Shrink films: influenced by packaging trends, technology and increased demand, the shrink film industry has seen dramatic change in recent years.

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Deep within the AriZona Beverage web site are pictures and letters submitted by customers. One consumer tells how he transformed AriZona bottles into lamps. Another, an artist, shares that she's painting a picture of an AriZona bottle full of roses. And a third submits a photograph of himself, surrounded by 240 AriZona cans, 147 bottles, two jugs and a carton.

The moral of these stories? AriZona Beverage Co. has succeeded in making people passionate about its packaging. And perhaps one of the keys to creating this type of brand loyalty is the company's use of shrink sleeve labels.

"We first used a shrink label in 1995 for our Pina Colada label," says Michael Kutner, vice president of operations for the company, which (despite its name) is located in Lake Success, NY. "It was very colorful and we needed a label that would reflect the art. From the very first time we used a shrink sleeve label, we've seen nothing but positive results in sales."

Shrink film use is taking the beverage industry by storm, but it isn't stopping there. The films are popping up in a variety of markets today--from the tamper evident band on a pharmaceutical to the brightly colored graphics of a shrink label on Ragu sauce. While shrink films are used for a variety of applications, shrink sleeves have proven to be the darling of the industry.

"It's the label of today," says Sharon Lobel, president and CEO of Seal-It Inc., in Farmingdale, NY. "It's got more vivid colors. There's more real estate around the bottle, so you can print 360[degrees]. It conforms to the bottle. It gives you a very polished, finished look. There's just so much you can do with shrink."

Narrow web applications

Though sleeves have been getting much of the attention, they are not the sole use for shrink film. Narrow web applications of shrink film can be divided into four categories: shrink sleeves, wrap around labels, tamper evident bands, and shrink for multi-packs.

Shrink sleeves. Perhaps the most well-known application of shrink film, shrink sleeves are admired for their potential for 360[degrees] graphics, and the ability to shrink to the contours of an unusually shaped bottle.

The type of film used for shrink sleeve production is called transverse (TD) or across-the-web oriented, says Gary Gates, CEO of The Garron Group in Monroe, NC. "Three main base resins are used: polyvinyl chloride (PVC), polyester, glycol modified (PETG), and oriented polystyrene (OPS). Some polyester (PET) is also being used," he adds.

Wrap around labels. Also known as roll on, shrink on, these labels are applied differently than shrink sleeves. Unlike sleeves, wrap around labels come in roll form. The leading edge and trailing edge of the labels are glued with adhesive or welded together with solvent, and heat is used to shrink the label.

These labels are created using machine-direction (MD) oriented film. The material is generally polypropylene, which has limitations. "With roll on, you are lucky if you can get 23 percent shrink. You are looking at applications that have a very small amount of contour," says Mary Ellen Reis, certified packaging professional at Packnology in Peacham, VT.

Shrink for multi-packs. While shrink film used to group several items together is normally the dominion of wide web, narrow web converters can use shrink for smaller multi-packs.

Shrink film can be used to pair items such as shampoo and conditioner together, or to join a group of golf balls. It is often used for promotions and the complexity of the printing can vary dramatically. "Sometimes it has as much as 10 colors, and sometimes nothing, or as little as one or two colors," says Lobel. Narrow web converters often work with PVC for this application.

Tamper evident bands. This is a small market for US narrow web converters. "Seamless shrink tubing is used mainly for tamper evident neck bands and other minimum printed shrink bands," says Gates. "Printing on tubing is flexo and mostly one color and random designs. The vast majority of tubing comes from Taiwan and mainland China because of low-price end uses in this country."

Some converters are creating shrink sleeve labels that include tamper evident bands, however.

Changes in the marketplace

Several changes are taking place within the shrink film market. Some are propelled by packaging trends and others are spurred on by changing attitudes in the marketplace.

Fueling a flurry of activity within the shrink film industry is the trend toward unusually shaped containers. "A lot of consumer product companies are going to proprietary bottles with very unusual shapes. The only way you can label a bottle like that is with a shrink sleeve label," says Reis of Packnology.

