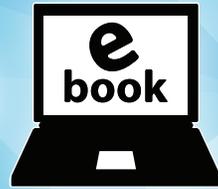


PACKAGING  
**STRATEGIES**



PUBLISHED OCTOBER 2017

A **bnp** PUBLICATION  
media

# LABELING, CODING & MARKING PART 4

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# WELCOME TO OUR OCTOBER 2017 eBook

## ON THE LABELING, CODING & MARKING SEGMENT

**W**elcome to part four of our labeling, coding and marking eBook series. This topic is so extensive and important, that we want to continue to offer you the most current information available. Read the best practices, examples, ideas and expert advice for information and inspiration as you consider your own business needs.

In this special eBook you can read articles on barcode grading, the craft beer boom in Britain, labeling specifically for pharmaceuticals and a consumer study that shows an area of labeling that can use some major improvements. We also cover consumer and retail trends including top trends in spirits packaging, how customized packages gain consumer attention and an exclusive interview surrounding RFID tags. Scroll through and enjoy our latest eBook on this vast topic. **PS**



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LABELING, CODING & MARKING

# LABELING/ CODING/ MARKING eBook STUDY

The BNP Media Market Research Group conducted the Labeling, Coding and Marking eBook Study to provide insights to the publishing team for producing this eBook. The group gathered responses from *Packaging Strategies* readers and here's what our readers said about equipment decisions and trends/ challenges within the industry.

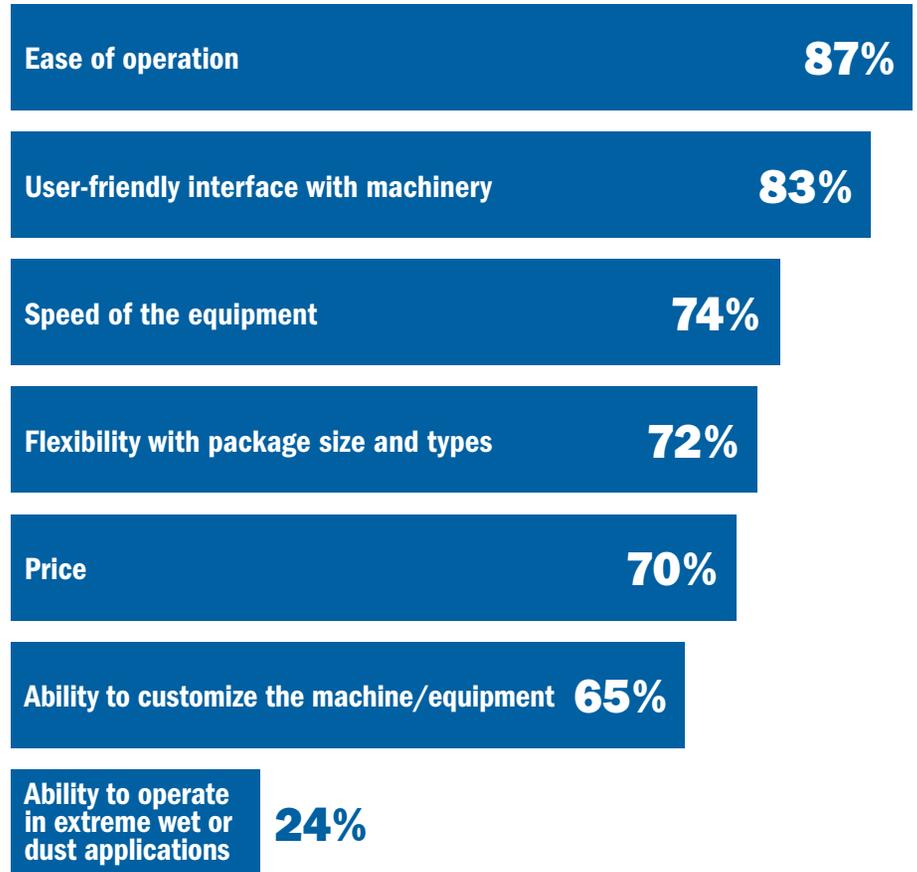
**Equipment selection criteria:**

Ease of operation and user-friendly interface with machinery are the top two criteria considered in selecting labeling/coding/marketing equipment. Speed of equipment and flexibility with package sizes/types are considered highly important by nearly three-quarters of respondents.

**Industry trends:**

The biggest trends emerging now within labeling, coding and marking are as follows:

LABELING/CODING/MARKING EQUIPMENT CRITERIA



- **In labeling:** Clean labeling, including non-GMO labeling, and sustainable labels
- **In coding:** QR codes
- **In design:** Customization and personalization, as well as high-impact colors
- **In packaging:** Influx of different sizes

**Here's what our readers say about the industry and challenges within:**

Cost management, legible and accurate information on the package, price and coding consistency are some of the more

frequently perceived challenges faced by respondents' companies. The biggest perceived challenges in labeling/ coding/ marking, per our readers are:

- Maintaining costs
- Legibility in codes/ clarity
- Price competitiveness
- Accuracy in marking
- Consistent coding
- Quality boxes and labels. **PS**

DIGITAL PRINTING

# BEER BOOM BRITAIN – WHAT’S IN IT FOR YOU?

submitted by **TONEJET**, *Tonejet.com*

The boom of the small independent brewing industry in the U.K. shows no sign of slowing. In fact, according to a recent report by Siba (The Society of Independent Brewers; [siba.co.uk](http://siba.co.uk)), a new brewery is opening in Britain every two days with one in six independent brewers planning to double levels of production, sales and turnover in the next two years. The trend is boosting the British economy with the beer and pub market sectors now responsible for some 869,000 jobs.

With the various events and festivals now organized around craft produce, in the U.K. and throughout the world, it’s near impossible to miss the craft beer explosion. Not only that, there are ‘craft beer clubs’ operating in Britain where, for a fee, beer drinkers are provided with a monthly supply of small batch, hand-picked craft beer from around the world, delivered to their doorstep.<sup>1</sup>

The Siba report states that 56% of produced beer is supplied to free-trade (non-brewery owned) pubs while over



80% of all beer sold by members is sold within 40 miles of the brewery. 17% are now exporting beer with a further 53% interested in doing so. In such a competitive market with plans for increased levels of both production and sales, it’s no

wonder then that most breweries made capital investments in 2015, with 13% investing over £100K mainly in expansion of production, modernizing equipment and transportation improvements. To aid the entry into new markets and exports many breweries are looking to canning their beer.

Of course, a growing market is a competitive one and while independent craft brewers continue to enjoy this rapid growth, larger brewers are also looking to capitalize on investments in this market, through mergers and acquisitions, and their own small batch brews. We saw this in early 2016, with the AB InBev takeover of U.K.-based Camden Town Brewery, a brewery which has taken on canning their product, alongside their bottling and keg products.<sup>2</sup>

While cans are undeniably becoming extremely popular, there is still a lack of ability to provide small batch brews in cans with the same print quality as mass produced product. This is due to traditional processes and the economic cross-over point of the suppliers, with minimum order quantities of around 150,000 cans and long lead times creating a barrier to the fluidity and potential rapid growth of small, independent brewers who need batch sizes of 10,000 to 50,000.

