RecyClass™

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For immediate release

PRESS RELEASE

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Novel findings for functional barriers in HDPE containers

Compatibility of the ethylene vinyl alcohol (EVOH) barrier in high-density polyethylene (HDPE) containers with the recycling process was tested by an independent laboratory. A compatibilizer layer was originally put into the structure, in order to test how an embedded solution could improve the recyclability of a structure usually considered difficult to recycle.

The test was performed on natural, five layers HDPE containers consisting of 6% of EVOH and 3% of PE-g-MAH [1] tie layers (by weight) and carried out as per the *Recyclability Evaluation Protocol for HDPE containers*. Apart from pretreatment, tests include extrusion at 220 °C and use of pellets in the production of new HDPE containers with a recycled content up to 25%.

These novel findings show that when EVOH is sandwiched in the packaging structure with PE-g-MAH[1] tie layers the recyclability is improved. The results of laboratory tests show that the chemistry of these tie layers can enhance the compatibilization of EVOH and HDPE during the extrusion by avoiding typical yellowing effect as well as an increase of gels and specks in the pellets. However, this corresponds specifically to the PE-g-MAH[1] tie layers and not to any other arbitrary tie layers. In case another type is used, the laboratory tests will have to be repeated.

Consequently, these findings will be used to update and enhance the RecyClass *Design for Recycling Guidelines for PE-HD Natural and Colored Containers* which are one of the pillars serving as a database for the recyclability evaluation within the RecyClass Tool.

The 6% concentration of EVOH and 3% of the PE-g-MAH[1] tie layers (where MAH is > 0.1%), is therefore reported in the design for recycling guidelines as compatible with the HDPE recycling stream as no detrimental effects were reported in the testing conditions[2].

It must be noted however, that EVOH concentration above 1% with any other types of tie layers is reported as having no compatibility as further testing will be required.

RecyClass welcomes the industry to submit additional products with other barrier combinations for evaluation in order to improve the best available information on plastics packaging recyclability. Analysis of the impact of the EVOH on the recyclability of a package is indispensable to advance design for recycling of plastic packaging.

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[1] *PE-g-MAH (polyethylene-grafted maleic anhydride)*

2 The Recyclability Protocol for HDPE containers is available at: https://recyclass.eu/recyclability-evaluation-protocols/

With these findings, RecyClass is providing a direction to the industry to work towards and implement solutions that are improving HDPE containers recyclability and respectively recycling rates in this stream.

About

RecyClass is a comprehensive cross industry initiative that works to advance plastic packaging recyclability within Europe. RecyClass assesses recyclability and provides specific recommendations on how to improve packaging design to fit current recycling technologies. Activities within RecyClass include the development of Recyclability Evaluation Protocols and testing of innovation materials. Findings are used to update the RecyClass Design for Recycling guidelines and the online free tool.

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