



Colour quality for recycling of plastic waste

The worldwide production of plastic products has been increasing for years and this trend is expected to continue in the coming years, so that the amount of plastic waste is also steadily increasing. Material recycling of this waste is therefore a major challenge for the future and will become more important in future.

At the beginning of 2018, the European Commission presented a strategy for the recycling of plastic products. In addition to improved sorting of plastic waste, the use of recycled materials in certain areas of application is also regulated by EU directives and regulations.

What does this mean for colour quality in the production of compounds?

In contrast to the use of virgin material, the constantly changing inherent colour of the recycled material makes it difficult to fall back on the experience of the colourists. For a visual colour adjustment, many tests are therefore necessary to adjust the desired colour tone, which takes a lot of time.

The use of masterbatches for colouring the compounds is also more difficult, since the masterbatcher has to take the inherent colour of the recycled material into account when creating the colour formulation. Every single batch of recycled material would therefore have to be sent to the masterbatcher so that he can be match to the exact mixture of recycled and virgin material.

This makes it interesting for compounders to think about using Computer Colour Matching by themselves to ensure the colour quality of the end product.

How are recycled materials treated in colour formulation?

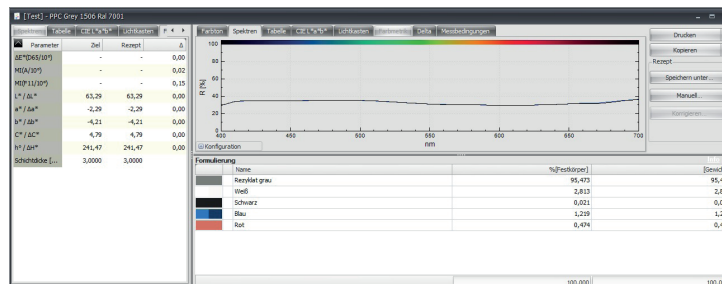
All colour formulation systems require calibration series of all colourants from which the optical data are calculated as a prerequisite for recipe calculation. These calibration series are mixtures of polymer and colourants, whereby mixtures of the colourants with white and/or black are produced in certain concentrations. In most cases, the polymer is assumed to be constant, so that a separate calibration series (Colorantset) must be produced for each polymer. In addition, most programs can only use one polymer for formulation, either virgin or recycled. The mixture of both would be treated as a new polymer, so again a complete calibration series would be necessary. An immeasurable effort that no one can and will afford.

How can Colibri® help with the use of recycled material?

With the Colibri® formulation software it is possible to consider coloured recycled material in the recipe calculation either as pure polymer or in combination with virgin material. No new Colorantset, i.e. no new calibration series for all pigments is required. It is only necessary to characterise the recycled material itself, with a few mixtures with white and/or black. The time saving is therefore enormous.

Colibri® calculates a recipe with the recycled material very quickly and predicts whether the requirements regarding metamerism and price can be met. If recycled materials in different colours are available, it is very easy to select the appropriate material for formulating the desired shade.

Components can be easily linked together to determine the ratio of recycled plastic to virgin material. The calculated recipes then contain both plastics in a predefined ratio and the colourants required for exactly this mixture.



Colibri® also helps with its very specific correction calculation for minor deviations in the colour of the recycled material. In this case, a known recipe for a similarly mixture of polymer and recycled material can be used and the required correction can be calculated in just one step.

Advantages of Colibri® for recycled material

- Characterisation of the recycled material with only a few samples
- Fast calculation of recipes for the colouring of recycled material
- Valuation of metamerism and price of the calculated recipe
- Statement on the general feasibility in advance
- Easy selection of suitable recycled material depending on the desired colour shade
- Use of recycled and virgin material in the desired ratio
- Specific correction calculation
- Reduction of costs and time for colour adjustment