Until now, the only alternative for small batch brewing to be packaged in cans is to utilize indirect label printing at a consid-

erable additional cost to conventional manufactured cans. New digital can printing technology addresses these issues while opening-up a whole new world of opportunity. Digital print technology for beverage can decoration, whether for craft beer or non-alcoholic craft beverages, wines or RTD's can deliver the variety, flexibility and choice that producers need to succeed. In fact, with limited edition flavorings or one-off special brews increasing in popularity, packaging can help a brand stand-out.

“Digital print teamed with customization has transformed the packaging industry as we know it today. Personalized, one-off cans as produced by Tonejet’s direct-to-can printer are a revolutionary step in packaging for aluminum cans. For all canned beverages from soft drinks and energy drinks to pre-mixed alcoholic cocktails and even wine. For small volume brewing from either small or large brewers, in a competitive market, this type of packaging innovation is guaranteed to generate brand recognition,” says Martijn van Buuren, Broad Green Partnerships.

From a cost perspective alone, Tonejet direct to can digital printing is roughly 20 times cheaper than label printing for cans.

With the inherent nature of digital print and minimum orders of almost one, brewers are now provided with virtually limitless personalization opportunities. Not only that, but as

the technology is capable of printing several batches a day, product time-to-market is decreased too, enabling brewers to respond quickly to seasonal trends or produce and can key beverage brands for events or social media campaign, opening-up new business opportunities.

True personalized packaging, made available from printer manufacturers such as Tonejet, are key to unlocking significant investment opportunities, for a variety of craft beverage packaging business models – be that simply as a financial investor or in setting up individual custom digital can printing operations.

In the U.S., small batch beverages have been canned for some 20 years with a variety of mobile canning companies

offering a canning service at the brewery when the beer is ready. By example, a recent Tonejet customer in North America is setting up a contract can printing company, buying in blank cans and printing smaller run orders for local craft brewers. With no order constraints, even before the system is installed, its order book was full for several months in advance. They are already expecting to invest in a second system to meet demands.

In the U.K., with an increased focus on branding and customer communication, there is a huge opportunity for such canning operations, whether that be for small and contract brewers, beverage producers, printer converters or potential investors. **PS**

1 <https://www.beer52.com/>

2 Wall Street Journal, <http://www.wsj.com/articles/sabmiller-ab-inbev-agree-on-deal-in-principle-1444717547>

PRINTING & CODING

# THE CHALLENGE OF BARCODE GRADING IN A SERIALIZED WORLD

Barcode grading assists in maintaining a standardized level of quality and operability.

by **JOHN CAPANTS, P.E.**, *contributing writer*

The barcode is so pervasive in worldwide commerce that it's hard to believe its uses are still increasing. Now add prescription drug anti-counterfeiting measures to the list.

In November 2018, the FDA will start enforcing the Drug Supply Chain & Security Act regulation that requires all manufacturers and packagers to apply a unique 2-dimensional (2D) barcode (the GSI DataMatrix) on every prescription drug container (e.g., bottle/carton and case) to be sold in the U.S. Similar regulations are taking effect around the world that will eventually impact re-packagers, distributors and other supply chain organizations as well.

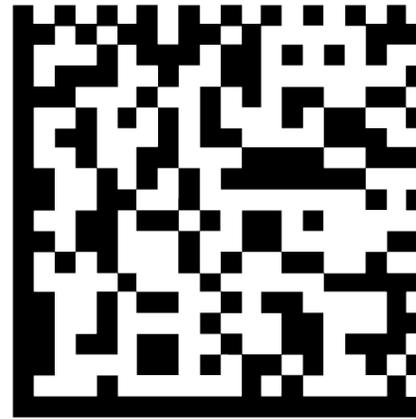
Although most of us take barcodes for granted, a poorly printed barcode can wreak havoc in the supply chain, potentially interrupting supply and hampering business performance. With this concern in mind, suppliers, wholesalers

and brand owners have urged manufacturing and packaging organizations to grade their DataMatrix barcodes to maintain a standardized level of quality and operability.

## SCANNING VS. GRADING

Barcode reading (also called scanning) isn't the same as grading (a.k.a. verifying). Poor-quality barcodes can be read under ideal conditions (e.g., excellent lighting) and vice versa. Simply being able to read a barcode in one location provides no assurance that the code will be readable elsewhere in different surroundings. Barcode grading establishes a baseline for quality that greatly improves the chances for successful barcode scans throughout the supply chain by providing a number or letter score that quantifies multiple barcode attributes against known standards.

GSI DataMatrix is the ISO/IEC-recognized and standardized implementation of the use of the 2D data matrix barcode, with the GSI standards body working in close cooperation with regulators and the healthcare industry to develop standards for encoding required serialization information. Barcode grading standards have been developed by various standards organizations (ISO/IEC, ANSI).



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## GRADING PARAMETERS IN DETAIL

GSI DataMatrix barcode attributes are graded on a number (4-0 - ISO) or letter (A, B, C, D, F - ANSI) scale. The final overall grade reflects the lowest score of any one attribute. Most pharmaceutical distributors are requiring grades of B (3) or higher. The attributes are:

1. **Decode:** The ability of the barcode to be read. If decode fails, the overall barcode grade is a failure.
2. **Contrast:** The difference between light and dark squares or dots in the barcode. Pure black and bright white provide the best contrast/highest grade.
3. **Modulation:** Variation, or differences, in contrast



throughout the barcode. Less is better.

4. **Fixed pattern damage:** The quality of the squares/dots that form the perimeter of the barcode, plus the presence of the “quiet zone” surrounding the barcode.
5. **Grid non-uniformity:** The barcode’s fit within specified horizontal and vertical boundaries.
6. **Axial non-uniformity:** Alignment of the barcode with horizontal and vertical axes.
7. **Unused error correction:** Amount of available error correction in a symbol, with 100% unused being the ideal case. Error correction reconstructs data that is lost via damage, erasure of the symbol, or poor printing.

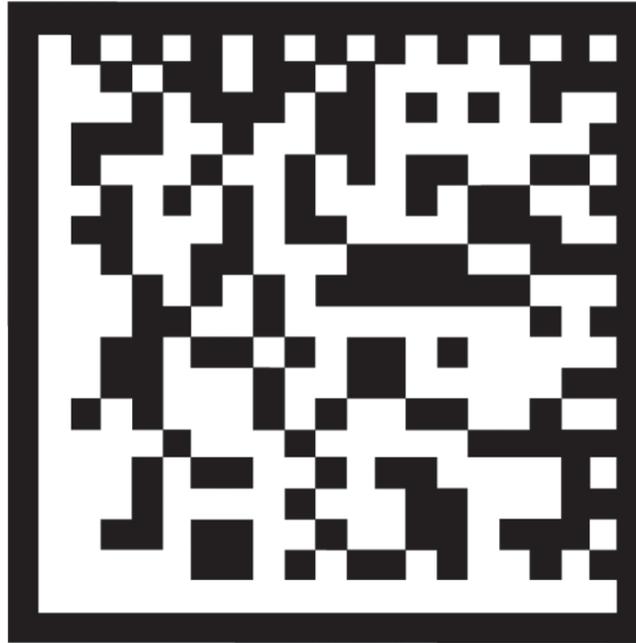
## GRADING CONDITIONS AND METHODS

Conditions for barcode grading (e.g., lighting, angle of illumination, number of scans) are also specified in the standards. Whenever possible, the barcode should be graded in its final configuration (i.e., label on bottle or case).

