Brussels, June 2025

Interim endorsement extension, expiring June 30th, 2027

INTERIM ENDORSMENT

The Technical Committee of the European PET Bottle Platform (EPBP) was requested by Avantium (former Synvina) to conduct an evaluation of the effect of poly(ethylene 2,5-furandicarboxylate), or PEF, on the PET recycling stream. PEF is a polyester resin chemically similar to PET but comprising furandicarboxylic acid (FDCA) instead of terephthalic acid (PTA) in the polyester backbone. Due to its possible use as an alternative material for bottles, PEF requires a thorough assessment of the impact on PET recycling activities.

The assessment refers to the use of **PEF for the production of bottles and similar articles**.

PET and PEF bottles are not intended to be sorted and recycled together in a single stream, as the presence of PEF might negatively affect the properties of recycled PET.

PEF has a higher density than PET and cannot be separated from PET by a traditional washing or sink-float step. Furthermore, mechanical recycling plants that produce recycled PET suitable for food contact applications must comply with strict requirements on the composition of the feedstock to their plants. For these reasons, **the EPBP requests that PEF manufacturers promote sorting of PEF bottles coming from separate collections into a dedicated PEF stream,** to be recycled separately from the PET bottles stream.

Separation of the two streams at the sorting stage should be achievable provided automatic sorting equipment is used, as PEF bottles are indistinguishable from PET bottles during manual sorting operations. Data supplied by near-infrared (NIR) sorting equipment manufacturers demonstrates that PEF has a different NIR profile compared to PET, and can be distinguished and sorted by commercial NIR sorting equipment. However, sorting efficiencies could be affected by the design aspects of PEF based articles, which should be taken into consideration.

For cases of inefficient sorting, the contamination of the recycled PET stream by PEF was evaluated prior to 2017 per EPBP protocols and using an experimental PEF grade. Data from these tests demonstrated no negative impact on haze, colour and other properties of the resulting rPET products to max 2% of PEF. At this stage commercial PEF grade(s) are still under development.

Based on the assessment's outcome but considering the variable performance of European sorting and recycling plants, the novelty of this packaging solution and its potential market penetration, **EPBP has awarded interim and conditional endorsement to Avantium's PEF polyester resin in a test market (up to 5kt/annum) and for an interim period, expiring 30 June 2027**.

This endorsement extension is granted upon the applicant's request as the introduction of the material is delayed and it was not possible to meet the deadline of the original endorsement.

The interim endorsement is awarded under the following conditions:

- A maximum allowed market penetration of 2%
- Any statement that relates PEF compatibility with PET recycling streams must not be used
- PEF-based articles are designed to allow detection and ejection by NIR sorting equipment, to minimize contamination of the PET bottle stream
- Avantium will provide EPBP with additional data on the targeted end-products, PEF commercial grade(s) and sales regions as they become available
- Avantium will continue to cooperate with the EPBP in order to carry out additional tests, to be conclusive to decide if the interim endorsement can become permanent
- Avantium will work to develop a separate sorting and recycling stream for PEF based bottles when larger quantities will come to market
- Detailed testing as per EPBP protocol to be done as soon as the Plant under construction is operational.

An updated technical opinion will be based on additional test data and market information supplied to the EPBP prior to any market introduction of PEF based products.

The EPBP reserves the right to update and change the conditions of this technical opinion at any time, upon prior notice to Avantium Renewable Polymers BV, in accordance to the most recent technologies, assessments and experience.

The European PET Bottle Platform EPBP is an industry initiative that provides PET bottle design guidelines for recycling, evaluates PET bottle packaging solutions and technologies and facilitates understanding of the effects of new PET bottle innovations on recycling processes. The EPBP initiative fully supports the economic and environmental sustainability of the European PET value chain.