

LyondellBasell

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 29 April 2022

DISCLAIMER

RecyClass recognition applies only to LyondellBasell 'Toppyl PB 8310M' technology reported in Annex I. It, therefore, does not refer to a recyclability assessment of 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 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 certifies 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 conditions:

- 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) 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 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%¹.

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.

About RecyClass

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 its traceability in Europe. Activities within RecyClass include the development of Recyclability Evaluation Protocols and scientific testing methods for innovative materials which serve as the base for the Design for Recycling Guidelines and the Recycling Online Tool. RecyClass offers Recyclability Certifications for plastic packaging and Recycled Content Traceability Certification for plastic products.

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¹ Technology tested according to the [RecyClass Recyclability Evaluation Protocol for PP films](#)

Annex I



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