Two general types of barcode verifiers are available: off-line and on-line. Off-line verifiers are typically tabletop units. On-line graders mount directly to a packaging line.

Off-line graders provide tight control and repeatability of the test conditions per the ISO standard and are easily calibrated. However, operators must pull samples from the line and bring them to the grader. This process takes extra effort and prohibits 100% verification of all codes.

On-line grading offers 100% inspection of every barcode that is printed. Any degradation in barcode quality is immediately detectable and can be addressed. However, it is virtually impossible to replicate ISO-specified conditions with a system mounted on an active line. Suboptimal lighting or vibration, for



example, can yield erroneously lower or failing grades due to poor image capture.

Off and on-line systems can complement each other. A good approach would employ off-line grading to establish a baseline, traceable barcode verification process supplemented by on-line verification to provide continuous comparative checks of each barcode.

## PRINTING AND SUBSTRATES

Creating high-quality barcodes is a function of printing and substrates.

There are three primary types of systems used to print/mark barcodes and human-readable data – thermal transfer, inkjet and laser ablation/marketing.

Thermal transfer applies heat to an ink-laden ribbon, which causes the transfer of the heated wax-based ink onto a substrate and is common for printing on labels on a web. Thermal transfer systems have wear parts and consumables. Poorly maintained systems could result in lighter print (lower contrast and/or modulation) or missing elements (failed decode, lower fixed pattern and unused error-correction grades).

Inkjet printers are often used for printing directly onto cartons and labels. The nozzles must be kept clean and ink level must be monitored/maintained. The carton material should also be unvarnished to allow the ink to effectively dry and adhere to the substrate.

When printing directly onto a carton, it is important for the carton conveying/handling system to maintain firm control of the carton. This will minimize potential for skewed positioning and vibration that could cause an imprecisely shaped barcode (affecting grid/axial non-uniformity), wrongly positioned barcode (causing an inadequate quiet zone), or poorly defined elements.

Laser ablation is the process of removing a coated material from a surface by irradiating it with a laser beam. Laser marking is the process of irradiating a reactive layer of material, which changes color to create the required markings. Laser printing processes are precise and do not consume any materials. A strong contrast in color between the coating material and underlying substrate is needed to get good grades for contrast and modulation using laser ablation. For laser marking, the darkness of the coated substrate when irradiated must be sufficient to contrast the lighter unaltered substrate. Proper handling/positioning of the package/label is again important.

In summary, the use of the 2D DataMatrix will increase

dramatically with the advent of prescription drug anti-counterfeiting regulations throughout the world mandating a unique serial number on each saleable unit and shipper label. Manufacturers and packagers will need to ensure that the barcodes used to carry critical product authentication data are precisely and accurately marked and verified. Good packaging and artwork design, properly selected and maintained printing systems, and an effective barcode verification process will all be needed to keep product moving safely and efficiently throughout the global supply chain. **PS**

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*John Capants is responsible for the development of sales and implementation activities for Vantage clients in the packaging, serialization and automation services business. Capants comes to Vantage Consulting Group ([vantageconsultinggroup.com](http://vantageconsultinggroup.com)) from Teva Pharmaceuticals where he served as executive director, engineering technology & qualification, for the past six years. In his role with Teva, Capants led the corporate department of key subject matter experts and qualification engineers to manage large and/or complex capital equipment projects. In addition, Capants served as the engineering leader on Teva's global Serialization Team, overseeing U.S. implementation teams and managing vendor relationships.*

*Vantage Consulting Group is a focused manufacturing solutions provider helping pharmaceutical and food companies deliver safer, higher quality products. It solves complex manufacturing automation problems – including vision inspection, serialization and packaging – by providing end-to-end expertise that spans strategic guidance, design, implementation and validation. Capital projects are consistently delivered more effectively, quickly and at less cost because of the company's deep industry expertise and proven methodology.*



## IT'S TIME TO AUTOMATE YOUR MARKING AND CODING OPERATIONS. WHAT ARE YOU WAITING FOR?

**A**utomation is a hot topic, and has been for the last several years. We've all heard what it delivers, and most likely have experienced automation success firsthand at least somewhere in the manufacturing chain: It reduces cost. It virtually eliminates human error. It increases operational efficiencies and productivity. Automation benefits have outlasted the initial hype: the value of automating your production processes has proven itself, and automation is here to stay.

So why hasn't every manufacturing company adopted marking and coding automation across their packaging lines?

Changing any existing process is always a big decision that requires thoughtful planning, watchful implementation, and careful control. It's not always easy to make the big leap, even when you know that you'll be happy when you make it over to the other side. Marking and coding is no exception, especially considering the complexities of a varied landscape that includes equipment from multiple vendors, numerous systems of record that house data, and additional layers of control systems that may already be in place. The potential struggle of pulling all these pieces together into a harmonized system can understandably intimidate even the most

forward-thinking production manager.

Matthews Marking Systems understands these challenges and created a solution that puts the promise of automated marking and coding control within arms' reach, by cutting the complexity and cost of integration.

**ANY EQUIPMENT. ANY DATA SYSTEM. SCALE WITHOUT LIMIT.**

MPERIA®, the universal marking and coding automation platform by Matthews Marking Systems, simplifies the process of implementing centralized marking and coding control by adapting to your existing CPG packaging environment, allowing you to streamline processes and put your products onto retailers' shelves faster. MPERIA controls and automates coding operations across primary, secondary, and tertiary packaging lines, regardless of equipment technology or vendor, and integrates seamlessly with existing data systems and control systems.

MPERIA's unique architecture is more flexible than proprietary central systems, making it easy to connect to and control marking and coding equipment, scales, barcode readers and other devices on the packaging line – use the equipment you already have, whether it be Matthews' high perfor-

mance printheads or competitive equipment, and add new equipment when required. This total production line controls allows you to make changes as needed; you no longer need to train production workers on new user interfaces or invest in the standardization of print technologies upfront.

This intelligent architecture also allows MPERIA to connect to any database with minimal IT support, whether it is ERP, MRP or WMS system, via both wireless and Ethernet connections and transfer production information into templates maintained in a centralized database. This eliminates the labor required to modify information stored on the production line whenever an edit is made, and reduces errors by automating the message changeover process, sending the new code or mark data to the connected printers in real-time. Faster changeovers mean increased uptime for your production line.

MPERIA is scalable, allowing you to control one or multiple print heads or production lines, from one controller. As you grow your business, MPERIA grows with you – whether you are adding equipment to your production line or expanding to multiple plant locations, MPERIA's unparalleled performance keeps up with your needs without needing to add expensive server hardware.

