

CUTTING-EDGE SUSTAINABLE PACKAGING

A new generation of products aims to shrink the beverage alcohol industry's carbon footprint for a more sustainable future

BY BETSY ANDREWS

A

As a drinks writer, I get sent a lot of bottles in a lot of packaging. Among recent deliveries: three mattress-thick, plastic-wrapped slabs of molded foam cushioning a single liter of boxed wine; a styrofoam shell made for three 750-milliliter bottles containing one half-bottle of vermouth; a heavy glass bottle of “sustainable” Malbec in a bed of styrofoam peanuts; and eight tiny, unbreakable Burgundy samplers in 20-milliliter plastic bottles nested in a shippable box that was itself swaddled in bubble wrap and tucked inside a much larger carton.

I like my profession. It's a privilege to write about interesting beverages. But my heart breaks at the amount of waste involved in getting them to me. An estimated 91 percent of plastic packaging—the material that cushions bottles—ends up in the environment, or in landfills where it leeches harmful chemicals. Then there's the carbon footprint of making and sending glass.

The drinks media has tended to focus on earth-friendly production. But the biggest burp of CO₂ comes afterwards, in the glass bottle production and shipping

that comprises from 51 percent to as much as 68 percent of wine's carbon footprint. Glass is impermeable; it's great for preserving beverages. But it requires inferno-like heat to make and loads of fuel and packaging to ship. Cans are lighter and less delicate, but aluminum alloy production billows with greenhouse gases.

As the CO₂ index rises above 415 parts per million and temperatures soar, as cargo ships languish in COVID-paralyzed ports and shipping costs skyrocket, isn't it time for us to rethink the way beverages get to consumers?

Luckily, I'm not the only person asking this question. Box wines, TetraPak wines, and bulk shipments in large plastic bladders made for bottling or kegging at their

destination avoid the transport of glass. But ever-more creative ideas are emerging. With engineers devising alternatives and drinks companies supporting them, we're looking at a beverage packaging revolution.

It comes at a good time for consumer adoption. Seventy-three percent of consumers say they are willing to pay more for sustainable packaging, a number that rises to 83 percent among younger buyers.

Given shortfalls in recycling and composting, none of these solutions is foolproof. But innovation is crucial to the future of the industry and the planet. Here's a look at the alternative packages here and coming soon.

New-Wave Plastic

An estimated eight million tons of plastic ends up in oceans each year, wreaking havoc on ecosystems, the food chain, and human health. Why would we want to keep using it? For Santiago Navarro, founder and CEO of the British packaging company Garçon Wines, it's a matter of triage.

“Our home is on fire,” he said on a recent panel for Porto Protocol, an organization seeking climate action in the wine industry. “We must act like it's a climate emergency.”

OPPOSITE, CLOCKWISE FROM TOP LEFT: Garçon Wines' flat, recycled PET bottles // Wild Arc Farms wine for sale // The Eco Six Pack Ring from Saltwater Brewery // Filling Good Goods bottles at Wild Arc

Navarro's response is what Porto Protocol's Marta Mendonça calls "a really disruptive bottle." It is made of recycled PET. The food-safe, BPA-free plastic commonly used for containers, PET is 87 percent lighter than glass. More important, though, is the shape of Navarro's bottle. It holds 750 milliliters of wine, but unlike glass bottles, it's flat. In Bordeaux and Burgundy versions, it packs tightly into cartons without need of additional packaging, fitting 91 percent more product on a shipping pallet.

Better utilization of space, less loading time, and speedier deliveries add up to savings for wineries, at a 50 percent reduction in emissions over glass. Though permeable PET isn't appropriate for wines that need long aging, with a nylon-based oxygen barrier inserted between its walls, the flat bottle gives up to 21 months of shelf life. That's perfect for wine that's produced and consumed within the same vintage, which is 85 percent of the total global volume, says Navarro.

