

## ... the significance of recyclates

### Explanations and worked examples on the use of recyclates in high-quality recycling

Recyclates are materials that result from recycling secondary resources. There is a difference between post-consumer recyclates (PCR) and post-industrial recyclates (PIR). PCR is often made from used packaging from kerbside collection (yellow bag/bin and commercial collection streams). PIR involves industrial production waste from plastic packaging or products that have not yet reached consumers.

Recyclates can be used to make a variety of new products, packaging types and designs, with both short and long lifecycles. Food packaging is still largely an exception because there is currently no approved recycling process for products that have contact with food except for polyethylene terephthalate (PET). It is already technically possible to produce packaging made of 100 % recyclates. But depending on factors like colouring and label size, the percentage goes down.

### Worked examples:

#### 1. Plant pots made of at least 80 % polypropylene post-consumer recyclate (PCR-PP)

The plant pots pictured here are made of at least 80 % PCR. This figure has to be calculated in relation to the colourants in the pots, the use of filler material and other added materials in the production process. It is not uncommon for colourants to account for up to 10 % of the overall product for plant pots. The blue plant pot is made of 100 % recyclates. The plant pots made of PP recyclates are themselves 100 % recyclable.



## 2. Bucket made of at least 90 % polypropylene post-consumer recycle (PCR-PP)

Here we see buckets made of more than 90 % PCR, including the dye and any labelling. The labels are 'in-mould labels'.

These labels are made of a polypropylene film (virgin material). They are shrink-wrapped around the buckets with heat during the production process. For material technology purposes, both the bucket and the label are therefore a single recyclable material. In this example, the carrier handles are made of 100 % recyclates because the weight of the contents permits that from a load-bearing perspective. The buckets made of PP recyclates are 100 % recyclable.



**Practical non-food example:**

## Packaging made of polypropylene post-consumer recycle (PCR-PP) from packaging waste collected in yellow bags/bins

- The recycle share varies depending on the use of colouring and labels.
- A PCR share of up to 90 % is possible, depending on the use of colouring and labels.
- All plant pots and buckets shown here are 100 % recyclable.

## 3. Buckets made of 75 % polypropylene post-consumer recycle (PCR-PP) and post-industrial recycle (PIR-PP)

In this example, the buckets are made of 75 % polypropylene post-consumer recyclates and 25 % recovered ground particles from the producer's own industrial production. The bucket and lid can be made of up to 100 % PCR. The recyclates used here are made of a mixture of plastic waste and therefore assume different shades of grey in the recycling process. The buckets made of PP recyclates are 100 % recyclable.



## 4. Buckets with lids made of 75 % polypropylene post-consumer recycle (PCR-PP), post-industrial recycle (PIR-PP) and virgin polypropylene

Here we see two other buckets that underscore the interaction between recyclates and virgin plastic material. They are made of 75 % PCR and 25 % recovered ground particles from the producer's own industrial production. The bucket's lid in the top picture is made of 100 % virgin material.

The bucket's lid in the lower picture is made of 50 % PCR and 50 % PIR, recovered ground particles from the producer's own industrial production. Because of the contents' weight and the necessary carrying robustness, the plastic handles of both buckets are made of 100 % virgin material.

The labels for both are 'in-mould labels'. They are made of a PP film (virgin material) that is shrink-wrapped to the buckets with heat during the production process. Bucket and label form a single, recyclable material unit here as well.

Both buckets and lids can be made of 100 % recyclates. The buckets are 100 % recyclable.



### In practice:

## Polypropylene packaging: post-consumer recycle (PCR-PP) and post-industrial recycle (PIR-PP)

- The source of post-consumer recyclates (PCR) is yellow bin/bag waste.
- The source of post-industrial recycle (PIR) is industrial production waste or non-conforming batches.
- With recyclates being made of a mixture of plastic, they assume different shades of grey.
- The interaction between PCR, PIR and virgin plastics can vary, and the individual packaging components can be made of differing materials, for example buckets made of a PCR/PIR mix with their lids and handles made of virgin material.