**AUTOMATE CHANGEOVERS.  
REDUCE RECALLS. INCREASE UPTIME.**

MPERIA improves the efficiency of your print operations, reducing downtime and cost, and increasing packaging line productivity. The simplicity with which MPERIA adapts to

your environment makes taking the step towards automation an easy decision. **PS**

**Stop Waiting. Start Updating.**

# MPERIA®

## A marking and coding automation platform that's simple to integrate?

**Now that's Mpressive.**

Automate changeovers. Reduce recalls. Scale without limit. Only MPERIA® cuts the cost and complexity of centralizing control of your packaging lines so you can stop waiting and start updating.



 **Matthews  
Marking Systems™**

Learn more at [matthewsmarking.com/mperia](http://matthewsmarking.com/mperia)

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LABELING

# WHAT DOES THE FDA’S NEW NUTRITION FACTS LABEL MEAN TO THE INDUSTRY?

by **CLAUDIA LEWIS**, *contributing writer*

In May 2016, the FDA finalized the Nutrition and Supplement Facts Label and Serving Size final rules, significantly revising the nutrition facts label for the first time in over 20 years. July 26, 2018 was slated as the compliance date for most large businesses (those with over \$10 million in annual food sales), with smaller companies required to comply by the following year (July 26, 2019). In the meantime, food and dietary supplement companies have been working through interpreting the new requirements, contemplating whether to reformulate certain products, and developing timelines to meet the compliance deadlines.

However, on June 13, the FDA announced that it was delaying the compliance dates to help food manufacturers implement the changes. The agency has not revealed the new

dates, nor has it made its “announcement” official by publishing the delay notice in the Federal Register. Some suspect that the dates will be pushed to 2021, to be aligned with the expected timeline for the federal GMO disclosure requirements. But until we know for sure, it raises the question—how should companies forge ahead?

## WHAT DOES THE NEW NUTRITION FACTS LABEL REQUIRE?

Reflecting “new scientific information,” the final rule requires important updates, including which nutrients should be declared, what the base serving sizes should be, and how the label should be designed. The changes discussed below are the most important or controversial, and are not a compre-

hensive list of what the rule requires.

Probably the most widely discussed requirements under the new rules is that “added sugars” must be declared, both in grams and as a percentage Daily Value. Recognizing that Americans are consuming more calories from added sugars on average (13%) than what is recommended by scientific studies (no more than 10%), the FDA thinks the new added sugar requirement will “help consumers make informed choices.” Last January, the agency issued draft guidance clarifying this requirement for fruit juice blends, products containing fruit juice concentrates, and other processed fruits or vegetables (e.g., purees, pastes). The agency also acknowledged the industry’s concerns regarding sugars from honey in the definition of added sugars, and it “plans to invite further comment in the near future.”

The rule also updates the list of required nutrients on the



label. Currently, calcium, iron, and vitamins A and C need to be declared. On the new label, vitamin D and potassium are required instead of vitamins A and C, but these vitamins can still be declared voluntarily. The requirement reflects the changes in the American diet in recent years, which, accord-

ing to the FDA, used to lack vitamins A and C but now is deficient in vitamin D and potassium.

In addition, the rules update serving sizes for the nutrition facts label based on the “amounts of foods and beverages that people are actually eating.” Most serving sizes will increase, indicating that Americans eat more than they think. Also, containers with one to two servings will be required to be labeled as a single-serving container, because consumers are likely to finish the entire package in one sitting, making it less likely that they will consult the nutrient figures listed for a single serving rather than calculate the amount of that ice cream they actually eat.

Finally, the rule introduces a new definition of “dietary fiber.” While the definition covers all non-digestible soluble and insoluble carbohydrates and lignin that are “intrinsic and intact in plants,” it includes only “isolated or synthetic non-digestible carbohydrates” if the FDA determines that they have “physiological effects that are beneficial to human health.” The Agency has determined only seven isolated or synthetic non-digestible carbohydrates to be “dietary fiber,” and has requested scientific data and comments regarding the other twenty-six to decide whether they should be added to the list.

## WHAT SHOULD COMPANIES DO?

### **Do not delay in devising an implementation plan.**

Even though the FDA considered the industry’s concerns in announcing the extension, it seems unlikely that the requirements of the rule will change. Public notice and comment procedures shaped the rule, and substantively modifying it will be difficult. Furthermore, the Agency did not hint at such a drastic measure. Instead of waiting until the FDA announces the details of the extended compliance date, companies should already be in the process of establishing their plans and timelines to comply with the new rule.

### **Determine whether any product needs to be reformulated.**

The manufacturers should first discuss whether they need to reformulate any products before getting into other technical changes. The new serving sizes may require reformulating certain products to continue making the same health or nutrient content claims, such as “healthy” or “low-fat.” Similarly, the new definition of dietary fiber may require product reformulation to maintain claims such as “rich in fiber.” Companies should also consider whether they want to reduce added sugars to stay attractive to consumers. When considering reformulations, companies should also factor in

the upcoming GMO disclosure requirements if their products use GMO ingredients.

**Determine the optimal container size.**

With regard to the new serving size requirements, companies need to consider whether they should change their product sizes to improve marketing effectiveness, especially if a package contains more than one serving. For example, companies may want to avoid describing the entire package as a single serving by reducing packages with one to two servings to one serving, or increasing them to two to three servings. **PS**

*Claudia Lewis is Co-Chair of Venable's FDA Practice. Other contributors to the article include: Kristen Klesh and Ashley Saba, associates in Venable's Regulatory Practice, and Jude Lee, a summer associate.*

*Venable LLP is an American Lawyer Global 100 law firm headquartered in Washington, D.C. that serves as primary counsel to a worldwide clientele of large and mid-sized organizations, nonprofits, and high-net-worth entrepreneurs and individuals. With over 600 attorneys in nine offices across the country, including California, Delaware, Maryland, New York, Virginia, and Washington, D.C., the firm strategically advances its clients' business objectives in the U.S. and around the globe. Venable advises clients on a broad range of business and regulatory law, legislative affairs, complex litigation, and the full range of intellectual property disciplines.*

*For more information, visit [venable.com](http://venable.com).*

DIGITAL PRINTING

# CUSTOMIZE PACKAGING TO GAIN CUSTOMERS

Digital printing offers brands of all sizes the opportunity to design for local needs while improving sales.

by **MARVIN FOREMAN**, *contributing writer*

It's no secret that global brands can spend millions on branding, packaging and marketing campaigns while brokering deals with retailers to secure premium retail positioning. Global brands have long enjoyed all the benefits of mass production such as cheaper unit costs, bulk distribution and the ability to dominate shelf space through sheer volume, all of which are typically out of reach for smaller local businesses. However, thanks to changing consumer habits and innovations in digital print technology, small to medium businesses now have an increased focus on both branding and customer communications, and greater ability to make it work for them.

While having a one-for-all global design can be an effective brand strategy for packaging, in local markets consumers are likely to have different behaviors or preferences. Despite

having the advantage of volume and reach, global brands don't always get it right.

We have all heard or seen a packaging faux pas, whether it be bad translations or unfortunate designs that cause offense. Such mistakes illustrate the importance of research in local regions for global companies. The little details can make a huge difference to the consumer experience and a brand's reputation.

This is when brand strategy and local customization need to work together. Brands, whatever the size, should take the time to fully understand local markets when working with packaging designers. The pressure is not only on from the local consumer but also the local retailer; with sustainability high on the agenda for many, avoiding wasteful mistakes is an imperative.



uniqueness and sold locally.

