

OPEN TO MONO



The Nyguard company produces zipper fastenings whose every component, from the starting piece to the zipper itself, consists of Vestamid Terra, a bio-based plastic from Evonik

Most products for everyday use consist of a mix of materials. That increases their practical utility, but it makes recycling more difficult. Especially for plastics, a switch to monomaterials could make it easier to recycle products—an important step toward a circular economy

TEXT BJÖRN THEIS

Year after year, about 20,000 tons of used toothbrushes land in garbage dumps—in the USA alone. The problem is that most manufacturers use several different plastics to make their products. The combination ensures that the toothbrush is lightweight and inexpensive and doesn't irritate the user's gums. However, because it's difficult or impossible to separate its component materials into different types, they cannot be recycled.

It's the same story for toiletries, electronics, clothing, and packaging. In countless manufacturing processes, materials are mixed or bonded in order to make products practical, safe, hygienic or wrinkle-resistant. And that leads to the same problem we saw with toothbrushes—after their useful life is over, these items cannot be recycled in a practical way.

ENVIRONMENTALLY FRIENDLY AND EFFICIENT

“Take-Make-Use-Waste” is the phrase used by experts to describe linear product systems of this type. However, climate change and increasing environmental pollution are making it obvious that if we want a sustainable future we need a new paradigm: the “Make-Use-Recycle-Make” circular economy. One future-oriented principle for realizing efficient circular flows of this nature is the concept of monomaterial design. This type of product is made of a single material that can be easily processed and fed once again into the cycle of production and utilization.

SYNERGIES WITH 3D PRINTING

Although the concept sounds so simple, there's still a long way to go before a diverse and sustainable product range of monomaterials can be marketed. Nonetheless, limiting products to a single material harbors tremendous economic and environmental potential, especially in combination with other technologies such as 3D printing. This type of production makes it possible to dispense with glue or screws. As a result, in the future it could be possible to make even complex products out of monomaterials.

In an effort to identify possible practical applications, the Foresight team at Creavis is developing a variety of scenarios for plastic in the year 2040. In addition, the “Circularity of Plastics” unit, which was formed in December 2020, is working to develop transformative innovations for the creation of plastic material cycles. This is how Creavis is supporting Evonik's global program “Circular Plastics,” whose objective is to make plastic material cycles a reality as soon as possible. —



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