

Primary Advantages

Recyclable foil materials help lessen the environmental footprint of blister-pack packaging

By Andreas Detmers

While primary packaging usually accounts for the least amount of materials typically used to make off-the-shelf blister-packs and other pharmaceutical products, major global pharma brands are facing the same public pressures to make their packaging more sustainable as all other CPGs (consumer goods companies) these days. This pressure is driving more packaging machinery and material suppliers to collaborate on various joint projects to develop and commercialize the next generation of climate-friendly, material-saving, affordable, customizable and ultra-thin packaging solutions.

Recently, leading German pharmaceutical packaging machinery producer **Romaco Siebler** got together with the Finnish film and foil specialist **Huhtamaki** to develop a while new approach to package tablets and other solid pharmaceutical products.

Called **Push Pack**, the new push-through four-sided sealed strips provide equivalent barrier properties to conventional blister packs and are opened in the same way: you simply press the tablet out of the *Push Pack* with your thumb just as you would normally do with a blister.

Made from the new ultra-thin, PVC-free foils manufactured by Huhtamaki, the *Push Packs* are also similar in appearance to conventional blister packs, whereby the standard *Push Pack* version can be combined with transparent foil for an unobstructed view of the contents. Since *Push Packs* are sealed all-round with two foils, far thinner aluminum barrier layers can be achieved than with cold formed blisters: namely between nine and 25 µm, depending on the primary packaging's barrier specifications.

With aluminum-aluminum blisters, on the other hand, the fact that the aluminum is deep-drawn means that very thick foil is inevitable. That is why a cold-formed aluminum-aluminum blister weighs more than twice as much as a high-barrier *Push Pack* produced on a Siebler strip packaging machine.

This markedly lower material consump-



Comprising 90-percent polyethylene and polypropylene, the recyclable eco Push Pack packaging allows for more than 70 percent of the strip to be recycled back into the material loop.

tion goes hand-in-hand with significant cost-savings of up to 60 per cent.

"Push Packs not only help pharmaceutical companies reduce their carbon footprint; they also let them produce much cheaper", explains Rolf Izsak, the product manager responsible for *Push Pack* development at **Romaco Pharmatechnik GmbH**.

The standard and high-barrier *Push Pack* versions are manufactured from a five-layer, laminated PE or Surlyn, aluminum and PET foil from Huhtamaki.

The foil's push-through function is achieved by perforating the outer PET layer. In the standard version, *Push Packs* have an aluminum barrier layer just 9 or 12 µm thick, whereas the high-barrier *Push Packs*, which have to meet very high light, air and moisture tightness requirements, are made using 25 µm aluminum foil.

Thanks to the tear-resistant PET film, children find it extremely difficult to open *Push Packs*, whereas elderly people can press the tablets out without any problem, and since the relatively small cavities in the *Push Packs* also mean smaller air pockets, allowing the medicines to have a longer shelf-life.

For its part, the *eco Push Pack* version consists of polyolefin laminate, which can be disposed of as recyclable material—allowing for 70 per cent or more of the strip to can be recycled back into the material loop. The key lies in the unique structure of the Huhtamaki foil: recyclable *Push Packs* comprise over 90 percent polyethylene and polypropylene, which belong to the same material class.

The Finnish packaging manufacturer's special new foils were extensively tested by Romaco and Huhtamaki on a Romaco Siebler HM 1-230 strip packaging machine at **PacTech**, the Romaco laboratory in Karlsruhe, Germany.

The optimum sealing conditions for these ultra-thin Huhtamaki foils—the ideal processing temperature, pressure and time—, were determined in a large number of test series and the foils subjected to various leak tests, including the blue dye method.

Says Huhtamaki's senior sales manager Fabio Daidon: "We really enjoyed bringing the idea for our foils to maturity in collaboration with Romaco because we both pull in the same direction and the project teams at Romaco and Huhtamaki are passionate about what they do."

To enable safe and absolutely tight pharmaceutical packaging to be manufactured from the new Huhtamaki foils, the Siebler heat-sealing technology was specially adapted to handle laminates with an aluminum foil thickness of between 9 and 25 µm.

According to Isak, "The secret is our unique heat-sealing process: the precise temperature distribution means we can coordinate all of the sealing parameters optimally with one another and ensures air, light and moisture-tight seams for the four-sided sealed strips."

The *Push Packs* are manufactured on the Romaco **Siebler HM 1** series of vertical heat-sealing machines, which can pack up to 7,000 tablets per minute. The product is fed vertically into the heat-sealing machine, where it passes through the rotary sealing system between the foil webs, so that it is sealed all-around.

In the next step, blades perforate the product web lengthwise and crosswise and cut it to size according to the customer's requirements.

In addition, the machine can be equipped with a continuous cutting station to processing the so-called design strips, whereby two servo-driven punches cut strips out of the foil layer with a drawing cut. (top picture)

"Round or star-shaped, stylized hand-drawn, 'thumbs up' look, or just about any other format under the sun: you name it, our machines can do it," says Izsak.

"The ability to customize shapes and sizes in this way helps pharmaceutical and healthcare companies give their primary packaging an attractive and distinctive appearance with high recognition value, so that they set themselves even more clearly apart from their competitors."