Many breweries have already made a move from traditional bottling processes to using cans, since these offer a full 360° circumference for marketing and branding. This can be more cost-effective than a bottle and label. New printing technologies are allowing brewers to not only explore creative branding opportunities, but to also include additional information to tell their story and sell their products, such as offers which

Craft beer is a good example where smaller producers have increased focus on branding in recent years. Craft beer and, in fact, many beverage products (cider, wine, ready-to-drink cocktails and even non-alcoholic beverages) are commonly produced in smaller batches, celebrated for their

can be accessed through unique promotional codes. With direct-to-shape digital print capabilities for cans, businesses can refocus their marketing efforts, frequently without the traditional barriers of cost and time that conventional print processes present.

## THE GAME-CHANGER

It's easy to see why many brands have already opted to digitally print their packaging. It's undeniable that digital processes have positively impacted marketing methods and will continue to rise in popularity. Many of the larger brands have adopted digitally printed shrink sleeves that are then applied to bottles and cans, to create marketing hype and increase consumer focus on their traditional products. The same approach has been taken by craft beer companies, using digitally printed shrink film and paper labels, however, this was primarily to overcome the minimum order boundaries set by can suppliers.

This is where direct digital printing on cans steps in. Traditional printing processes for beverage cans are only financially viable with minimum orders of around 150,000 blank cans. Add that to lead times of several months, even for version changes, and it's easy to see how digital is gaining preference in package printing.

Digital printing directly onto cans is very cost-effective, allowing brands to capitalize on short-run packaging for limited editions or special promotions. Products can be canned and printed exactly as required, in the quantity needed, without any of the set-up costs or time required for traditional printing formats.

## LIMITLESS DESIGN POSSIBILITIES

The true advantage of digital print is that every single can could be produced with a different image, creating virtually limitless design possibilities. Long lead times and minimum order constraints are eliminated, so essentially a digital printing solution removes one of the most expensive and restrictive parts of beverage production today—traditional bottling and labelling.

The new digital printing technologies are capable of printing several batches a day, decreasing product time-to-market. This means that larger breweries can leverage digital print to respond to market or seasonal trends, and produce limited edition versions for events and social media campaigns much more easily.

Digital print can also potentially have a significant impact on a small producer's ability to expand beyond the local limitations. By leveraging the full marketing potential of packaging design, products can be tailored to maximize appeal in different regions or offer promotions in partnership with other local brands or cultural events on a national or international scale. Not only that, digital print reduces the risk of over-production. This means improvements to packaging design can be made almost immediately in response to local market conditions.

In fact, brands should start to look beyond digital print for customization and limited-edition products, and start to take full advantage of this technology for its economic and time-to-market advantages for mainstream packaging decoration on any scale.

## ENGAGING CUSTOMERS

Interactive packaging design will become more common as more brands adopt methods to engage with customers through content such as how-to videos, coupons and promotions which can be accessed on a smartphone or tablet via a printed code or augmented reality app.

This will also have a significant impact on the kinds of data that brands are able to collect about the consumers who are interacting with their packaging. Even the smallest producers will be able to learn a great deal about how to improve their brand's appeal through small tweaks and variations to their packaging.

For effective consumer engagement and communication, digital print really can take brand marketing to a whole new level. There is a huge opportunity for brands to engage, entertain and educate consumers in real time, opening the door for brands to

capitalize on specific packaging features for local markets, while also empowering small producers to access global markets.

## IT'S ABOUT BALANCE

Customization and regionalization can attract more customers, but shorter print runs are often not feasible with traditional printing processes. Digital print for packaging makes the short runs required for brand differentiation increasingly accessible for smaller brands. True customized packaging is key to unlocking significant marketing opportunities for a variety of business models.

When the balance between global and local branding is achieved, consumers are left satisfied, and sales are certain to increase. Packaging is integral to your brand, so be sure it gets the attention it deserves. Custom digital printing operations on various types of substrate should be a consideration for any brand, regardless of size. **PS**

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*Marvin Foreman is worldwide sales manager for Tonejet, a digital printing technology utilizing electrostatic drop-on-demand deposition technology to print on virtually any type of substrate at high speed. For more information, visit [tonejet.com](http://tonejet.com).*

LABELING

# PHARMACEUTICAL LABELING: THE INS AND OUTS

by **LAURA JOHNSON**, contributing writer

**P**harmaceutical companies continue to adapt to regulations like the FDA’s Drug Supply Chain Security Act (DSCSA) and 21 CFR Part 11. At the same time, their supply chain needs to operate more efficiently to compete in a growing marketplace. That’s why more and more manufacturers are looking at labeling to provide an edge in the face of these challenges.

## IMPROVING EFFICIENCIES IN A HIGHLY COMPLEX SUPPLY CHAIN

The pharmaceutical supply chain is highly complex, with many steps, as ingredients are often shipped in bulk, repackaged and reshipped, before they find their way to the manufacturer producing the branded end-products. Multiple tiers of suppliers and wholesalers are often involved. Oftentimes, borders are crossed. Labeling is essential to smooth the flow of the pharmaceutical supply chain, where problems can

arise at any juncture in the chain, or may “wait” to become manifest only in a finished product.

A centralized approach to labeling allows companies to integrate the labeling process with their existing ERP, PLM or other validated environments to drive data from “sources of truth,” which offer greater control. By using a central database, companies can avoid the need to replicate data, which reduces errors and offers improved labeling consistency for deployment to other plants and distribution partners internationally. This ultimately provides a new level of consistency, simplifies troubleshooting and streamlines labeling, helping to drive greater supply chain efficiency.

When labeling is integrated with the enterprise business processes rather than in a stand-alone system, processes are simplified and non-value added activities, such as regulatory updates, are reduced.

## MEETING REGULATORY DEMANDS SUCH AS DSCSA

The global nature of the pharmaceutical industry – with worldwide manufacturing and markets – means that complex regulations are growing around the globe. In addition, the GS1 System of Standards is aimed at improving supply chain efficiencies in numerous industries, including pharmaceuticals, and these standards are continuously evolving.

In the U.S., the Drug Supply Chain Security Act (DSCSA) is designed to create a system that can trace pharmaceuticals throughout the supply chain so that legitimate products can be verified, illegitimate products detected and product recalls facilitated. Provisions of the DSCSA cover all parties in the supply chain, including manufacturers, wholesaler drug distributors, repackagers and dispensers. All stakeholders share responsibility for securing the pharmaceutical supply chain to protect providers and patients, and to guard against mishandling of products through counterfeiting, gray marketing and diversion.

However, a comprehensive enterprise labeling solution enables pharmaceutical companies to rapidly respond to changing regional and international regulatory requirements for labeling, including those being established by DSCSA. By leveraging a built-in business rules engine, companies can

support labeling variations using configurable rules in a controlled manner, removing the risk of manual errors and mislabeling. Using data-driven label content and configurable business rules provide the flexibility to address requirements quickly while minimizing validation and approval activities necessary to implement label changes into production.

