RecyClass

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IPACKCHEM

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 18 October 2022

DISCLAIMER

RecyClass recognition applies only to IPACKCHEM 'Advanced In-Mould Fluorination' technology reported in Annex I. The recyclability assessment therefore does not refer to the testing of a specific packaging using this barrier technology. Any specific packaging using this barrier 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 HDPE containers, and that it is sorted in the HDPE 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 HDPE Technical Committee was requested to carry out an assessment of the technology 'Advanced In-Mould Fluorination' by IPACKCHEM to verify its impact on the quality of recycled HDPE containers.

The technology consists in the deposit of a fluorine-based coating on the inner surface of a HDPE container by means of 'Advanced In-Mould Fluorination'. The thickness of the deposited layer is in the range of 100-200 nm. The HDPE container contains a white masterbatch, representing up to 3% of its weight and was provided without a cap. The ratio between the treated surface and the volume of the container is about 0.82 cm^{-1}.

According to the results that were obtained from the laboratory test by the Centre Technique Industriel de la Plasturgie et des Composites (IPC) carried out as per the RecyClass Recyclability Evaluation Protocol for HDPE containers[1], the 'Advanced In-Mould Fluorination' technology is considered to be fully compatible with HDPE recycling.

Based on these results, RecyClass acknowledges that IPACKCHEM 'Advanced In-Mould Fluorination' will have no negative impact on the current European HDPE containers recycling and provided that the packaging is designed under the following conditions:

a) The container is made of PE, with a prevalence of HDPE.
b) The thickness of the Advanced In-Mould Fluorination treatment is 200 nm or less;

[1] RecyClass Recyclability Evaluation Protocol for HDPE containers

c) The density of the packaging is lower than 1 g/cm^3;

d) Applied printing technology is compatible with recycling; since several printing options are possible, it is the responsibility of the end-user to choose an appropriate combination of inks and printing process to ensure that:

   i. the inks are non-bleeding;

   ii. the inks comply with the European Legislation (e.g. Packaging and Packaging Waste Directive on the heavy metal concentration levels) and are EUPIA compliant;

   iii. printing is limited as much as possible, using preferably light colours.

RecyClass concludes that IPACKCHEM 'Advanced In-Mould Fluorination' as per current market conditions and knowledge, is fully compatible with the existing European industrial recycling processes for HDPE containers. Indeed, the recycled plastic generated after the recycling process was successfully tested in high-value application such as HDPE bottles up to 50% concentration.

In regard to RecyClass Recyclability Certification, the present full compatibility with HDPE containers recycling approval delivered to IPACKCHEM 'Advanced In-Mould Fluorination' technology, means that a packaging containing the IPACKCHEM 'Advanced In-Mould Fluorination' as mentioned in the aforementioned conditions will not be penalised with a Recyclability Class downgrade. Nevertheless, the amount of recyclable PE in the packaging will impact the final Recyclability Class obtained during Recyclability Certification[2]. Also, it should be noteworthy that the presence of additional packaging features could impact the certification process.

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[2] RecyClass Recyclability Certification

Annex I

Figure 1. 'Advanced In-Mould Fluorination' deposit on inner surface of HDPE container by IPACKCHEM

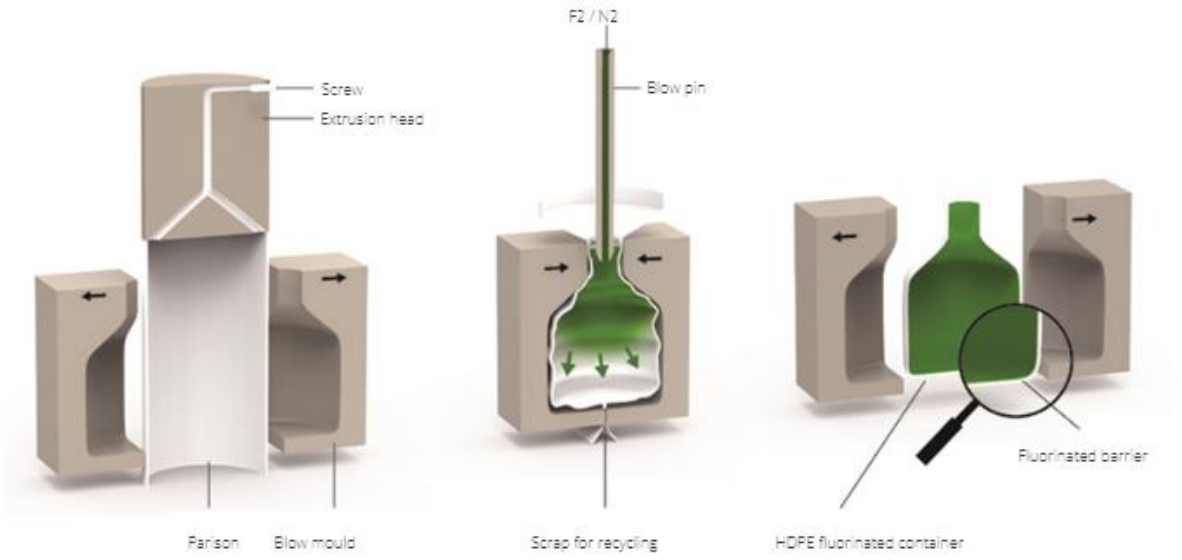

Figure 2. Advanced In-Mould Fluorination process by IPACKCHEM (https://www.ipackchem.com/in-mould-fluorination/)

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