



## The Green Evolution: Printing on Recycled Plastics

As retailers search for ways to use more recycled plastics in an effort to create a “green” culture, the demand on wide-format printers to provide a stellar product on imperfect materials is on the rise.

“We haven’t seen a big push, but more of a shift from clients,” said Scott Crosby, Vice President of Sales and Marketing, Holland & Crosby Ltd., of Ontario, Canada. “The idea was that you had signage or bags that could be recycled — that was a bonus — but we found that items were being thrown away. Now, we’re seeing retailers say, ‘Let’s print on plastics that already have been recycled,’ because that makes them feel better and is seen as a more practical green solution.”

Concerns over costs and quality control have prevented printing on recycled plastics from taking hold on a widespread basis. But it is likely coming, thanks to the rapid evolution of digital technologies and retailer demand. For now, Crosby and others say printers need to know the issues associated with printing on these materials

and start educating their clients about the drawbacks and long-term potential of doing so.

“Generally, retailers will glom onto one chemical they want out of a product, so they’ll say they don’t want to use something that has styrene or PVC in it without looking at the ramifications of what that means,” said Marci Kinter, Vice President, Government and Business Information, SGIA. “They don’t know what taking a specific chemical out will do when you’re trying to print something.”

### The Demand for Ecofriendly Products and Processes

As President of Image Options, a California-based company that provides visual communications solutions for retail, tradeshow, events and corporate environments, Brian Hite is constantly focused on developing products that have a smaller environmental footprint.

“We’ve been green since before green was in vogue,” he said, noting the company’s first

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By Glenn Cook, Industry Author



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press used corn-based bio-view inks rather than solvents in 1999.

For Hite, the push to print on recycled plastics is a natural part of the green evolution, although he admitted the process has not been refined to his satisfaction. Today, his company primarily prints on falcon board and paper-based products with recycled content on them. But he noted that it's a "matter of time" before the technology catches up.

"When you use recycled products, there are issues that can prevent you from getting what's on the client's proof that is supplied to you," Hite says. "On some of the plastics, some of the styrenes have recycled content that affects the adhesion of inks when you are using UV ink on them. So, to get the job done, it's really about managing the chemical make-up of the boards you are printing on, and that often precludes them from being recycled."

The increased push to print on recycled plastics makes sense, especially with recent studies showing how much trash is littering the environment. In July 2017, a team of researchers from the University of California, Santa Barbara; the University of Georgia; and the Sea Education Association reported that only 9% of the 7 billion tons of plastic waste produced since the 1950s has been recycled. Just 12% has been incinerated, leaving an estimated 5.2 billion tons for landfills and other places in the environment.

"A lot of this is about waste management," said Kinter. "China has stopped taking our trash. Brands in shopping centers want to make a difference. They see the ability to

print on and use recycled materials as a process they need to start looking at."

Crosby said sustainability has "taken a huge uptick" thanks to online retail, especially as consumers become more aware of what can be recycled and what can't.

"When it's shipped to the home and not to the store, you don't have to have all of those graphics that are constantly being replaced and thrown," he said. "At the same time, consumers are still looking for brick and mortar stores in a lot of markets, so we have to pay attention to that end. If we can just find an end-of-life closed loop system for these products, that would solve a great number of problems. Right now, every client deals with their own waste management and most of them throw it in the garbage."

Susan Long agrees. As the Sustainability Initiative Manager for REI, she looks at how to minimize waste throughout the company, which specializes in outdoor gear and clothing. She also serves on the company's green printing steering team that looks at packaging and other materials.

"We should be getting everyone's head wrapped around the idea of accepting the nature of recycled materials," she said. "There are a lot of places where perfection is demanded, but it's not really necessary."

One example, she said, are polyethylene plastic bags that REI uses to wrap most of the 1,000+ products it carries in stores. The bags, she said, are a necessary evil that "ends up being a large portion of our store waste stream." And many have some type of printing on them.

"The plastic is necessary because the worst thing we can do is damage an expensive ski

jacket, and the environmental impact of that lost item is much larger than the plastic bag it's wrapped in," she said. "But we have to ask, does the plastic bag need to have a surface that's perfect? Do you have to put the bar code on it or can you put it somewhere else? If you can put it somewhere else, then let's make sure the bag is made from recycled materials and can be recycled again."

### **Sustainable Considerations**

Digital print technologies have revolutionized the industry, improving efficiency and consistency while automating workflows and reducing labor costs. But the science of mass-production becomes complicated when the surface you're printing on is imperfect.

"Recycled plastics are made from a lot of different plastics, not just one," said Kinter. "The customer base expects that you'll be able to print on recycled material the same way you would on virgin material and it will be the same. But that's just not the case. When you have virgin material and you put a light color on it, it will be pretty, and it will pop. On recycled material, all of the imperfections will pop out at you."

Crosby, whose company specializes in point-of-purchase retail-based signage programs, said the largest problem is "not about the printers, but the inks," which are transparent and often have adhesion issues when the materials are inconsistent. Because digital printing is largely automated, taking the time to continuously check whether the inks will scratch or fall off creates inefficiency.

"Digital print technology is a lot less forgiving than the old days of screen printing, which was very opaque and robust and covered a lot of problems," he said. "There is so much automation in digital technology that the last thing you want to struggle with is imperfections in the material, which causes delays on the press. We are working at a much different pace today."

Further complicating matters, Crosby said, is the availability of the recycled materials, especially for large runs.

"When you go out and promote that you're using a green product, and then you have someone interested in using it, you usually have 48 hours to ship after it lands on your FTP site," he said. "A lot of times, having access to that much material is a challenge."

Crosby is encouraged by the evolution of digital inks, which gradually are



"becoming better, more robust, less likely to chip and flake." He said his company is also discussing "some things we can do in the design stage" to improve the finished product.

"What we've found is that you need to stay away from the continuous subtle tones in the background when you're printing on these types of materials. Recycled plastic seems to handle darker colors better, because you can't get a true bright white point just yet to work with," Crosby said. "Right now, it's just inconsistent and fraught with challenges, but it's not something that can't be overcome."

### **Educating All Involved Parties**

As technology and inks improve, Crosby and Kinter said printers must also find ways to educate their clients about the benefits and challenges of recycled plastics. While retailers may want to tout that they are going green, Crosby said they are not willing to "trumpet that they're printing on recycled stock if it is less than perfect."

"That's been the challenge in pushing sustainability and green products," he said. "When out of the gate you say it may cost more and you might have to compromise the finished product, it's a big no. A lot of people talk a good story, but if it impacts their cost or result, they shy away from it and it becomes a tough sell."

Crosby said the key for printers is educating the client and "managing the process so they have an understanding of what to expect."

"Early on, you need to say, if you want to go green and use recycled materials, these are the issues," he said. "If you're going to get that green happy feeling, this is how it might — emphasizing might — affect the finished product. You have to get them to understand the limitations and buy into the limitations."

Hite said he saw many of the same problems when his company first started printing on recycled polyester yarn and on ecofriendly vinyl film. But in each instance, the products improved enough to make printing on them worthwhile.

"If you go from a premium PVC film and switch that over to one of the more ecofriendly products, you may save a half barrel of oil and a few hundred gallons of water. That's a win for me," he said. "Even if it means you're not using a 100% recycled product, it does mean you have a better footprint. And that's ultimately what we're all seeking."

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