

Tekni-Plex

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 19 July 2024

DISCLAIMER

RecyClass recognition applies only to Tekni-Plex 'ProtecSeals® PE foamed liner' technology reported in Annex I. The recyclability assessment therefore does not refer to the testing of a specific packaging using this PE foamed liner. Any specific packaging using this PE foamed liner 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 technology 'ProtecSeals® PE foamed liner' by Tekni-Plex to verify its impact on the quality of recycled HDPE containers.

The technology is an Expanded Polyethylene (EPE) liner of 3 mm with a small amount of Chemical Foaming Agents (CFAs). Such CFAs are typically citric acid-based chemicals used as nucleating agents during the foaming process. The EPE liner represents 9.8 wt% of the total weight of the packaging.

According to the results that were obtained from the laboratory tests done by the Institut für Kunststofftechnologie und -recycling (IKTR), carried out as per the Recyclability Evaluation Protocol for HDPE containers (version 5.0), 'ProtecSeals® PE foamed liner' technology is **fully compatible with HDPE recycling**.

Based on these results, RecyClass acknowledges that Tekni-Plex 'ProtecSeals® PE foamed liner' technology will have no impact on the current European HDPE containers recycling and provided that the full packaging using this PE foamed liner is designed under the following conditions¹:

- a) The packaging is made of HDPE;
- b) The final density of the packaging is lower than 1 g/cm³;
- c) The PE foamed liner represents 9.8 wt% of the total weight of the packaging, or less;

¹ HDPE containers designed under conditions other than those indicated need to be tested to assess their compliance with Recyclass Recyclability Evaluation Protocol for HDPE containers.

- d) Any additional component or features (inks, coating, etc.) of the packaging must be compliant with the corresponding RecyClass Design for Recycling Guidelines².

RecyClass concludes that Tekni-Plex 'ProtecSeals® PE foamed liner' technology 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 50 % concentration³.

In regard to RecyClass Recyclability Certification, the present full compatibility with HDPE containers recycling delivered to Tekni-Plex 'ProtecSeals® PE foamed liner' technology, means that a packaging made of this technology as mentioned in the aforementioned conditions will not be penalised with any Recyclability Class deduction. Moreover, the amount of recyclable PE will impact the final recyclability class obtained during Recyclability Certification and should be kept above 95 % or 90 % to maximise chances to get a Recyclability Certificate with a Class A or B, respectively⁴. Also, it should be noteworthy that the presence of additional packaging features, such as inks or closure, could impact the certification process.

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 [Recyclability Evaluation Protocol for HDPE containers](#)

⁴ [RecyClass Recyclability Certification](#)

Annex I



Figure 1. 'ProtecSeals® PE foamed liner' technology by Tekni-Plex.