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PRESS RELEASE

PrintCYC provides important input for design for recycling guidelines

Research evaluates the impact of printing inks on recyclability of plastic films

Printing inks have a major impact on the recyclability of plastic films, the recycling process, the quality of regranulates as well as their processability. The PrintCYC initiative started two years ago to investigate this impact more closely and drive circular economy. Today, the initiative is once again providing insights into its research work: Currently focusing on the impact of pigments on the recycling process, PrintCYC has found that standard pigments for flexo- and rotogravure printing show excellent compatibility with recycling and enable recyclates comparable to virgin film. This opens a wide range of reuse possibilities in different film and packaging applications.

The PrintCYC consortium was established in 2019 to support the transformation of printed polyolefine-based packaging films towards a circular economy by evidence-based industrial trials. Key stakeholders are leading machine manufacturers such as Brückner Maschinenbau, Erema, Kiefel and PackSYS Global, the printing ink manufacturer hubergroup Print Solutions, and Profol, one of the market leaders for PP cast films. The initiative is coordinated by Dr Annett Kaeding, an independent packaging expert and sustainability consultant. PrintCYC is connected to converters and in continuous dialogue with brandowners, recyclers, and platforms such as Ceflex and Forum Rezyklat to discuss and share results.

In the starting phase of the project in 2019/2020, PrintCYC successfully produced PP and PE film and packaging samples containing more than 50 % of recyclate from post industrial sources. Focusing on the recyclability of the binders NC (nitrocellulose), PU (polyurethane) and PVB (polyvinylbutyral), the initiative identified the binder PU as most temperature resistant and, thus, as best recycling-ready solution for mechanical recycling without de-inking.



The influence of pigments on recyclability

At the beginning of this year, PrintCYC started into the next project phase, investigating the impact of pigments on the recyclability of printed packaging films. Inorganic pigments are mostly temperature stable and therefore supposed to be recyclable without degradation. However, organic azo-pigments like most standard red and yellow pigments are more temperature sensitive and might re-split into critical components. The pigments yellow (Pigment Yellow 17) and red (Pigment Red 57:1) are commercially available standard pigments for flexo- and rotogravure printing and were selected for the recycling trials.

Both pigment types showed excellent recyclability, leading to odour- and defect-free, colour-stable PP recyclates. The material properties of the coloured recyclates were analysed technically and analytically.

After the first recycling loop, PrintCYC found no significant impact on material properties compared to virgin reference. Based on a specific migration screening test, the renowned Swiss quality testing laboratory SQTS evaluated the PP recyclates according to the limits of the Commission Regulation (EU) No 10/2011 and Swiss Ordinance 823.023.21 on materials and articles in contact with food. The positive results open a wide range of reuse in different film and packaging applications.

For the next project phases, PrintCYC is looking for partners to test and evaluate closed loop printed PP packaging scenarios and to further improve relevant design for recycling guidelines.

About PrintCYC

PrintCYC started in March 2019. The initiative was launched by a group of companies within the value chain of printed films. The acronym PrintCYC stands for printed polypropylene (PP) and polyethylene (PE) films for mechanical recycling.



Partner information:

<https://www.akk-innovation.de>

<https://www.brueckner-maschinenbau.com>

<https://www.erema.com>

<https://www.hubergroup.com>

<https://www.kiefel.com>

<http://www.packsysglobal.com>

<https://www.profol.com>

Contact:

Daniela Jung

EREMA Group GmbH

Tel.: +43 732 3190-3150

d.jung@erema-group.com

Dr Annett Kaeding

AKK INNOVATION

Tel.: +49 8642 5965 290

annett.kaeding@akk-innovation.de