RecyClass

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Mitsubishi Chemical Europe GmbH

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 15 September 2025

DISCLAIMER

RecyClass recognition applies only to Mitsubishi Chemical Europe GmbH 'PE based barrier film with Soarnol™ EVOH, PE-g-MAH and Soaresin™ RG500' technology reported in Annex I. The recyclability assessment therefore does not refer to the testing of a specific packaging using this barrier layer. Any specific packaging using this barrier coating 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 PE films, and that it is sorted in the PE 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 'PE based barrier film with Soarnol™ EVOH, PE-g-MAH and Soaresin™ RG500' by Mitsubishi Chemical Europe GmbH to verify its impact on the quality of recycled PE flexible packaging.

The technology is an LLDPE-based film containing EVOH as inner layer, PE-g-MAH tie layers and recycling agent. The EVOH represents 10 wt% of the total weight of the film, with a EVOH:tie-layer ratio corresponding to 3.4. The recycling agent 'Soaresin™ RG500' (not MAH-grafted PO) represents 3 wt% 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 PE films (version 5.0), the 'PE based barrier film with Soarnol™ EVOH, PE-g-MAH and Soaresin™ RG500' technology is fully compatible with PE flexibles recycling.

Based on these results, RecyClass acknowledges that Mitsubishi Chemical Europe GmbH 'PE based barrier film with Soarnol™ EVOH, PE-g-MAH and Soaresin™ RG500' technology will have no impact on the current European PE flexibles recycling provided that PE flexible films using this technology are designed only under the following conditions[1]:

a) The density of the PE film is below 0.97 g/cm^3:

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

b) The EVOH represents 10 wt% of the total weight of the film, or less;

c) The EVOH is compatibilized with PE-based tie layer grafted with maleic anhydride, with a EVOH:tie-layer ratio of 3.4, or more;

d) The recycling agent 'Soaresin™ RG500' represents 3 wt% of the total weight of the films, or less;

e) Any components or attachments to the packaging should be preferably made of clear PE;

f) Any additional component or features (inks, adhesives, …) of the packaging must be compliant with the corresponding RecyClass Design for Recycling Guidelines[2].

RecyClass concludes that Mitsubishi Chemical Europe GmbH 'PE based barrier film with Soarnol™ EVOH, PE-g-MAH and Soaresin™ RG500' technology as per current market conditions and knowledge, is fully compatible with the existing European industrial recycling processes for PE flexibles. The plastic generated by the recycling process may be used in high quality applications such as PE blown films up to 25 % concentration[3].

In regard to RecyClass Recyclability Certification, the present full compatibility with PE flexibles recycling delivered to 'PE based barrier film with Soarnol™ EVOH, PE-g-MAH and Soaresin™ RG500' technology, means that a packaging containing this technology, as mentioned in the aforementioned conditions, will not be penalised with any 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 80 % in the final packaging to maximise chances to get a Recyclability Certificate with a Class A or B, respectively[4]. Also, it is noteworthy that the presence of additional packaging features, like inks or adhesives, could additionally 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] Technology tested according to the RecyClass Recyclability Evaluation Protocol for PE films

[4] RecyClass Recyclability Certification

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Annex I

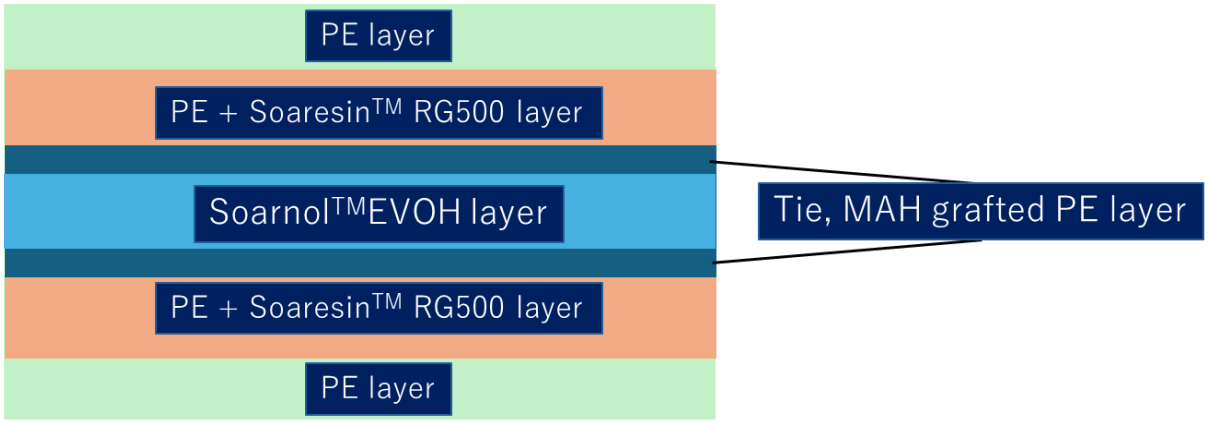

Figure 1. 'PE based barrier film with Soarnol™ EVOH, PE-g-MAH and Soaresin™ RG500' *technology by* Mitsubishi Chemical Europe GmbH.