innovation.

Look for manufacturing partners with these characteristics:

- Cross-department collaboration
- Ideation and creativity built into a robust stage gate process
- Ongoing market research
- Business structure that supports rapid project implementation
- Resources to deliver projects on time, on budget and with high quality

A successful stage gate process aligns the company throughout the entire project.

FIGURE 1. MOLD-RITE PLASTICS' STAGE GATE PROCESS



Although packaging and closures may not seem like an obvious area for extensive innovation, it's surprising how the right manufacturing partner can bring new products that drastically impact the overall product design. The right closure feature can drastically change the consumer experience – both on the shelf and during regular interaction with the product. Think of the first hinged pour cap, multiple orifice spice shakers, child-resistant closures or even the first vented liner.



As technology advances, package designers are finding new ways to incorporate trends into their packaging. We've seen it happen before – after the advent of QR codes, many brands integrated these into their labels to push consumers to their websites or custom promotions. Now



Image Source: 19crimes.com

designers are incorporating augmented reality (AR) into their packaging. For instance, drinkers of 19 Crimes wines can use an app that reveals stories when hovering over a bottle's label. As AR technology becomes more common, more and more brands will be likely to use it to extend the brand experience and engage consumers in new ways.

THE IMPACT OF GENERATIONAL PERSONAS

Gen X. Millennials. Baby boomers. Alphas. The backgrounds and behaviors of these groups impact everything in today's world—from shopping preferences to technology adoption and the techniques and tactics companies must employ to direct attention to their product lines.

Each of these groups has vastly different buying behaviors and packaging considerations, which in turn influence the design and technical considerations for each new package project. The behaviors and preferences of these generations have created several distinct trends:

- 1. Aging consumers:** According to the latest census data in the United States, more than 34% of the population is older than 55. Baby Boomers control an astounding 53% of America's wealth and 70% of disposable income. These consumers are concerned with living longer and healthier, so they are looking for products – in packages that require closures – geared towards health, wellness and anti-aging.
- 2. Younger consumers:** On the other end of the spectrum are Gen Z and Gen Alpha. These “digital natives” are not only mobile-first but mobile-only. Companies need to be able to optimize the shopper's journey for a small screen. This mobile scrolling requires companies to direct attention to their products by carefully considering colors, graphics and design.
- 3. Personalized, specialized design:** “Mass” production has begun to lose appeal. Instead, consumers seek products that appeal to their unique personalities and preferences. This trend is particularly important to the “Zoomers” or Gen Z.



AT LEAST 90% OF ADULTS MUST BE ABLE TO OPEN THE PACKAGING WITHIN 5 MINUTES FOR THE PACKAGING TO BE CONSIDERED SENIOR FRIENDLY.

Source: www.healthcarepackaging.com

4. Faster shopping: Since the rise of e-commerce (i.e., Amazon Prime), consumers expect faster and more convenient delivery times, especially the younger generations who expect near-instant gratification. Marketers face demands for real-time, virtual dialogue with brands and brand representatives via chatbots, FAQs or through a variety of social media platforms. Packages must be secure and robust to withstand temperatures in shipping transport vehicles and extra handling, while remaining true to branding and style guidelines.

5. Authenticity: Millennials and younger generations connect more with social and influencer advertising than with more traditional marketing methods. This tendency extends to packaging, as these groups look for more health- and eco-conscious packaging materials, more approachable branding and sustainability pledges and actions.

6. Small indulgences: Luxury appeals to almost every generational segment as consumers treat themselves to small indulgences through personal care product purchases. High-end packaging serves as a purchase driver for many CPG categories. A deep understanding of your buying audience can help to create a luxurious experience with your product.

7. Post-purchase: The customer experience no longer ends with the purchase. Customer service, durability and sustainability after the “buy” is essential as consumers employ new digital and social channels to interact with and evaluate brands.

8. Privacy and security: Digital purchasing has unleashed new ways for consumers to be affected by harmful entities. Not only that, but they’re looking for safety in their products, from air purifiers to online healthcare screening to product freshness.

