

Avantium

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 30 June 2025

## DISCLAIMER

*RecyClass recognition applies only to Avantium 'PET/PEF multilayer bottle with Releaf® RP90N as inner layer' technology reported in Annex I. The recyclability assessment therefore, does not refer to the testing of a specific packaging using this polymer grade. Any specific packaging using this PEF resin would need to be tested individually to demonstrate that the system of resin, adjuvants, label, closure, and printing conforms to the Recyclability Evaluation Protocol for PET bottles, and that it is sorted in the PET bottle 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 PET Technical Committee (TC) was requested to carry out an assessment of the technology 'PET/PEF multilayer bottle with Releaf® RP90N as inner layer' by Avantium to verify its impact on the quality of recycled PET packaging.

The technology is a Polyethylene 2,5-furandicarboxylate (PEF) resin used as an inner layer of a PET bottle, and representing 10 wt% of the total weight of the PET packaging. The bottles were tested with no decoration or printing.

According to the results that were obtained from the laboratory test performed by PTI-Europe and Plastics Forming Enterprises (PFE), carried out as per an adapted version of the Recyclability Evaluation Protocol for PET bottles (version 1.0)<sup>1</sup>, the technology 'PET/PEF multilayer bottle with Releaf® RP90N as inner layer' is fully compatible with PET bottle recycling.

Based on these results, RecyClass acknowledges that Avantium 'PET/PEF multilayer bottle with Releaf® RP90N as inner layer' will have no impact on the current European PET bottles recycling and provided that the full packaging using this resin is designed under the following conditions<sup>2</sup>:

- a) The bottle is made of PET;
- b) The bottle is sorted in a PET bottle stream;
- c) The PEF resin represents 10 wt% or less of the total weight of the bottle.
- d) The PEF is only used as an inner layer in a PET bottle;

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<sup>1</sup> [RecyClass Recyclability Evaluation Protocol for PET bottles](#)

<sup>2</sup> PET bottle designed under conditions other than those indicated need to be tested to assess their compliance with RecyClass Recyclability Evaluation Protocol for PET bottles.

- e) Any additional component or features (inks, adhesives, ...) of the packaging must be compliant with the corresponding RecyClass Design for Recycling Guidelines<sup>3</sup>.

Under aforementioned conditions, RecyClass concludes that Avantium 'PET/PEF multilayer bottle with Releaf® RP90N as inner layer' technology, as per current market conditions and knowledge, is fully compatible with the existing European industrial recycling processes for PET bottles. The plastic generated by the recycling process may be used in high-quality applications such as PET injected preform up to 50 % concentration<sup>4</sup>.

In regard to RecyClass Recyclability Certification, the present full compatibility with PET bottles recycling delivered to 'PET/PEF multilayer bottle with Releaf® RP90N as inner layer' technology, means that a PET packaging using this technology as an inner layer for PET bottle, as mentioned in the aforementioned conditions, will not be penalized with a recyclability class deduction. Moreover, the amount of recyclable PET will impact the final recyclability class obtained during Recyclability Certification and should be kept above 95 % or 80 % in the final packaging to maximise chances to get a Recyclability Certificate with a class A or B, respectively<sup>5</sup>. Also, it is noteworthy that the presence of additional packaging features, like labels, adhesives, inks or barrier material, could additionally 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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<sup>3</sup> [Design for Recycling Guidelines of RecyClass](#)

<sup>4</sup> Technology tested according to the RecyClass [Recyclability Evaluation Protocol for PET bottles](#)

<sup>5</sup> [RecyClass Recyclability Certification](#)

## Annex I



*Figure 1. 'PET/PEF multilayer bottle using Releaf® RP90N' technology by Avantium*