In addition to compliance with the DSCSA, there is also the FDA’s Title 21 of the Code of Federal Regulations (CFR) Part 11, which provides guidance for electronic records and eSignatures to streamline workflows. Here again, an enterprise labeling solution offering workflow and eSignature capabilities can provide a new level of visibility and control for managing labels in the highly regulated pharmaceutical and medical device industries.

## DEALING WITH CONSTANT CHANGE AND INCREASING CUSTOMER DEMANDS

Organizations within the pharmaceutical supply chain are increasingly required to respond to their customer and partner labeling demands. These requirements are varied: 2D and linear barcodes, serialization, updated regulatory symbols, logo placement or other branding demands, language variations, location-specific information, country-specific regulations, labeling that

enables health care providers to better monitor patient care and more. With enterprise labeling, pharmaceutical manufacturers are able to quickly respond to customers' requirements, reducing what was once a month-long process to a matter of a few days.

One company in the pharmaceutical chemical space relied heavily on orders obtained through their internet web page. The issue was that the formulations could change frequently but their labeling system wouldn't always reflect the changes in time for shipment, causing a major issue with their customers. They had struggled with this issue for years. With an enterprise labeling solution in place, they were able to change the data for their product, which automatically changed the label in real time. Standard labels, templates and systems allow for global compliance and a single source of the truth for change management.

How quickly and accurately companies respond to customer requests or meet changing regulatory requirements such as DSCSA can mean a huge difference in time to market, customer satisfaction, and cost savings.

## **ELIMINATING DELAYS AND DELIVERING MEASURABLE SAVINGS**

In a recent survey we conducted with about 200 manufacturing professionals (including many from the pharmaceuti-



cal industry), nearly half (47%) indicated they were experiencing costly downtime due to labeling disruptions. The reasons cited for these delays included dealing with customer-specific labels, product-specific labels and slow label printing speeds, in that order. When you add up all of these isolated labeling issues occurring across different segments of your supply chain, you're looking at hundreds of thousands of dollars of lost productivity, severely impacting your bottom line.

One pharmaceutical company we recently worked with had the same issue, managing several different label types – in-

coming materials, weigh-dispense, WIP, sampling labels, shipper box, pallets, finished goods – all of which have different layout and data requirements. With a goal of simplifying the labeling landscape and reducing the Total Cost of Ownership (TCO) for labeling, this manufacturer leveraged a centralized solution to pull data from trusted resources, improve accuracy, and consolidate and share templates across multiple sites. More importantly, the company achieved its ultimate goal of simplifying the global labeling process and lowering overall costs.

Additionally, an automated process allows companies to achieve significant printing performance gains, allowing labeling to keep up with production. With this type of labeling platform, pharmaceutical companies are able to initiate print jobs and produce labels anywhere in the global landscape. Labels are based on approved templates, using a common labeling infrastructure.

## CREATING EFFICIENCIES AT THE SUPPLIER LEVEL

For years, companies in the pharmaceutical industry have struggled with how they integrate partners into their processes. Today many companies use third parties as extensions of their own business. When it comes to labeling, companies handle

third parties in multiple ways – but it's commonly a manual process wrought with inefficiencies and difficult to manage consistently at remote locations. Many manufacturers rely on third party printing companies to produce and ship the labels directly to the partner or they pay to have the labels printed by an outside vendor after receipt of an order. These options can be extremely costly and can cause significant delays and mistakes, especially when you need to take into account ongoing regulations like DSCSA. The best way to handle this challenge is to integrate the third parties into the labeling systems.

Using a secure partner portal or a secure enterprise labeling system, pharmaceutical manufacturers can allow suppliers to access and print labels locally – with the right information expected by the receiving organization. Globally consistent labeling reduces the need to manually ship labels around the world and eliminates the need to relabel inbound shipments, saving time, labor and money while reducing the likelihood of errors.

Companies can set up this solution in a secured environment so third parties access information, labels, and the printers only they are supposed to see. Many of Loftware's customers leverage this ability to print their labels at the third party sites around the world and have improved their pro-

cesses immensely while saving millions of dollars in relabeling and reducing preprinted label inventory.

## MANAGING GROWTH AND EXPANSION WITH ENTERPRISE LABELING

Entering new markets is essential for pharmaceutical success. It's where you'll find many opportunities for growth – but each new market presents unique labeling challenges, as pharmaceutical companies must satisfy local language, shipping, and regulatory demands. We discussed the value of pulling data from sources of truth like SAP or Oracle, but a change like this may require programming which can take 4 to 6 weeks to complete.

To overcome this challenge, look for enterprise labeling solutions that have built-in business logic that can streamline label changes. Business rules can be configured and customized within a standard user interface to update label specifications quickly and dynamically – be it language, branding, regional compliance – where they're needed. This also removes a significant burden from IT to eliminate the need to maintain custom code or manage so many label designs.

For example, suppose you bring on a new distributor in Germany who wants to introduce your medical device right

away to meet a huge customer opportunity. With configurable business logic as part of the labeling solution, select users can quickly pull up the template, translate the text to German, and add appropriate symbols and health and safety language without any delays. Your product gets out the door within days versus weeks or months.

Labeling is complex; today's pharmaceutical organizations are faced with a range of evolving requirements that complicate the process – and leave many companies accepting outside changes and regulatory updates to the process as a cost of doing business. But it doesn't have to be. Labeling can make a huge difference, enabling IT and supply chain decision-makers to overcome challenges, and provide their companies with a distinct competitive advantage. **PS**

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*Loftware Inc. ([loftware.com](http://loftware.com)) is the global market leader in Enterprise Labeling Solutions with more than 5,000 customers in over 100 countries. Offering the industry's most comprehensive labeling solution, Loftware's enterprise software integrates SAP®, Oracle® and other enterprise applications to produce mission-critical barcode labels, documents, and RFID Smart tags across the supply chain. Loftware's design, native print, and built-in business rules functionality drives topline revenue, increases customer satisfaction, and maximizes supply chain efficiency for customers. With over 30 years of industry leadership, Loftware's Enterprise Labeling Solutions and best practices enable leading companies to meet their customer-specific and regulatory requirements with unprecedented speed and agility.*

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RFID SENSOR TAGS



# MULTI-SENSOR RFID TAGS CAN ACCOMMODATE MULTIPLE SENSORS IN A SINGLE TAG

*A Packaging Strategies NEWS interview with Dr. Charlie Greene, Ph.D., Powercast's Chief Operating & Technical Officer*

## What is your role as Powercast's Chief Operating & Technical Officer?

I have been at Powercast for 14 years, so I do a little bit of everything. In general, I manage day to day operations of the business and technical direction for products and R&D.

## Powercast recently announced what you claim are the industry's first RFID Sensor Tags which can include multiple environmental monitoring sensors on a single tag. Why would that be important?

Yes, our new Multi-Sensor RFID Tags are unique in that they can accommodate multiple sensors (temperature, humidity and light, initially) in a single tag, and can transmit their sen-

sor data from up to 10 meters (32ft), while industry-standard RFID readers are interrogating them. They enable cost-effective monitoring of multiple environmental conditions, because there's no need to purchase separate tags. They cost between \$10-35 apiece, depending on volume and whether or not they include a battery. We also plan future sensors for monitoring vibration, tilt, stress, pressure, moisture and biometrics.