9. Life stage marketing: Post-pandemic self-care spans generational groups, focusing on wellness for every life stage, with beauty products, for example, fulfilling multiple roles, from medicinal beauty to simply uplifting and playful.

Many brands have been able to create package designs that successfully answer these generational preferences. At least 90% of adults must be able to open the packaging within 5 minutes for the packaging to be considered senior-friendly. Here, designers should consider child-resistant yet senior-friendly closures to avoid frustration while enhancing safety, balancing two generations at once.

E-COMMERCE, HOME DELIVERY AND PACKAGING

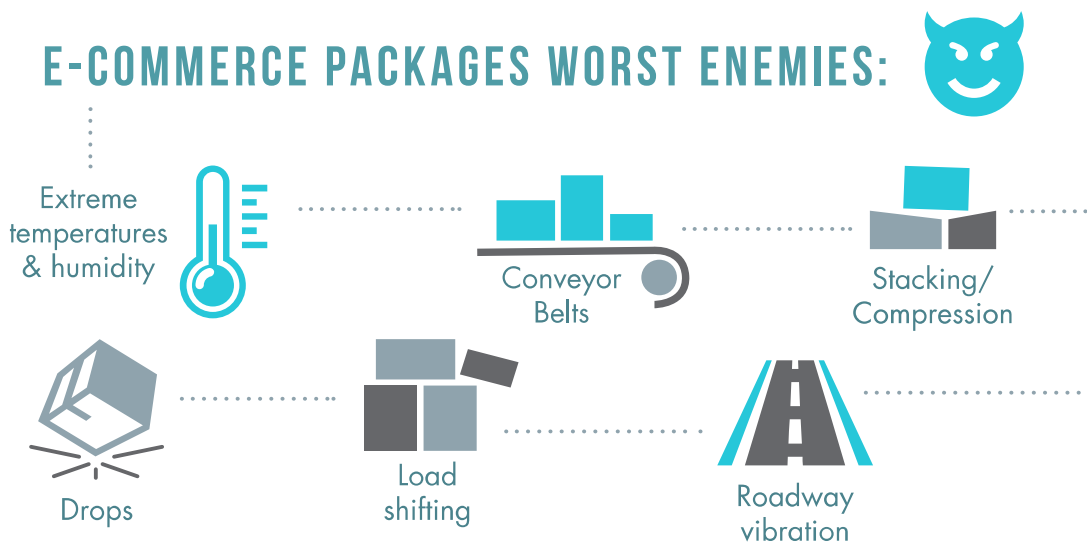
The e-commerce platform has experienced explosive growth in the past few decades. Today, 79% of people shop online a minimum of once a month. Retailers should pay close attention to why shoppers abandon their virtual shopping carts, with a 72% abandonment rate. The best way to avoid this is to make the online experience as easy and attractive as possible with the features customers prefer and have trouble finding elsewhere.

WHAT ONLINE SHOPPERS WANT

One study found that for purchasers, 94% of a product's first impression is design-related. For online shoppers, 79% report packaging needs to differ from in-store purchases. A variety of packaging factors can affect an e-commerce purchase experience:

- The condition of a package when it arrives
- The secondary packaging that may pose an environmental impact
- The ease or difficulty of opening a package

Packaging that is hard to open, unattractive or damaged during home delivery, including breaks or leaks, can have a negative impact on an online customer experience; good packaging can have a positive impact.



ONLINE SELLERS' APPROACH TO PACKAGING

E-commerce and store shelf are unique channels that require different packaging, yet only slightly more than half of those who sell both in-store and online produce different packaging for each channel. E-commerce is beginning to be viewed as an independent distribution paradigm, providing an opportunity to design packaging with sustainability and optimization in mind. Although most manufacturers think about what problems might occur in e-commerce product shipping (including extreme heat, humidity or careless handling), only slightly more than half of them actually test for these potential issues.

