

LyondellBasell

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 29 April 2022

Reviewed: Brussels, 19 December 2023

DISCLAIMER

RecyClass recognition applies only to LyondellBasell 'Toppyl PB 8310M' technology reported in Annex I. The recyclability assessment therefore does not refer to the testing of a specific packaging using this film. Any specific packaging using this film 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 films, and that it is sorted in the PP flexible 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 PO films Technical Committee was requested to carry out an assessment of the technology 'Toppyl PB 8310M' by LyondellBasell to verify its impact on the quality of recycled PP flexible packaging.

The technology is a three layers PP film with lowered Sealing Initiation Temperature (SIT) conferred by the addition of Polybutene-1 in the sealing layer. The Polybutene-1 (Toppyl PB 8310M) is incorporated in the external PP layer and represents 7,5% of the total weight of the film. The film has been tested unprinted.

According to the results that were obtained from the laboratory test performed by Aimplas, carried out as per the Recyclability Evaluation Protocol for PP films, the 'Toppyl PB 8310M' technology is considered to be **fully compatible with PP flexibles recycling**.

Based on these results, RecyClass acknowledges that LyondellBasell 'Toppyl PB 8310M' technology will have no negative impact on the current European PP flexibles recycling provided that PP flexible films based on this technology are designed only under the following conditions¹:

- a) The density of the PP film is below 0,97 g/cm³;
- b) The Polybutene-1 (Toppyl PB 8310M) represents 7,5% of the total weight of the film, or less;
- c) Any components or attachments to the packaging should be preferably made of clear PE;

¹ PE films designed under conditions other than those indicated need to be tested to assess their compliance with Recyclclass Recyclability Evaluation Protocol for PE films.

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

RecyClass concludes that LyondellBasell '*Toppyl* PB 8310M' technology as per current market conditions and knowledge, is fully compatible with the existing European industrial recycling processes for PP flexibles. The plastic generated by the recycling process may be used in high quality applications such as PP cast films up to 25%².

In regard to RecyClass Recyclability Certification, the present limited compatibility with PE flexibles recycling approval delivered to '*Toppyl* PB 8310M' technology, means that a package based on PE film containing the '*Toppyl* PB 8310M' technology, as mentioned in the aforementioned conditions, will be penalised with one Recyclability Class downgrade. Nevertheless, the amount of recyclable PE 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 B or C, respectively³. Also, it is noteworthy that the presence of additional packaging features, like inks or adhesives, could additionally impact the certification process.

Note that, in addition to the '*Toppyl* PB 8310M' LyondellBasell developed an equivalent grade '*Toppyl* PB 8220M' dedicated to PP film applications mainly used for blow-film and BOPP technologies. This '*Toppyl* PB 8220M' grade is only different from the '*Toppyl* PB 8310M' by having a lower ethylene (C2) content and a lower Melt Flow Index. Based on the information provided by LyondellBasell, the RecyClass PO films Technical Committee extends the present technology approval to the equivalent grade '*Toppyl* PB 8220M'.

Compounding blends "Ready-to-use solutions" using '*Toppyl* PB 8310M' or '*Toppyl* PB 8220M' grade under the conditions listed above in the present letter are covered as well by the RecyClass approval as fully compatible with the PP flexible recycling stream.

² Technology tested according to the [RecyClass Recyclability Evaluation Protocol for PP films](#)

³ [RecyClass Recyclability Certification](#)

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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Annex I



Figure 1: Example of flex packaging made using Topyl PB 8310M technology by LyondellBasell for sealing initiation temperature (SIT) reduction