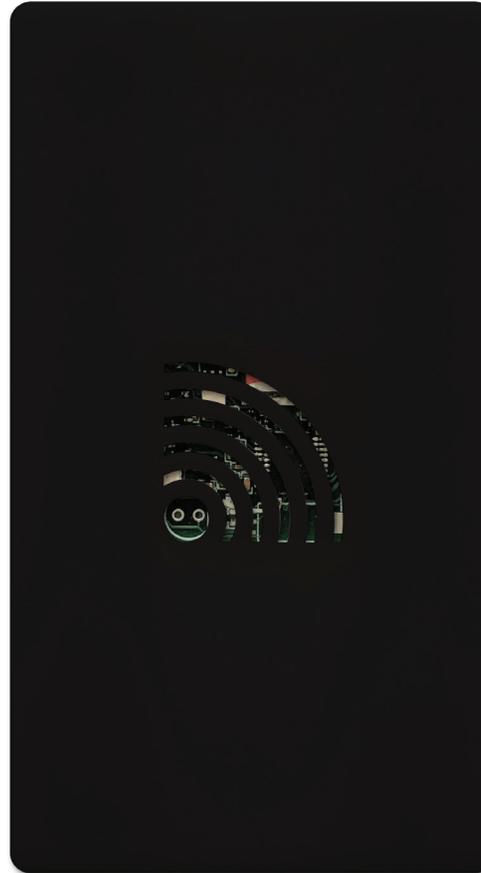
## What is RFID technology? What are some of the benefits of Powercast's Multi-Sensor RFID Tags?

RFID is Radio Frequency Identification. Our new RFID Sensor Tags use UHF (Ultra High Frequency) for communication and for power.

We offer battery-free (PCT100) and rechargeable battery (PCT200) versions for different situations and with different benefits.

For battery-free monitoring, our PCT100 generates enough power for operation purely by harvesting it from a standard RFID reader. Our chips inside the tag very efficiently harvest the RF field from the reader and convert it into energy to read one or more sensors and transmit the data. This version is good for sensor reads at checkpoints along a package’s journey, where the tag can power itself from the energy harvested while in an RFID reader’s field.

If you’ll need to collect and store sensor data throughout a package’s journey, rather than just at checkpoints, our PCT200 data logger contains a rechargeable battery to power the sensors. It has the unique ability to recharge itself from an RFID reader’s field, and you can wirelessly charge one or hundreds of tags all at once without cords. This version can log data for up to one month before an RFID reader must download the data, which, as mentioned, also recharges the battery.



**What types of packaging applications will benefit from the new RFID Sensor Tags?**

The tags are useful anytime it’s necessary to monitor data to ensure the goods inside a container or box don’t fall outside of acceptable parameters. You place a tag inside and interrogate it along its shipping journey. We also designed the tags so they work with existing RFID reader infrastructure—the same readers companies already use to manage inventory or assets.

Consider the cold chain. You can monitor the temperature and humidity inside a container without having to open it and let

air in. As an example, you can include ice packs when shipping an epoxy product to maintain a cold temperature and avoid deterioration. It’s simpler to reject shipments without having to open boxes if the RFID reader shows the temperature is too high.

Additionally, a “find tag” feature allows you to locate a particular package by its RFID number, which will blink an

LED on its tag. This is helpful when there are multiples of the same item or a large number of items.

Now here's a marketing application instead of a shipping one. Our wireless power technology can also illuminate packaging for brand differentiation. If two competitive products are side-by-side on a shelf, the illuminated one will draw attention. The wireless power aspect will also make the product interactive, because the illumination will change intensity as the customer moves the product closer to or farther away from the shelf containing the wireless power transmitter.

**The Powercast PCT100 and PCT200 SuperTags are said to “enable RFID-based monitoring of environmental conditions, including temperature, humidity and light level.” Under what types of conditions/applications might these features be most useful?**

Here are condition-monitoring situations where the RFID tags are most useful:

- Temperature-sensitive pharmaceuticals or perishable products throughout their shipping journey
- Moisture-intolerant assets without opening the container to check each one

- Temperature of machine parts before they overheat and cause damage
- Manufacturing processes where moisture detection is an essential part of quality control

Shipping, in particular, needs condition monitoring. Valuable goods are typically handed off to a third party. Obtaining data about the journey can help determine if and when an event occurred that may have compromised the integrity of the goods.

**Tell us about the PCT200 family’s rechargeable battery. What are its unique advantages?**

Our PCT200 data logging tag uses a thin, lithium ion battery that is unique in its ability to wirelessly recharge from an RFID reader’s field. Competitive data-logging tags are disposable or require a wired recharge. When numerous devices are deployed, a wired recharge becomes very cumbersome, whereas our tag enables easy wireless recharging of many devices simultaneously.

**Can you explain why other passive RFID tags aren’t sufficient for some of the applications Powercast’s product is targeting?**

We believe that one or more of the following limits other solutions: short read range; loose sensor accuracy; or the in-

ability to leverage existing RFID readers requiring a custom reader. Powercast's solutions provide long read range, high accuracy sensing and also leverage standard RFID infrastructure.

**What applications will Powercast's tags address with their long read range that weren't possible with existing RFID or other technology?**

Long read range allows a single RFID reader to cover more volume, i.e, fewer readers interrogating an area will reduce infrastructure costs. And, typically, the infrastructure is already in place and is designed for the read ranges of standard ID tags. Our tags have comparable read ranges to standard ID tags, so no changes are required to the infrastructure.

Long read range (high sensitivity) also allows the tag to work better when there is not direct line of sight. Materials between the tag and reader attenuate the RF signal, shortening its read range. If you start with short read range and shorten it, you may no longer be able to read the tag. With Powercast's long read range to start, we can tolerate a reduction caused by attenuating materials and still have meaningful read range. As an example, a Powercast RFID sensor tag may be in each box stacked on a pallet. The boxes in the cen-

ter must be read through the other boxes and their contents, which causes attenuation. Our long read range provides a very robust solution.

**Do you see any new/exciting technological developments in the future in either sensor technology, smart packaging technology or any other packaging-related areas?**

As we continue to drive down the cost of our wireless power technology, I think that wirelessly-powered, illuminated packaging will become very interesting. Our technology can already be used on higher-cost packaging, but advances will allow us to illuminate less expensive packaging, growing the potential market size significantly. **PS**

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*Dr. Charles Greene is the CEO and Chief Technical Officer of Powercast Corporation ([powercastco.com](http://powercastco.com)). He has more than 17 years' experience in the Radio Frequency (RF) field, including 14 years at Powercast. Dr. Greene is an expert in wireless power transfer, antenna design and RFID. He has 20+ issued U.S. patents and many other foreign and pending patents in the wireless power and RFID fields. Dr. Greene has published many articles and presented at various industry-leading conferences in the U.S., Europe and Japan. He received a BS, MS, and Ph.D. in electrical engineering from the University of Pittsburgh in 2001, 2002 and 2006, respectively.*

LABELING

# CONSUMERS STRUGGLE WITH REMOVABLE LABELS ON PACKAGING

A recent survey by Avery Dennison Label and Packaging Materials, North America reveals that most shoppers have had challenges with the removable labels that provide price and/or product information that are found on a wide variety of retail products.