When selecting a partner in developing your e-commerce packaging, it is important to collaborate with a team that is experienced with e-commerce packaging solutions, knows the Frustration Free Packaging standards, and other packaging best practices. Mold-Rite is now a member of a select network of companies that are officially recognized by Amazon to support vendors selling products with Amazon. The Amazon Packaging Support and Supplier Network (APASS) connects vendors with companies and labs that can help test, design, and supply protective packaging in line with Amazon's Packaging Certification requirements.

"The most important thing is that the [e-commerce] industry works together to create packaging that's great for customers, companies and the environment. Our commitment is to drive adoption of rightsized, minimal packaging that protects against damage and is made from environmentally responsible materials."

– Brent Nelson, senior manager, worldwide packaging, Customer Packaging Experience (CPEX) in regards to the Amazon Packaging Certification Guidelines

WHY CHOOSE B2B E-COMMERCE?

Expanded Customer Base — Beyond concentrating on their existing customer base, businesses are reaching out to millions of potential international buyers.

Greater Opportunity to Focus on Prospective Customers—A B2B e-commerce site may increase phone calls from customers that prefer to interact with a live salesperson. Professional sales staff with deep knowledge of products and customers continue to be valuable for contacting current and prospective companies in order, for instance, to promote the online platform by offering a discount for using it.

Consultative Selling — Once freed from repetitive administrative tasks, sales reps can become consultative sellers, advising customers on how to drive better business outcomes, giving them the opportunity to have a greater impact on the company. It is not unusual for returning customers to order from the site while the sales team remains responsible for landing deals with new customers.

CONCLUSION

The right package design can mean the difference between a purchase or a pass from the consumer, whether they are shopping online or at the store. Package designers should account for closure anatomy, functionality, customization/decoration, generational concerns and the method of sale when choosing the right closure and packaging for their next project.

Learn how Mold-Rite can help. We offer stock options as well as customization to help you make the right decision for your next package design.

Sources: Trends in E-Commerce Packaging. A Survey of Packaging Stakeholders. [2017]. Dimensional Research. <https://www.jabil.com>

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WHY MRP SOLUTIONS?

MRP Solutions combines extensive packaging expertise with a consultative approach to reliably uncover customer needs. By understanding your business goals, we can tailor smarter, safer and more flexible packaging solutions that reduce costs and increase speed to market, helping businesses capitalize on opportunities.

1. Safety: We foster a business culture that emphasizes safety for our workers and in the closures we design. All operations here are driven by twin goals of excellence and safety to instill confidence in our supply chain.

2. Quality built in from the beginning: MRP Solutions maintains high-quality standards, evident from our ISO 9001:2015-certified manufacturing facilities that adhere to global food safety and GMP guidelines.

3. Environment, Social, Governance (ESG): MRP actively pursues sustainable practices, holding multiple certifications and memberships that emphasize our commitment to environmental responsibility and social conscience.

4. Purposeful agility: Agility and flexibility enable us to supply swiftly tailored solutions while keeping sight of our partners' needs. Our goal is to provide confidence and peace of mind that the outcome meets specifications, enabled by our depth of experience in the packaging industry.

5. Support: MRP is committed to proactive support, ensuring efficient and collaborative assistance for every customer need.

6. Proprietary operation model -CAPitalize: Through our unique operating process, 'CAPitalize,' we prioritize understanding customers' objectives to offer innovative packaging solutions that meet desired outcomes for every order.

7. Professional: With over 75 years of collective experience, MRP ensures exceptional and ethical service across all stages of design, manufacturing and packaging.

8. Brand-ability: MRP offers customized design services backed by a comprehensive solutions center, enabling brands to achieve efficient and standout packaging.

9. Financially sound minority-led ownership: Owned by Clearlake Capital, a Minority Business Enterprise (MBE-certified) entity, MRP boasts robust financial backing, diversifying investments in the packaging sector.

10. Diverse product portfolio: MRP presents an extensive range of stock components with an expansive line of sizes, styles, colors and liners. This allows us to provide tailored packaging solutions with various options for a customized approach to every customer order.

UNCAP YOUR PRODUCT'S POSSIBILITIES.

For more information on MRP Solutions products and services, or to view a list of authorized distributors in your region, contact us today.

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