Australia's Accolade Wines was an early adopter for its eco-minded Banrock Station label, following it up with its British mega-brand Hardys and its Chilean label Anakena, as "part of our strategy to take the sustainable packaging option to a broader consumer base," says chief marketing officer Sandy Mayo. U.S. companies can try it when Navarro opens a bottling facility outside of Los Angeles in 2022.

"The wine industry is unnecessarily hampered by a bottle that is no longer fit for purpose for the vast majority of wines," Navarro declares. "Ours is a 21st-century bottle."

It does have a 21st-century drawback. Recycled PET has a much lower carbon footprint than new plastic, and unlike the coating on TetraPaks and the bags inside boxed wines, it is, in turn, easily recycled. Still, under 30 percent of PET containers are recycled in the U.S. That's a failure of policy and infrastructure. "It does not, in my view, justify not using PET when you need it," Navarro says.



As the CO2 index rises above 415 parts per million and temperatures soar, as cargo ships languish in COVID-paralyzed ports and shipping costs skyrocket, isn't it time for us to rethink the way beverages get to consumers?

With labs working on infinitely recyclable varieties; think tanks promoting radically expanding plastics recycling; and beverage behemoths like PepsiCo promising 100 percent renewable packaging, the days of throwaway plastic might be ending. Bacardi has announced that, in 2023, it will replace 80 million conventional plastic bottles it uses annually with a novel plastic that "swaps crude oil for seed oil." Made by fermenting canola and other seed oils, the Nodax PHC biopolymer biodegrades in any environment containing microorganisms, including home compost bins and fresh or saltwater, within 18 months. That's as long as Bacardi is holding an exclusive contract with Danimer Scientific, the biopolymer's maker. After that, it will share the design with other companies. Imagine a flat version of this biopoly bottle for your pool-side rosé, and you're seeing a much more sustainable future for your wine.

Cellulose-Fiber Solutions to Replace Glass

Even in containers designed to lower plastic use, plastic is involved. "Though we use 77 percent less plastic than a plastic

bottle, plastic is the enabler for all we do," admits Malcolm Waugh, CEO of the British-based Frugalpac, manufacturers of the paper Frugal Bottle.

Similar to a bag-in-box but molded with heat and moisture into a shape "more acceptable to a traditional wine drinker," the Bordeaux-style bottle is 94 percent chemical-free, recycled paperboard fused with water-based glue. Five times lighter than an average glass bottle, it resists spills, humidity, and breakage from a five-foot drop, giving beverages a 12-month shelf life. The polyethylene metallised polyester laminate film inside it is removable for recycling—if your municipality accepts it.

"Film, to be fair, is not well recycled in the world," says Waugh. "The infrastructure is not there, but we felt the benefits of bringing the bottle to market now outweigh the small cost of our liner not being recycled."

The Frugal Bottle's carbon footprint is 84 percent smaller than that of glass. But

ABOVE: Frugalpac molds bottles from recycled paperboard to create a bag-in-box-style vessel // The Frugal Bottle



“The wine industry is unnecessarily hampered by a bottle that is no longer fit for purpose for the vast majority of wines.”

– Santiago Navarro, Garçon Wines

the real innovation is its localized production model. “Where, historically, there was a glass maker in every village, now there are super companies. Most North American wine glass packaging comes from China,” says Waugh. “We’re thinking of bringing the machine that makes the Frugal Bottle to the winery or the region.” Local printers can truck paperboard sheets to wineries or bulk-wine packers to be assembled on Frugalpac equipment, getting five times the “bottles” onto trucks and further reducing the container’s carbon footprint.

Italian winery Cantina Goccia, British gin maker Silent Pool, Scotland’s NB Distillery, and a Japanese sake brand are among early customers, with the first stateside user, Signal 7 Wines, launching it in the U.S. this year.