In an effort to accommodate the trend of contoured bottles, however, suppliers have been working on creating film material with higher shrinkage for wrap around labels. Because of limited shrink percentages obtained with polypropylene, current wrap around labels have been limited to a relatively cylindrical shape.

This is changing with the introduction of new materials that have higher shrink percentages. "With the wrap around, the material being used right now is polypropylene. It has very low shrink characteristics compared with sleeves. We are in the midst of introducing a high shrink wrap around product," says Roger Brown, shrink film label industry manager for Plastic Suppliers in Columbus, OH. The product is polystyrene-based.

Other companies are also working on films for wrap around labels with a higher shrink percentage. "We are actively developing machine directional shrinkable films that can shrink up to 50 percent," says Sunder Rajan, business manager, speciality films, for the Avery Dennison Engineered Films Division in Painesville, OH. "Our area of concentration has been in the area of polyolefins because that's where we see the future."

In a similar vein, marketers are looking for additional ways to differentiate their products on the shelf. This sometimes means taking product decoration a step further. For instance, one converting company is offering its customers color changing inks.

Seal-It has announced the introduction of thermochromic inks for shrink sleeve labels. The inks change color when subjected to either hot or cold temperatures. Applications are varied and can include promotional use, interactive games, or to indicate perishable food products.

Will this be an up-and-coming trend in shrink sleeves? "I think it will be," says Lobel. "It's a marketing manager's dream to be able to do something new and different before everybody else gets to it."

Other converting companies have also responded to changes in the market place. Century Marketing, for instance, has seen increased demand for short runs.

"Manufacturers have always had a difficult time finding production quality sleeves for their short run needs, i.e., presentations, trade shows and test markets," says Greg Rogers, vice president of new business development for Century Marketing in Bowling Green,

OH.

Among other endeavors, the company has focused in on custom, short run sleeves as a niche. "We feel we've been able to satisfy a very critical need. An average-sized order for us is normally 500 to 3,000 per copy. We are even doing some group run programs with very small runs of 50 or less per copy," says Michael Manahan, director of manufacturing for the company. A group run is when the sleeve size is the same, but the art or copy changes.

Environment concerns fuel change

In addition to trends driven by the need to be different, environmental concerns have also affected the shrink film industry. PVC, which is the predominant resin used in shrink sleeve material in the US, has met with disapproval among environmentalists.

"There are some concerns that if you burn PVC, you are emitting chlorine gas into the atmosphere. The reality of that is most current incinerators have scrubbers that remove that as an issue. But that doesn't lessen the perception of environmentalists or the public. In Asia, they do not use PVC because of that," says Tim Nicholson, senior director, business development, for Fort Dearborn in Elk Grove Village, IL.

Is using PVC-based material a real concern or just a perception? "There have been many arguments on either side of those issues, both in favor of PVC and against PVC. It's completely debatable," says Paul Wingate, sales manager for Bonset America in Browns Summit, NC.

The debate surrounding PVC has lead to the growth of alternative materials, such as PETG, styrene (OPS & SBS) and PET. In addition to assuaging the environmental concerns of the public, these films can offer other benefits.

PVC's shrink percentage hovers around the 60 percent mark. While it can be used for a number of containers, long neck bottles may require higher shrink. Generally speaking, polyester and some styrene can reach percentages that are higher.

OPS offers other advantages. "One thing to note is that the [shrink] curve for OPS is a more gentle sloping curve thus allowing a smoother transition into unusually shaped containers," says Brown.

While those are several of the arguments for using PVC alternatives, some see a few disadvantages associated with the films. For instance, PET is generally more expensive than PVC. And styrene can be unstable at room temperatures.

Concerning SBS specifically, "There's a lot of natural shrinkage problems at room temperature that makes it more volatile to use than PVC or PETG film. And you can't use the same ink systems. It's much more sensitive to solvent attack," says Wingate.

Challenges of printing on shrink

Printing on shrink film presents a number of challenges not encountered when printing on paper. For one, the way the label comes out on press is not the way it will look on the bottle. This is because the label will shrink to the contours of the container.

