Packaging is critical in cannabis production because it delivers and presents the product to the consumer. This article discusses how producers and distributors can best position their CBD products to meet potential future regulations and increase the bottom line.

Cannabidiol (CBD) is a chemical compound derived from the cannabis plant. Now that CBD is legal in many states and is informally available through the internet, products that contain CBD are in high demand. This is good news for manufacturers and distributors and presents a great opportunity for companies to differentiate their products and get ahead of the CBD curve.

The global cannabis packaging market was around $588.29 million in 2017 and is anticipated to register a
compound annual growth rate of 20.7 percent between 2018 and 2025, with product development and innovations according to new packaging regulations anticipated to drive the market [1].

While promising, the cannabis industry is new and remains somewhat controversial. As such, manufacturers and their products will be scrutinized at every point in production and distribution. A few key standards and processes should remain top priorities, including:

- Delivering the product in a reassuring format, such as capsules;
- Implementing seamless tracking and reporting for manufacturing and distribution operations and supply chain;
- Ensuring safety and environmental integrity in the packaging; and
- Building brand trust by providing valuable product information, such as specific dosage instructions.

Package design is critical and must be appropriate for the product’s distribution channel. Broadly speaking, CBD product distribution channels are segmented as pharmacy, e-commerce, dispensary, and retail. The future of CBD product distribution in retail chains is still emerging, but it will likely include club, grocery, convenience, and dollar stores as well as food service and vending.

**Challenges in cannabis packaging**

The cannabis market faces several challenges, the first of which is the disharmony between state and federal regulation. In the US, cannabis dispensaries—the physical locations where consumers can acquire cannabis and cannabis-related items—are regulated for medical and/or recreational usage at the state level. This means that packaging regulations vary from state to state.

Packaging plays a critical role in protecting the safety and integrity of any product, and cannabis products have particular packaging needs related to compliance, potency, purity, safety, aroma, and efficacy. Packaging for cannabis products must address four fundamental challenges, which are shown in Figure 1.

A wide variety of delivery systems, or routes of administration, are available for CBD products, as shown in Figure 2. There are also many possible package types (both flexible and solid) and materials, as shown in Figure 3. Choosing the right package type and material is critical to delivering a safe, high-quality, and affordable product to consumers.

The National Association of Cannabis Businesses (NACB) provides clear packaging guidelines for cannabis products [2]. These include ensuring that containers “are made of materials that are generally recognized as safe for use as components of articles that contact articles under 21 CFR Parts 170 through 186 (i.e., FDA Generally Recognized as Safe)” and that they protect the product “against foreseeable external factors that may cause deterioration or contamination of the cannabis or cannabis product.”

**Blister packaging materials**

Using the latest technology to produce best-in-class custom packaging is the safest path toward guideline compliance. A wide range of films and foils can be used for blister packaging applications for various cannabis formulations, such as CBD oils in capsules.

When selecting a blister packaging film, be sure to match the film’s quality and production efficiency to the needs of your product and process. For example, polyvinyl chloride (PVC) films come in a variety of thicknesses, colors, and other properties that can be tailored to your packaging requirements. For blister packaging, a PVC thickness between 150 and 300 microns (.006 to .011 inch) is recommended, depending on the required cavity size and shape.
PVC properties can be adjusted to various physical specifications. For example, the typical water vapor transmission rate (WVTR) of a 250-micron PVC film is 2.79 g/m² per day at 38°C and 93 percent relative humidity, and the typical oxygen transmission rate (OTR) is 25 cm³/m² per day. By choosing the thinnest PVC film that meets your CBD product’s required WVTR and OTR, you can minimize production costs while still meeting the quality requirements for your blister packaging.

PVC packaging film for cannabis products can be laminated to a thin layer of another polymer—such as polyvinylidene chloride (PVDC), polychlorotrifluoroethylene (PCTFE), or cyclic olefin copolymer (COC)—to achieve better WVTR and OTR properties. It can also be coated with PVDC to improve packaging productivity. PVC film can also be tinted with pigments containing additives to tailor the packaging to a product’s needs, such as for ultraviolet light filtration.