This difficulty can create negative association with the product and brand. Such frustrations may be avoided – and consumer satisfaction enhanced – through label converters helping brand owners choose label constructions that may be removed easily by the retail customer.

In February, global market and opinion research specialist Ipsos ([ipsos.com](http://ipsos.com)) fielded questions on behalf of Avery Dennison in its daily eNation Omnibus to 1,000 adults across the U.S. A total of 819\* participants qualified to answer these questions. Among the findings:

- 81% of shoppers have experienced difficulty when removing a label.
- 72% had a hard time removing a label from a kitchen item.
- 53% said labels left a sticky residue on a product.
- 82% felt frustration when removing a label from a product.

## FRUSTRATION LEADS TO NEGATIVE CONSEQUENCES FOR BRANDS

Imagine buying and bringing home a new picture frame to display a photo from a family vacation, only to discover the label on the glass resists an easy peel-off.

Clean adhesive label removal may ultimately involve soapy water and some scrubbing, the use of solvents or even

scratching the label off with items like a coin or razor.

The survey respondents' comments demonstrated this happens frequently and leads to frustration with the brand owner:

“Why would they put something so sticky on a simple product? They really need to come up with a new way to tag things.”

“I cannot understand what type of company continues putting these types of labels on items. Many other companies use better quality labels that don't leave residue... I won't buy from them again.”

“I experienced a lot of frustration removing a label from dishes I had purchased as a gift for someone. I thought it should just peel off easily, but it was almost as though the label had been melted onto the dishes.”

“It seems that many people have had a bad experience with a removable label,” says Agata Kowalska, associate prod-

uct manager, Avery Dennison Label and Packaging Materials, North America. “Some survey respondents talked about how the wrong label adhesive ruined a present, damaged a collectible, or just caused a lot of grief. It happened to me when I recently bought a pair of shoes. The adhesive left an ugly stain, so I had to exchange them for a different pair.”

The Avery Dennison Select Solutions Removables Portfolio can help label converters, and the brand owners they serve, avoid such negative consequences. The portfolio includes a core of general-purpose, “go-to,” removable adhesives. Paired with film and paper facestocks, they are engineered to work across a variety of substrates and environmental conditions. It also includes a range of removable adhesives for specialized or unique applications, including those optimized for apparel, automotive, inventory management, and restaurant and food rotation. **PS**

PRINTING, CODING & LABELING

# PRINTING, CODING AND LABELING MAKE A BIG IMPACT ON THESE NEW PACKAGES FOR SPIRITS & WINE

## “SMART” GIN BOTTLES

Northern Lights Spirits Ltd. (NLS) – a Finland-based distiller of handcrafted gin and vodka – will begin distributing “smart” bottles of its premium Kalevala Gin. The bottles will feature Thinfilm’s NFC SpeedTap™ tags, which combine with cloud-based software to enable remote tag management, custom content delivery, and detailed analytics and reporting.

Each SpeedTap tag is uniquely identifiable and virtually impossible to clone, and can be read with the simple tap of an NFC-enabled smartphone or device. Once tapped, tags wirelessly communicate with Thinfilm’s cloud-based software platform, creating a powerful one-to-one mobile marketing platform from which brands can connect directly with consumers.

As a result, marketers are able to instantly deliver authentication messages, brand stories, promotional offers,



product news, and other relevant content. Thin Film Electronics ASA was the first company to commercialize printed, rewritable memory and now creating printed systems, including memory, sensing, display and wireless communication.

## VODKA LABEL HIGHLIGHTS PIERCING GAZE

Award-winning SnowFox vodka gets new stunning visual identity from cold foil brand enhancement specialist API. Perfectly integrated with the brand essence of the drink from Port Royal Distillers, the API 1000 TA foil depicts the piercing gaze of the iconic Canadian snow fox on its shrink label.

Applied to the front graphic panel of the shrink label by Spectrol, the over-printable TA cold foil shows a Canadian snow fox in finely detailed close-up, gazing out from above an icy blue labeled area. It produces a striking glow-in-the-dark effect, causing the electric-blue eyes of the snow fox to illuminate dramatically in low-lit areas such as nightclubs, drawing the atten-



## LABELING, CODING & MARKING: PART 4

tion of consumers. On the lower blue area, the API foil produces an air of textured high quality by creating a doming effect on the drink's name and by representing the second "O" in "SNOWFOX" as a paw print.

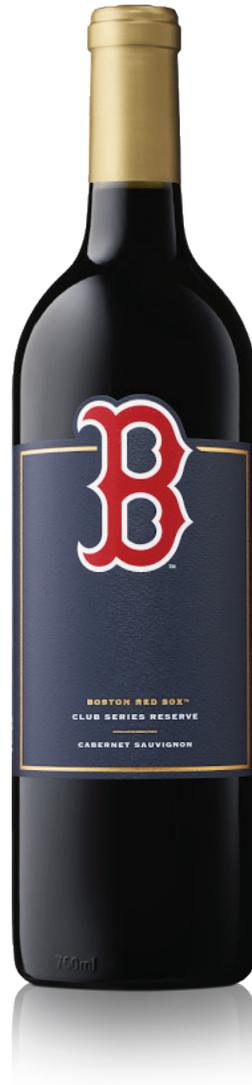
At the Spectrol factory in Ontario, CAN, the foil is printed using a Gallus EM5 10S 20-inch flexographic printing press with ten colors and a full servo drive (inline). The drink has won the Gold Award for Flexible Packaging at the Canadian Print Awards and the Silver Medal at the New York Wine & Spirits Festival.

## BASEBALL-THEMED WINE LABELS

Baseball fans who want to enjoy wine in honor of their favorite pastime can now find bottles with MLB™ team logos on premium labels printed by Labeltronix. After a successful label printing for Wine by Design (WBD) on the Colts 10th Anniversary commemorative bottle, WBD, also the exclusive wine licensee for Major League Baseball, selected Labeltronix to print labels for the newest additions to the 2017 MLB Club Series Wine Collection. Labeltronix printed labels for the Yan-

kees™, Brewers™, Pirates™, White Sox™, Red Sox™ and Indians™ to kick-off the 2017 baseball season.

“We chose a pinstripe texture for the background as a nod to the Yankees pinstripes,” explains WBD creative director Lisa Salisbury. “The goal was to give a visual and tactile impression. Labeltronix worked with us on customizing the embossing plate. Also of note was the great job Labeltronix did with the raised emboss and gloss hit on the



## LABELING, CODING & MARKING: PART 4

NY logo. Paper selection was also key. The resulting label conveyed the right balance of elegance and sophistication, reflecting the New York Yankees, and the 2014 Cabernet Sauvignon Reserve inside.”

To get these “special effects,” Labeltronix first identifies just the right labeling materials, such as Classic Crest and Bright White Felt, and adds the appropriate embellishments in the printing process, whether foil or embossing. **PS**

# PACKAGING STRATEGIES

would like to thank its sponsors for supporting this eBook.



We hope you learned more about labeling, coding and marking.