But Frugalpac’s product is not the only paper-based bot-

tle. Sustainable Swedish paper company BillerudKorsnäs and Austrian plastics manufacturer ALPLA have formed the Paper Bottle Company, or Paboco, creating a bottle using FSC-certified paper and a plastic-film liner for a 65 percent reduction in plastic content from standard plastic bottles. Carlsberg, Absolut, and Coca-Cola Europe are pioneering it, while Paboco is working on a polymer-free version with a tethered cap that can be recycled entirely as paper.

Other brands are innovating with fiber for secondary packaging. Corona introduced a recycled barley-straw six-pack holder, and the Eco Six Pack Ring, E6PR, that Florida’s Saltwater Brewery debuted in 2018 has expanded its reach to more breweries, kombucha makers, and other artisan drinks companies. Made of renewable fibers from food production, the circular product breaks down in compost bins. For Don Julio’s Don-on-the-Run Margarita Kit, the design firm Spearhead Group nixed typical thermoforms and plastic windows in favor of a pressure-fit clamshell case made out of bottle-hugging BillerudKorsnäs cardboard. Cheaper and 20 percent lighter than thermoform, it ups the elegance and sustainability of cocktail kits. Ruinart has introduced a similarly sleek “second skin” that is nine times less heavy than their former gift box.

At its La Maison des Startups in Paris, the Champagne producer’s parent company, LVMH, is also supporting the incubation of a fiber-based liquor bottle. The brainchild of France’s Green Gen Technologies, the bottle is made of woven flax fused at low temperatures with a bio-resin to create a durable composite. Requiring a tenth of the heat of glass and less than a third of glass’s weight, the Green Gen Bottle is so

TOP LEFT: Hardys packaged in Garçon Wines bottles // TOP RIGHT: Don Julio’s Don-on-the-Run Margarita Kit is made from bottle-hugging cardboard, which is cheaper and lighter // LEFT: The Green Gen Bottle is made of woven flax fused with bio-resin



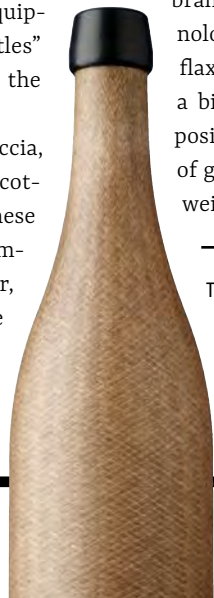
sturdy that you can throw it off a 20-story building. Green Gen is revolutionizing closures, too, fusing grape residue from wine production into a composite that can replace 40 percent of the plastic in a T-top.

In its original form, the Green Gen Bottle is 100 percent compostable, but only in the high-heat facilities that process “compostable” plastics. Of course, not every municipality has one of these facilities. “That’s a disconnect between what the consumer really wants and what the industry has organized of yet,” says CEO James de Roany, “and we are stuck in the middle of this.”

The Return of Returnables Creates A Circular Economy

Even with glass, only 31 percent of containers are recycled in the U.S. Perhaps the best solution is one that circumnavigates the recycling and composting rut altogether. Co-creator of the first TetraPak brand, Bandit Wines, and co-founder of wine-on-tap pioneer The Gotham Project, wine entrepreneur Charles Bieler has made a career out of newfangled sustainable packaging. Now Bieler (who is married to *SevenFifty Daily* editor-in-chief Kristen Bieler) is reaching back in time for his latest concept, to the days when we left bottles on the stoop for the milkman.

Having built the national infrastructure to clean, refill, and recirculate wine kegs, Bieler and partner Bruce Schneider realized they could do the same with glass. Employing a customized bottle sanitizer from the dairy industry, they’ve rolled out returnable glass bottles in five test markets. The hope is to use each bottle 10 times



and reduce the carbon footprint of Gotham Project wines by as much as 90 percent—all while giving consumers the “full decadent experience” of serving from glass.

“If you’re a sophisticated wine person over a friend’s house and they’re serving wine in a bag-in-box, you’re not accustomed to that,” Bieler says. “I think people look to wine and wine packaging to project a bit. There’s an emotional thing. There’s a potency to traditional glass bottles.”