Cold-form films are ideal for blister packaging pharmaceutical or cannabis products, which require a high degree of protection against light and moisture. Cold-form films consist of biaxially oriented polyamide (BOPA), aluminum, and PVC layers that are laminated to each other using a cold forming process. Also, cold-form foil (CFF) is becoming more popular as the number of moisture-sensitive drug products on the market increases. CFF is the only material that provides a 100 percent barrier to moisture, oxygen, and light.

The combination of materials used to produce CFF gives the blister packaging the critical properties needed to meet the highest standards of protection for sensitive pharmaceutical and cannabis products, while providing exceptional formability and depth during the packaging process. These materials include camera-inspected aluminum-based foils as well as specialty, high-barrier, and anti-counterfeiting polymer films that provide exemplary protection against moisture, oxygen, light, and gases.

Premium-grade, cold-form base foil made from validated raw material sources that are compliant with global regulatory standards serves as an ultra-high barrier packaging solution and can increase a product’s shelf life. Working with this grade of foil will not only ensure that you meet product protection standards but will also provide advantages, such as exceptional formability and sealability with common lidding materials and high delamination resistance when used with primer.

**Stability testing and distribution**

Once your product is packaged, it’s important to ensure that it remains potent, pure, unadulterated, and safe over time. In the pharmaceutical industry, this is done through stability testing. The NACB addresses stability testing in its “Standard 4.05. Sampling Integrity” [3]:

“a. When selecting test samples for laboratory testing, a cannabis establishment shall use procedures that produce samples that are reasonably representative of the batch.

“b. A cannabis establishment shall not alter the samples or expose them to irregular conditions intended to manipulate the results of laboratory testing. Comment: One example of a practice that would violate Standard 4.05(b) would be the use of an ozone generator on a sample to eliminate microbes prior to testing in a way that does not reflect how the rest of the batch was treated.”

Packaging is also critical to distributors, who may require seamless product tracking and reporting. Finding the right tracking and reporting system for your product can be challenging, but new solutions that meet or exceed traceability and anti-counterfeiting requirements for the pharmaceutical supply chain are available. A comprehensive tracking solution must address:

- A unique identifying number for each consumable package,
- Aggregated bundles and pallets for shipping, and
- Geolocation to track the products through distribution (from distributor to warehouse to dispensary) and to counter the grey market.

When you’re adopting a new tracking and reporting process, this is also a good time to consider heightening your branding efforts to create brand differentiation and awareness and strengthen brand loyalty.

**Regulatory outlook**

While many manufacturers are waiting for clarity on FDA regulation before entering the CBD market, companies continue to introduce minor CBD products, and...
ne is optimistic that distribution will expand into supermarkets and mass retailers. In fact, the United Kingdom Food Standards Agency recently issued a positive ruling on CBD, which the FDA is likely to consider in its own decision making [4, 5].

Recently, FDA commissioner Stephen Hahn stated that the agency will continue to “take appropriate action against unlawful CBD products that pose a risk of harm to the public” but offered no timeline for when the agency might release guidelines [6]. Commissioner Hahn vowed that the FDA will “monitor the marketplace” and punish sellers who make unsubstainted claims about the benefits of CBD, but he also said that the agency would not take any extra steps to stop consumers from getting over-the-counter CBD [7].

Considering the level of FDA attention focused on the cannabis industry, a cautious approach to manufacturing and distributing CBD products is wise. The key to success is following industry guidelines and standards and partnering with experts, so that, when retailers begin to show interest, your products are market ready and already meet the standards.

Select a packaging supplier who has industry compliance experience, is up to date on industry standards, and can provide brand guidance. A company with marketing expertise will take into account the requirements of your target market and can help you create an effective product design, which is not always an easy task [8]. This may include assisting with color combinations and brand consistency to ensure that your packaging is compliant with state and local laws.

In the new and somewhat uncharted territory of the CBD market, following NACB guidelines and working with a knowledgeable manufacturing, packaging, and solutions partner will put you on the best path.

References

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