RecyClass

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Kraton Polymers LLC

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 10 January 2022
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DISCLAIMER

RecyClass recognition applies only to Kraton Polymers 'CirKular+ C3000' resin reported in Annex I. The recyclability assessment therefore does not refer to the testing of a specific commercial packaging using this technology. Any specific packaging using this label technology would need to be tested individually to demonstrate that the system of resin, adjuvants, label, closure, and printing conforms to the RecyClass Recyclability Evaluation Protocol for PP containers, and that it is sorted in the PP rigid stream at the state-of-art sorting plants in Europe.
Publication of results of testing of this technology MUST clearly include all the conditions listed in the approval letter. Partial reporting of the conditions is forbidden.
Additionally, any change in the formulation of the technology must be communicated to the Technical Committee which will reassess the approval of the technology.

The RecyClass PP Technical Committee was requested to carry out an assessment of the resin 'CirKular+ C3000' by Kraton Polymers to verify its impact on the quality of recycled PP containers.

The resin is a Styrenic Block Copolymer (SBC) resin based on polystyrene and polybutadiene usually used as a compatibilizer or impact modifier. Pellets containing 5 wt% of the CirKular+ C3000 resin blended in an injection moulding PP grade matrix were tested.

According to the results that were obtained from the laboratory tests done by Plastic Technologies, Inc. (PTI), carried out as per the APR Critical Guidance for PP Rigid Containers, the RecyClass PP Technical Committee assessed the 'CirKular+ C3000' resin to be fully compatible with PP recycling.

Based on these results, RecyClass certifies that Kraton's 'CirKular+ C3000' resin will have no impact on the European PP containers recycling and provided that the full packaging using this resin is designed under the following conditions[1]:

a) The packaging is made of clear PP;
b) The amount of CirKular+ C3000 represents 5 % of the total weight of the packaging, or less;
c) The final density of the packaging is lower than 1 g/cm^3;
d) Any components or attachments to the packaging should be preferably made of clear PP;

[1] **PP Rigids designed under conditions other than those indicated need to be tested to assess their compliance with Recyclass Recyclability Evaluation Protocol for PP containers.**

e) Any additional component or features (e.g., inks, adhesives, etc.) of the packaging must be compliant with the corresponding RecyClass Design for Recycling Guidelines[2].

RecyClass concludes that Kraton's 'CirKular+ C3000' resin as per current market conditions and knowledge, is fully compatible with the existing European industrial recycling processes for PP containers. Indeed, the recycled plastic generated after the recycling process was successfully tested in injection moulding applications up to 50 % concentration[3].

In regard to RecyClass Recyclability Certification, the present full compatibility with PP containers recycling delivered to Propyplast 'LMG CleanLoop®' technology, means that a packaging containing this technology, as mentioned in the aforementioned conditions will not be penalised with any Recyclability Class deduction. Nevertheless, the amount of recyclable PP will impact the final Recyclability Class obtained during Recyclability Certification and should be kept above 95 % or 90 % in the final packaging to maximise chances to get a Recyclability Certificate with a Class A or B, respectively [4]. Also, it is noteworthy that the presence of additional packaging features, like inks or barrier material, could impact the certification process.

It should be northworthy that unlike other approvals based on lab testing of packaging, only pellets containing the innovative technology has been tested in this study. The PP Technical Committee recommends to rather evaluate compatibility with recycling of specific resins or additives by processing them into packaging.

About RecyClass

RecyClass is a non-profit, cross-industry initiative advancing recyclability, bringing transparency to the origin of plastic waste and establishing a harmonized approach toward recycled plastic calculation & traceability in Europe. RecyClass develops Recyclability Evaluation Protocols and scientific testing methods for innovative plastic packaging materials which serve as the base for the Design for Recycling Guidelines and the RecyClass Online Tool. RecyClass established Recyclability Certifications for plastic packaging, Recycling Process Certification and Recycled Plastics Traceability Certification for plastic products.

RecyClass – Plastic Future is Circular

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[2] Design for Recycling Guidelines - RecyClass

[3] APR Critical Guidance for PP Rigid Containers

[4] RecyClass Recyclability Certification

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Annex I

Figure 1: CirKular+ C3000 *by Kraton Polymers.*