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TO INFINITY AND BEYOND

How a circular-economy manifesto is driving sustainable innovations

Big idea
FlexFilms CEO Anantshree Chaturvedi on reducing petrochemical use

Cool off
Temperature-controlled packaging's place in the cold chain

The four Rs: reduce, reuse, recycle and refit

Founded in 1973, **REPI** develops and produces colours and additives in liquid form for plastics, with local partners covering five continents through a comprehensive network of sales and service.

That plastics are blamed for polluting is a sad fact, but this wrongly addressed negative image is probably exactly what has challenged plastics stakeholders to firmly prove the contrary. Many sustainable reports are coming out stating, with no doubts, that packaging helps reduce CO_2 emissions, especially when it involves recycling. A polyethylene terephtalate (PET) bottle made of 50% recycled PET (rPET) has a lower environmental impact than a glass bottle or a tin can. The single glass bottle is the least environmental unit – even behind aluminium tin, which is almost always the runner-up to plastic packaging.

Crucial in this context is recycling, as we all well know. The three 'R' statements adopted by many plastics stakeholders succinctly summarise what the industry needs to do: reduce, reuse and recycle.

REPI adds its own fourth 'R': 'REFIT', the new brand representing the company's approach towards a sustainable growth and environmental care. Ignoring its advantages for products for a moment, REFIT involves a number of internal processes, from the choice of raw materials, to the tuning of low-energy production cycles, to the use of sustainable energy sources for its facilities and separate waste collection. REPI has applied for ISO 14001 certification, focusing on the brand's environmental impact. Being environmentally friendly is not an easy task, but REPI consider it an act of great responsibility.

A wide range of products

Regarding products, REPI has been specialising in additives and colours for recycling for many years and is now able to offer a broad-spectrum support in the form of aesthetics enhancers and mechanical boosters: anti-yellow (AY) additives and intrinsic viscosity (IV) enhancers.

The colour of rPET varies a lot from supplier to supplier (and even from one batch to the next) and depending on the ratio of virgin PET and rPET used, the result can be anything from grey or pale yellow to blueish or greenish. The more recycled content the bottle has, the darker the end colour will appear.

Mechanical challenges when using rPET include a drop in the IV and wall-thickness distribution, one the cause of the other. This happens because PET has already passed through several production processes that impact on its chemical composition and shortens its molecular chain. A drop in the IV is responsible for inconsistencies in the moulding machine pressure, leading to uneven wall thickness and therefore to insubstantial packaging.

REPI's prototyping and R&D department moulds preforms and bottles with colours and additives using rPET pellets and flakes mixed in different percentages. The AY liquid additives range balances the appearance of inconsistent material and make it possible to regain brightness, as well as to correct a greenish or greyish tone.

REPI's IV Enhancer attracts and binds to the free oligomers in rPET, extending its molecular chain and therefore increasing the IV to the level of a virgin material.

Besides additives, colours can be of great help

Currently the trend is to reduce colour, or even to go transparent, but many brands are not ready to sacrifice the aesthetics of their packaging and their brand recognition. When a very dark rPET is used, an AY additive may not be enough. For this, REPI has developed the Fumè colour range that can give the packaging a premium and elegant look, masking the effect on colour caused by rPET and not impacting the recycling stream because it is detected as a transparent light colour. The range goes from light amber to light blues, greys, and aquamarine shades, to antique rose.

Depending on the ratio of virgin PET and rPET used, the colour of the bottle can be anything from grey or pale yellow to blueish or greenish.

Moving towards a circular economy is not simple, but solutions are already in place to help as much as possible to find how to be sustainable from a branding and aesthetic point of view, as well as from a technical perspective. Colourants and dedicated additives are available to make rPET look and work even better. ●

For further information
l.buffoni@repi.com