Consequently, calculating distortion correctly is paramount to a successful label. The process can be laborious. "Converters will still generally print a 1/8" grid pattern on a film, sleeve it, put it on a container and put it through a shrink tunnel or hit it with a high temperature heat gun to get it to shrink. Then they'll cut that off and measure it.

"From there a converter will go to a computer program and print the graphics up. It's not an exact science. You still have to put the sleeve on the bottle, shrink it down, and make sure the graphics are correct," says Brown.

Inks are also affected by the fact the film is meant to shrink. "One challenge is to make sure the ink is flexible enough so that when the material shrinks, it doesn't crack, break or cause dark streaks when the pigments bundle up as it shrinks," says Gates. "Most of the good quality ink companies have overcome the ink problems, but you can't just go out and buy an off-the-shelf ink you're using for pressure sensitive."

Another ink challenge can be present when converters use water based inks. Much of the work has traditionally been handled on gravure presses, but more and more companies are offering flexo printing with water based inks.

"One issue that we have seen at Bonset is narrow web converters who use water based inks for shrink sleeve manufacturing and then have those sleeves applied in a steam tunnel environment. I have seen some issues with re-wetting of the inks," says Wingate.

Shrink film is also more temperamental than other substrates used for labeling, especially when it comes to heat management.

"There is a technique to printing film because [converting] equipment will generate heat. Even on press, you need to make sure you're not shrinking the film," remarks Brown. "One percent shrink in the film can prevent the label from sliding over the bottle in shrink sleeving applications. A controlled temperature environment and heat management on press is very important."

Wrap around labels and seams

While developments are under way to increase the shrink percentage in films used for wrap around labels, adhesives have proven to be a hurdle.

"The adhesives used for wrap around shrink generally are not strong enough to shrink more than 20 percent," says Nicholson. "Unless you have an adhesive that solves this problem, shrinking the material more doesn't matter."

"The problem with the higher shrink areas is that the adhesive does not shrink, but the films shrink a lot. Because of this, the film shifts from where it was originally affixed onto the container, and the adhesive gets exposed," says Rajan.

This can be true if an adhesive system such as hot melt is used, but advancements are occurring in this area that may eliminate seam splits as a challenge altogether. Solvent systems, which weld the label materials together, are traditionally used for shrink sleeves. As different materials are introduced to the wrap around market, the possibility of using solvent systems in wrap around label applications has opened up.

"Currently, the people who are using solvent systems for roll-fed are using a wick application. The label comes off the roll, it's chopped for the dimension. Generally, two dots are put on the container of hot melt or a very high tack cold glue, just to position the label onto the container.

"As the container and the label spin to location, a felt wick comes in and dabs the end of the label. Then it goes through a nip, and the second part of the label will generally be pushed into the wetted part," says Bruce Machleder, president of Flexcraft Industries in Newark, NJ.

While this alternative to adhesives exists, it has one major limitation: Solvent systems do not work with polypropylene. "Polypropylenes can only be sealed using heat stake, hot melts, or one of the exotic UV curables, and you are not going to get the same effect," says Machleder.

Still, with the emergence of different materials, such as OPS and polyolefins, the wrap around label market continues to be an area to watch. Improving technology in the areas of films, adhesives and solvent systems will increase the growth of this narrow web application.

Converters interested in wrap around labels, however, will do best to remember that it's a team effort. "As the roll fed label technology evolves, anybody who's getting into this marketplace cannot be working in isolation. You have to work closely with the end user, machinery suppliers, and the film manufacturer," says Rajan.

The same advice rings true with all forms of shrink. Shrink continues to show tremendous promise. In the past several years, shrink technology has improved on many fronts--from increased speed of application for shrink sleeves to increased film production.

But as with any fledgling industry, teamwork is vital for success. "Converters are not going to be able to do this by themselves. They are going to need the help of ink suppliers, of film suppliers, of equipment suppliers. That's first and foremost. It's different. And hopefully it's going to be profitable for them," says Brown.