

Kim Pack

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 06 May 2022

DISCLAIMER

RecyClass recognition applies only to Kim Pack 'Kim Pai Go Green Metallized HDPE 380 Laminate Tube' technology reported in Annex I. The recyclability assessment therefore does not refer to the testing of a specific packaging using this tube.

Any specific packaging using this tube 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 'Kim Pai Go Green Metallized HDPE 380 Laminate Tube' by Kim Pack to verify its impact on the quality of recycled HDPE containers.

The technology is a laminated tube, provided with HDPE shoulders but without cap. The tube is metallized and direct printed (ink + varnish) on the total surface of the tube (i.e. 1% of the total weight). The EVOH barrier concentration is about 3.0% of the tube body, while the laminating adhesive represents about 1% of the total weight of the packaging.

According to the results that were obtained from the laboratory test by Plastics Forming Enterprises (PFE), carried out as per the APR HDPE-A-01 Application Guidance¹, the 'Kim Pai Go Green Metallized HDPE 380 Laminate Tube' technology is considered to be **fully compatible with coloured HDPE recycling**. Additionally, the sortability of the packaging has been successfully tested by CIRCPACK following the RecyClass Sorting Protocol².

Based on these results, RecyClass certifies that Kim Pack 'Kim Pai Go Green Metallized HDPE 380 Laminate Tube' 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 tube and its shoulders are made of clear or white HDPE;

¹ [APR HDPE-A-01 Application Guidance](#)

² [Sorting Evaluation Protocol for Plastic Packaging](#)

- b) The maximum EVOH concentration is below 3.0% respect to the tube total weight;
- c) EVOH is compatibilized with LDPE tie layers grafted with maleic anhydride, with an EVOH: tie layer ratio lower than 1.5:1;
- d) The density of the finished tube is lower than 1 g/cm³;
- e) The laminating adhesive is polyurethane-based and solvent based, and represents less than 1% of the total weight of the tube;
- f) The metallized layer has an optical density of 2.35, or less, representing 0.02wt% or less of the total tube weight;
- g) Ink and varnish combined represent less than 1% by weight of the total tube weight;
- h) No additional printing technology are applied, and in any case, 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. direct printing is limited as much as possible (see Annex I);

RecyClass concludes that Kim Pack 'Kim Pai Go Green Metallized HDPE 380 Laminate Tube' as per current market conditions and knowledge, is fully compatible with the existing European industrial recycling processes for coloured HDPE containers. Indeed, the recycled plastic generated after the recycling process was successfully tested in high-value application such as HDPE bottles up to 25% concentration³.

Similar executions of 'Kim Pai Go Green Metallized HDPE 380 Laminate Tube' technology with the only modification of artworks would not have to be tested again as long as the direct printing decoration amount and the components proportion remain the same.

It should be noteworthy that the use of PE cap remains the favoured option in the case of HDPE tubes, in order not to reduce the quality of recycled plastic generated by the tube.

About

RecyClass is a comprehensive cross-industry initiative that works to advance plastic packaging recyclability and to establish a harmonized approach towards recycled content calculation and traceability in Europe. Activities within RecyClass include the development of Recyclability Evaluation Protocols and scientific testing of innovative materials which serve as the base for the Design for Recycling guidelines and the free online tool. RecyClass offers Recyclability Certifications and Recycled Content Traceability Certification for plastic packaging.

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³ [APR HDPE-A-01 Application Guidance](#)

Annex I



Figure 1 Kim Pai Go Green Metallized HDPE 380 Laminate Tube without cap by Kim Pack