

Lumson S.p.A

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 9 September 2024

DISCLAIMER

RecyClass recognition applies only to Lumson S.p.A 'FREE PUMP' technology reported in Annex I. The recyclability assessment therefore does not refer to the testing of a specific packaging using this technology. Any specific packaging using this 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 PP Technical Committee (TC) was requested to carry out an assessment of the technology 'FREE PUMP' by Lumson S.p.A to verify its impact on the quality of recycled PP containers.

The technology is a natural PP-based dispensing pump applied on a natural PP container, with a PP cap. The pump system contains PE-based components that account for less than 2 wt% of the total weight of the pump. The pump system has a plastic spring, made from a polyetherimide (PEI) grade, which represents less than 3.9 % of the pump weight. When coupling it on a PP container, the amount of PE-based component is about 1 wt% and the amount of PEI is around 2.3 wt% compared to the total weight of the packaging.

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

Based on these results, RecyClass acknowledges that Lumson S.p.A 'FREE PUMP' technology will have no impact on the current European PP containers recycling and provided that the full packaging using this technology is designed under the following conditions¹:

- a) The packaging is made of natural PP;
- b) The spring is made from PEI and represents less than 3.9 % of the total weight of the pump;
- c) The density of the spring is equal or higher than 1.27 g/cm³;

¹ 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.

- d) The amount of PE in the packaging is less than 1 wt% compared to the total weight of the packaging;
- e) Any additional component or features (e.g. inks) of the packaging must be compliant with the corresponding RecyClass Design for Recycling Guidelines².

RecyClass concludes that Lumson S.p.A 'FREE PUMP' 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 high-value application such as PP bottles up to 50 % concentration³.

In regard to RecyClass Recyclability Certification, the present full compatibility with PP containers recycling approval delivered to Lumson S.p.A 'FREE PUMP' technology, means that a packaging containing this technology as mentioned in the aforementioned conditions will not be penalised with any recyclability class downgrade. However, 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, respectively⁴. Also, it is noteworthy that the presence of additional packaging features, like label, adhesive or inks could 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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² [Design for Recycling Guidelines - RecyClass](#)

³ [Recyclability Evaluation Protocol for PP containers](#)

⁴ [RecyClass Recyclability Certification](#)

Annex I



Figure 1. 'FREE PUMP' by Lumson S.p.A.