

Kraton Polymers LLC

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 10 March 2022

DISCLAIMER

RecyClass recognition applies only to Kraton Polymers 'CirKular+ C2000' resin reported in Annex I. It, therefore, does not concern to a recyclability assessment of specific packaging using this resin.

Any specific packaging using this resin 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 HDPE containers, and that it is sorted in the HDPE 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 HDPE Technical Committee was requested to carry out an assessment of the resin 'CirKular+ C2000' by Kraton Polymers to verify its impact on the quality of recycled HDPE containers.

The resin is a clear, linear Styrenic Block Copolymer (SBC) resin based on polystyrene and poly(ethylene-co-butylene) usually used as a compatibilizer or impact modifier. Pellets containing 5wt% of CirKular+ C2000 resin blended in an injection moulding HDPE grade matrix were tested.

According to the results that were obtained from the laboratory tests performed by Plastic Technologies, Inc. (PTI) and Plastics Forming Enterprise (PFE), carried out as per the APR Critical Guidance for HDPE Rigid Containers and converting step of the RecyClass Recyclability Evaluation Protocol for HDPE containers respectively, the RecyClass HDPE Technical Committee assessed the 'CirKular+ C2000' resin to be **fully compatible with HDPE recycling**.

Based on these results, RecyClass certifies that Kraton's 'CirKular+ C2000' resin will have no impact on the European HDPE containers recycling and provided that the full packaging using this resin is designed under the following conditions:

- a) The packaging is made of clear HDPE;
- b) The amount of CirKular+ C2000 represents 5% of the total weight of the packaging, or less;
- c) The final density of the packaging is lower than 1 g/cm³;
- d) Any components or attachments to the packaging should be preferably made of clear HDPE;

- e) Applied printing technology is compatible with recycling; since several printing options are possible, it is the responsibility of the end-user to choose an appropriate combination of inks and printing process to ensure that:
- i. the inks are non-bleeding;
 - ii. the inks comply with the European Legislation (e.g. Packaging and Packaging Waste Directive on the heavy metal concentration levels) and are EUPIA compliant;
 - iii. direct printing is limited as much as possible.

RecyClass concludes that Kraton's 'CirKular+ C2000' resin as per current market conditions and knowledge, is fully compatible with the existing European industrial recycling processes for HDPE containers. Indeed, the recycled plastic generated after the recycling process was successfully tested in high-value application such as HDPE bottles up to 25% concentration¹.

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

About

RecyClass is a comprehensive cross-industry initiative that works to advance plastic packaging recyclability and to establish a harmonized approach towards recycled content calculation and traceability in Europe. Activities within RecyClass include the development of Recyclability Evaluation Protocols and scientific testing of innovative materials which serve as the base for the Design for Recycling guidelines and the free online tool. RecyClass offers Recyclability Certifications and Recycled Content Traceability Certification for plastic packaging.

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¹ [APR Critical Guidance for HDPE Rigid Containers](#)

Annex I



CirKular+ C2000 *by Kraton Polymers*