

*Propyplast*

RECYCLASS TECHNOLOGY APPROVAL

*Brussels, 31 August 2023*

## DISCLAIMER

*RecyClass recognition applies only to Propyplast 'LMG CleanLoop®' technology reported in Annex I. The recyclability assessment therefore does not refer to the testing of a specific commercial packaging using this label technology. Any specific packaging using this label technology 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 containers, and that it is sorted in the PP 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 Polypropylene (PP) Technical Committee was requested to carry out an assessment of the technology 'LMG CleanLoop®' by Propyplast to verify its impact on the quality of recycled PP containers.

The technology is an innovative PP Cast Multilayer film for In Mould-Label (IML) aiming to be applied on a PP container. The standout feature of this IML technology is its ability to separate in half during the grinding step, allowing the printed layer of the label to separate from the rest of the label which is moulded to the container. Consequently, the removed printed label flakes are separated from the container flakes by air elutriation, which allows for clean flake recycling. The thickness of the tested IML is 70 µm. The tested IML has been applied on a PP white tub (as reported in Annex I), representing less than 5.5 % of the total weight of the packaging. This sample has been fully printed with a print weight of approximately 5 gsm. The amount of white masterbatch accounts for less than 2 wt%.

According to the results that were obtained from the laboratory tests done by the CRITT Polymères, carried out as per the Recyclability Evaluation Protocol for PP containers, 'LMG CleanLoop®' technology is considered to be fully compatible with PP recycling.

Based on these results, RecyClass acknowledges that Propyplast 'LMG CleanLoop®' technology will have no impact on the current European PP containers recycling and provided that the full packaging is designed under the following conditions<sup>1</sup>:

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<sup>1</sup> PP Rigid designed under conditions other than those indicated need to be tested to assess their compliance with Recyclass Recyclability Evaluation Protocol for PP containers.

- a) The container is preferably made of clear or white PP;
- b) Any additional packaging component is made of PP;
- c) The density of the final packaging is lower than 1 g/cm<sup>3</sup>;
- d) The In Mould-Label represents less than 5.5 % of the total weight of the packaging;
- e) The thickness of the label is 70 µm or less;
- f) The coverage of the label is below 50 % of the packaging surface for a packaging smaller than 500 mL, and below 70 % of the packaging surface for a packaging bigger than 500 mL for natural or white PP packaging;
- g) The coating weight of the printing (inks + lacquers) is 5 gsm or less;
- h) The printed label must not hinder the recognition of the underlying PP natural or white container according to RecyClass Design-for-Recycling Guidelines;
- i) The printed label must not prevent the underlying natural or white PP container to get sorted in the clear or white PP recycling stream;
- j) The non-separable layer of the IML must be transparent for clear and white containers, or white for white containers.
- k) Any additional component or features (e.g., inks, adhesives, etc.) of the packaging must be compliant with the corresponding RecyClass Design for Recycling Guidelines.

RecyClass concludes that Propyplast ‘LMG CleanLoop®’ technology as per current market conditions and knowledge, is fully compatible with the existing European industrial recycling processes for PP containers. Indeed, the recycled plastic generated after the recycling process was successfully tested in injection moulding applications up to a concentration of 100 % innovation<sup>2</sup>.

In regard to RecyClass Recyclability Certification, the present full compatibility with PP containers recycling approval delivered to Propyplast ‘LMG CleanLoop®’ technology, means that a packaging containing the Propyplast ‘LMG CleanLoop®’ as mentioned in the aforementioned conditions will not be penalised with any Recyclability Class deduction. Nevertheless, the amount of recyclable PP 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 A or B, respectively<sup>3</sup>. Also, it is noteworthy that the presence of additional packaging features, like inks or barrier material, could impact the certification process.

<sup>2</sup> [Recyclability Evaluation Protocol for PP containers](#)

<sup>3</sup> [RecyClass Recyclability Certification](#)

It should be noteworthy that the full coverage of the IML will hamper the chance for a natural or white PP packaging to be sorted in the clear or white PP stream. Therefore, the RecyClass PP Technical Committee recommends minimizing the size of the label and the packaging surface coverage, as well as to use unprinted clear or white PP closure systems. Besides, it is also recommended to lower as much as possible the thickness of the IML to ensure an optimized separation by air elutriation and avoid high losses of material.

#### *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. Tested packaging decorated with a LMG CleanLoop® by Propyplast.