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INVENTING THE FUTURE

New materials

New directions

An analysis of the new materials packagers are working on to make their products more sustainable *by Alex Wyrne*

Packagers are looking to more sustainable materials. While the bulk of the market is currently concentrated on developing better post-consumer recycled (PCR) offerings, given the pressure on the market ahead of European regulations to be implemented in 2030 whereby all plastic packaging must be reusable or recyclable, developments in bio-materials also continue to forge ahead.

"We are trying out all the new bio-sourced or recycled resins that are emerging, [as well as] wood and stone," says Coverpla president Bruno Diepois. "But for the moment, there is nothing available on a truly industrial scale that would really work for us. [Nevertheless], demand is strong and there is so much pressure on the market that I think they will arrive."

Most of the solutions on the market still have their limitations. For PCR there are aesthetic constraints; for first-generation bio-resins there is the competition they represent with foodstocks, and with new materials there is a lack of visibility about their long-term viability and developing these new solutions is costly.

Re-use over newness

Many players are convinced that the biggest gains are to be made in further developing PCR solutions that contribute to the circular economy. "One of the best ways of reducing waste is to re-use it," says Albéa director of innovation, marketing and sustainability Gilles Swyngedauw. "I'm not sure about the relevance of new materials," agrees Arcade Beauty senior vice president, head of Europe Carl Allain. "I don't think this is the way forward today, the way forward is in how we treat existing materials." "Using recycled materials

is fundamental," says Cosfibel chief operating officer Stanislas Peronnet. "We have a lot of people saying we need ocean RPET, and we ask them, are you sure for starters that all the PET you use is RPET, because that is now a stream that is well-structured. There are quick wins to be made in many areas. [...] The price of RPET is now the same as that of PET, so that's no longer an issue."

Cosfibel has begun using recycled poly bags

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Anisa chief operating officer Fred Lewis

to house its products, and is also studying alternatives for plastic inserts for its gift boxes. "We are studying several alternatives to plastic trays, with for example molded paper pulp, injected paper or card chock systems," says Peronnet. For the firm's promotional luggage activity, demand is growing for hessian and eco-

certified cotton solutions and it is also testing water-based PU solutions and recycled resins, he adds.

The aesthetic limitations of PCR plastics remain a barrier to uptake, meanwhile, although suppliers are working on solutions to counter this, and mindsets are also changing with the growth in demand from sustainable brands. "We have an ocean plastic cap that companies can use, but of course this is always a topic with the colors, because it's very dark," admits Neopac head of marketing Comelia Schmid. "Scrap materials are usually very dark, that's a difficulty the industry needs to solve."

A boost for bio-materials

Others are convinced that bio-materials are the way forward, considering the aesthetic limitations of PCR. "PCR resins are always a talking point in the industry, but from a technology and infrastructure perspective, we need to develop a lot more before we can fully use those in beauty," comments brush maker Anisa's chief operating officer Fred Lewis. "We're doing some fun stuff on resins right now, with soy and algae resins. [...] Soy and algae and even ocean plastics have been making huge strides over the past year or so [and] there are a lot of fun materials out there, and I think they're more inspiring to the sustainably minded consumer than PCR is."

However, although there are certain bio-material solutions on the market—whether bio-sourced or compostable—most represent challenges that have hindered uptake. First generation bio-materials—PLA made from corn, for example—represent competition with foodstock. While solutions based on sugarcane



◀ Albéa says that some of the biggest gains are to be made in further developing PCR solutions that contribute to the circular economy



◀ Suppliers are looking to materials that come from nature, such as Neopac with its Picea tube, composed of spruce wood waste and a plastic matrix of sugar-based raw material

exist and are produced using byproducts, alleviating that issue, most of the world's sugarcane production is in Brazil, meaning that the carbon footprint involved in transportation is a negative for sustainability credentials.

"Materials that come from nature, while they must not compete with foodstock, there is strong demand there," says Cosfibel's Peronnet. "We always need to undertake full studies into the impact of materials, but I'm convinced that in the agricultural world, there are solutions that will provide alternatives to plastic, either totally or in part."

Neopac's Picea tube, made from spruce wood waste and a plastic matrix of sugar-based raw material, is one example already on the market. The plastic's distinctive texture is appealing to some brands, according to Schmid, because it allows them to communicate on their sustainable positioning. "It's a tactile and visual effect, so customers can really see it is a bio-material," she says. The company is currently working on adding a Picea cap to its line-up in addition to the tube.

Packaging companies are keenly observing the development of new materials and technologies. Potential developments like pineapple bark, biopolymers inspired by how bees build their nests and solutions made with wood waste are among nascent technologies. But knowing which material will have the potential to be developed at scale remains difficult. "We assess each material, because there are materials that are not accessible for our markets for the moment. Maybe they will be one day, but

we need suppliers that can provide sufficient volumes to answer the needs of our markets; we need industrial production volumes," explains Cosfibel's Peronnet.

"There is not a single strategy or solution, and there are a lot of 'false good ideas'," suggests Albéa's Swyngedauw. "This is particularly the case in bio-materials [...] compostable is a great idea, for example, except that there are very few industrial-scale composting schemes, and a pack cannot be composted in the open air in the garden. [...] We are looking at all of these materials, but [...] there are very few true systems in place, and this could perturb the system rather than offering a solution."

Structuring the market

As such, collaboration on the development of new materials and the implementation of downstream solutions is key to bringing costs down and building scale for the longer term. "We need to help structure the market, and that is a battle that cannot be won alone; it's important that as many manufacturers as possible work with the same material in order to bring costs down," says Peronnet, who suggests that larger industries like apparel and sportswear will ultimately contribute to creating the volumes that will move the pendulum towards one material or another. "They are the ones that create the volumes," he says.

"Once we make the investment, the volume comes and makes the solution more economical," agrees Anisa's Lewis, who equates the development of bio-materials with the

introduction of more environmentally friendly and vegan synthetic fibers for brushes several years ago, which has since largely become the industry norm.

Growth in green chemistry

Green chemistry is advancing potential new solutions, meanwhile—enzyme plastic substitutes are one example. "We have already received injected items [made with enzyme plastic]," says Peronnet. "But we need to test them, it's just the beginning, then we need to assess the costs associated with such products. If they are 10 times more expensive than a standard product, that means it's too early. But if the technique shows that it's possible, there is every hope that they could be produced on an industrial scale and that prices will come down."

"Bio-chemistry has made huge progress," agrees Swyngedauw. "There are products not yet available on an industrial scale that will be more interesting. The problem is that there will be dozens of different materials, and knowing which one will really make a difference and be available in sufficient volumes makes this an extremely complex issue. We are talking about billions in investment to manage or replace all the products we need."

There is no doubt that the lack of visibility about which solutions will provide the answers and become viable on an industrial scale remains a barrier. But as both suppliers and brands continue to ramp up their sustainability initiatives, a new market for sustainable materials will inevitably take shape. ■