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Mitsui Chemicals

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 22 July 2025

DISCLAIMER

RecyClass recognition applies only to Mitsui Chemicals 'TPX™ RT31' technology reported in Annex I. The recyclability assessment therefore does not refer to the testing of a specific packaging using this material. Any specific packaging using this material 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 was requested to carry out an assessment of the technology 'TPX™ RT31' by Mitsui Chemicals to verify its impact on the quality of recycled PP containers.

The technology is a poly(4-methyl-1-pentene) copolymer. A blend of 80 wt% of PP resin and 20 wt% of TPX™ RT31 was tested.

According to the results that were obtained from the laboratory tests done by the Centre Technique Industriel de la Plasturgie et des Composites (IPC), carried out as per the Recyclability Evaluation Protocol for PP containers (version 5.0), 'TPX™ RT31' technology is limited compatible with PP recycling.

Based on these results, RecyClass acknowledges that Mitsui Chemicals 'TPX™ RT31' technology will have a limited impact on the current European PP containers recycling and provided that the full packaging is designed under the following conditions:

a) The container is preferably made of PP;
b) Any additional packaging component is made of PP;
c) The density of the final packaging is lower than 1 g/cm^3;
d) 'TPX™ RT31' represents 20 wt% of the total weight of the packaging, or less;
e) Any additional component or features (e.g., inks, adhesives, etc.) of the packaging must be compliant with the corresponding RecyClass Design for Recycling Guidelines[1].

[1] Design for Recycling Guidelines - RecyClass

RecyClass concludes that Mitsui Chemicals 'TPX™ RT31' technology as per current market conditions and knowledge, is limited 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 50 % innovation[2].

In regard to RecyClass Recyclability Certification, the present limited compatibility with PP containers recycling delivered to Mitsui Chemicals, 'TPX™ RT31' technology, means that a packaging containing this technology, as mentioned in the aforementioned conditions will be penalised with one 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 80 % in the final packaging to maximise chances to get a Recyclability Certificate with a Class B or C, respectively[3]. Also, it is noteworthy that the presence of additional packaging features, like label, adhesive, or barrier material, 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] Recyclability Evaluation Protocol for PP containers

[3] RecyClass Recyclability Certification

Annex I

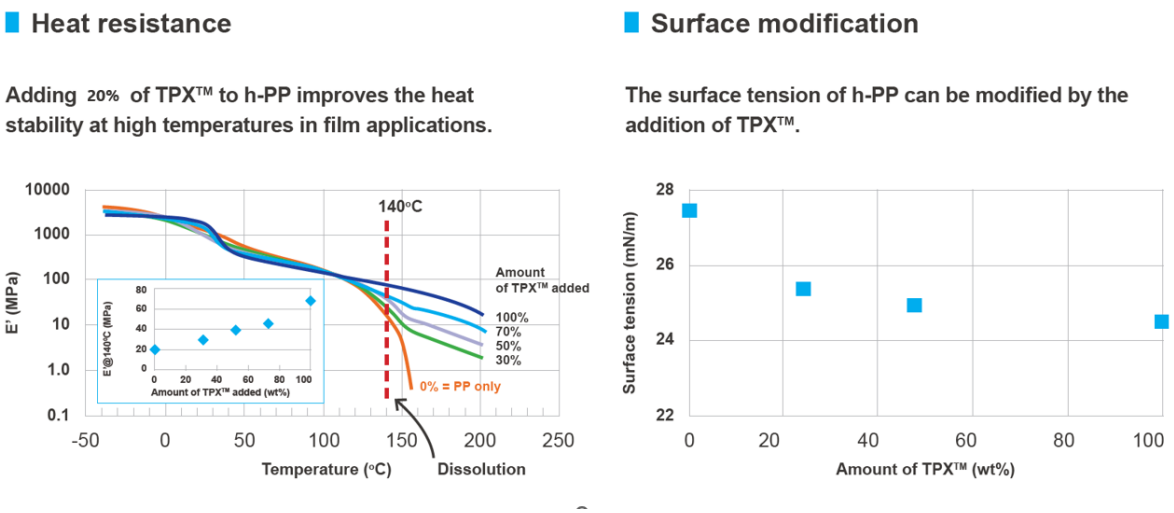

Figure 1. 'TPX™ RT31' *technology by Mitsui Chemicals.*