Gotham Project’s bottle is particularly potent. To withstand multiple uses, lightweight eco-glass won’t do. So the custom vessel, embossed with “Return and Reuse,” must be “reasonably stout,” says Bieler. And to work, it must be reliably returned, so Gotham Project incentivizes returns with a 25-cent credit. Once a buyer hits \$2, they’re asked over email if they’d like to cash out or donate the money to an environmental non-profit. Still, with returns less frequent than they’d hoped for, the partners have shifted focus to restaurants, where it’s easier to stow, drop off, and pick up empty cases.

“Returnable, economically, is not a business yet,” says Bieler. But he’s sanguine. “We feel it’s complementary and the right thing to do,” he adds. “And the wine industry is watching us. People are hoping that this is a viable option.”

The folks at New York-based Good Goods have worked on the customer experience to ensure returns of the bottles they make. Taking lessons from earlier experiments with grab-and-go meals in returnable containers, they give a \$1 store credit on each bottle brought back.

“Instead of an obligation, it’s a reward,” says CEO Zach Lawless. Delivered digitally, the credit allows “additional touchpoints, so you can communicate with customers,” opting them into branding messages and shoring up loyalty. A three-month pilot program had an 88 percent return rate among 4,000 users at 10 New York stores. The hope is to have the bottles at thousands of venues, from natural wine shops to big box stores, by 2022.

Unlike The Gotham Project, Good Goods doesn’t produce its own wines. Instead, it sells bottles to wineries, where they are filled. A bottle might hopscotch from winery to winery, acquiring and being scrubbed of labels as it goes. The more wineries that sign on, the bigger the impact. The pioneers are niche brands—the Hudson Valley’s Wild Arc Farm, California’s Las Jaras Wines—but with the Good Goods bottles outperforming prior sales by 71 percent, the company has potential to create a circular glass bottle economy of scale.

Shrinking the Product to Shrink the Package

Not all solutions are about the bottle. Colorado-based BrewVo seeks to better draft beer’s unwieldy kegs. “You’re shipping a lot of water and stainless steel, and shipping back air for reserve logistics,” says BrewVo CEO Gary Tickle.

BrewVo loses the keg by losing the water. Using a membrane to separate out water and alcohol while capturing the aromas of multiple fermentations, BrewVo winds up with a non-alcoholic beer that has six times the flavor density of regular brew.

At that concentration, the beer can be shipped in a small bag-in-box, reconsti-



TOP RIGHT: Deschutes uses BrewVo technology for their Irish Style Dark, which separates out water to lighten shipping // ABOVE: Gotham Project’s Return and Reuse Bottles



tuted with water, and spiked with grain alcohol or more beer at its destination. Beer makers can specify the mashbill and then dial up the ABV when it arrives, and they save money and carbon emissions on the shipping. BrewVo’s Next Draft system for reconstituting the beer saves on taproom space and refrigerant because there’s no need to store kegs.

Deschutes is using BrewVo for its non-alcoholic Irish Stout, and the non-alcoholic brand Grüvi uses it, too. Purists might argue that the grain alcohol-enhanced beverage the BrewVo system creates is not really beer. But BrewVo’s own Neologik non-alcoholic brew won a gold medal at the 2019 Best of Craft Beer Awards.

“I don’t think the judges had any clue of what they were tasting, but that’s a proof point,” says Tickle—at least for the non-alcoholic version. And given 86 percent less weight and volume than kegs, beer makers and drinkers might be willing to give these brews a whirl to ease the emissions of shipping. Along with packaging innovations, players in the cargo ship world are working, in turn, on zero-emissions vessels.

For the sake of the planet and, and in the eyes of new generations of consumers, the solutions can’t come soon enough. “They do have different criteria for how they select [beverages], and sustainability is a factor,” Gotham Project’s Bieler points out. “Increasingly brands will have to be meaningful. Companies are going to have to be better, brands are going to have to be better because we’re dealing with a more educated and activist consumer.” ■