RecyClass Unwrapped

Global harmonisation for a circular plastic future

7th September 2022

RecyClass

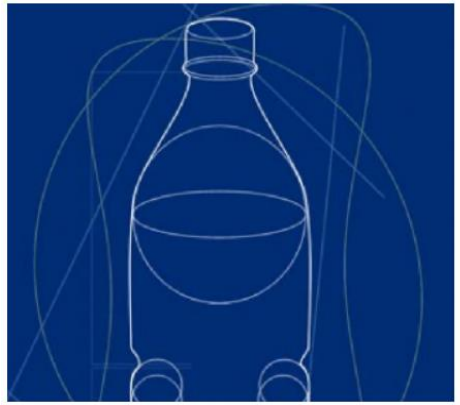
The Association of Plastic Recyclers

The Association of Plastic Recyclers:

The only North American organization focused exclusively on plastics recycling.

The Association of Plastic Recyclers

APR PROGRAMS



APR Design® Guide for Plastics Recyclability

APR Design® Guide Training Program

APR Recycling Demand Champions

Beyond Bottles

Grocery Rigid Plastics

APR PCR Certification

APR Membership

APR Design® Recognition

Webinar Series

Podcast Series

RecyClass Unwrapped: Global harmonisation for a circular plastic future

Mission & Vision

Making plastic circular by ensuring all products are **recyclable** and by promoting **transparent uptake of recycled content** in new products in line with the circular economy.

Enabling **optimization of the plastic recycling value chain** through design for recyclability, policy and communications for the purpose of promoting and encouraging a circular plastics economy.

RecyClass

The Association of Plastic Recyclers

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THE IMPORTANCE OF HARMONISED & SCIENTIFIC-BASED INFORMATION

- ✓ Strengthens and gives **credibility** to the message;
- ✓ Provides for **effective communication** with stakeholders;
- ✓ Provides **clear direction** for design for recyclability policies within brands.

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Global recyclability definition

The product must be **made with plastic that is collected** for recycling, has market value and/or is supported by a legislatively mandated program.

The product must be **sorted & aggregated into defined streams** for recycling processes.

The product **can be processed & reclaimed/recycled** with commercial recycling processes.

The recycled plastic becomes a raw material that **is used in the production of new products.**

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Common members and global market

BRANDS & RETAILERS

CONVERTERS

RAW MATERIAL PRODUCERS

SUPPORTERS

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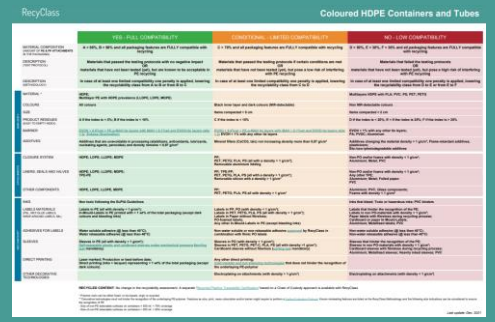
How the systems work?

TESTING PROTOCOLS

= ?

- **Lab testing** of innovative plastic packaging vs control material
- Comparison of properties
- **Technology/Product Approval**

DESIGN FOR RECYCLING GUIDELINES



- Design guide & recommendations for plastic packaging
- Design for Recycling (DfR) Guidelines transposed in the tool
- Assessing **overall recyclability** of a finished package

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Recognized testing facilities

United States of America
PE & PP Rigids and Flexibles
PFE

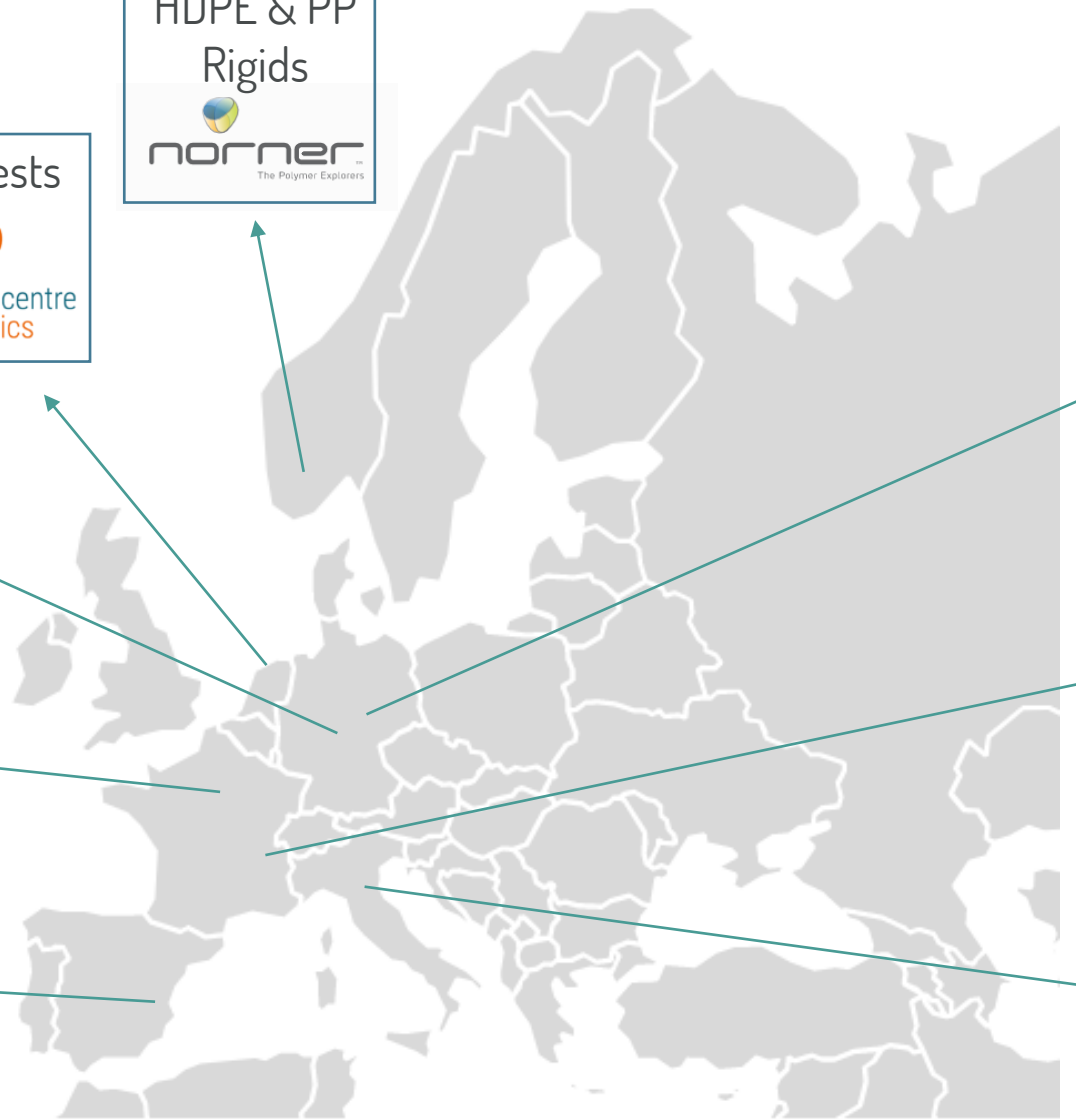
HDPE & PP Rigids
norner
The Polymer Explorers

Sorting tests
NTCP
national test centre circular plastics

Sorting tests
CIRCPACK
by VEOLIA

HDPE & PP Rigids
Critt
POLYMÈRES

PE & PP Flexibles
AIMPLAS
PLASTICS TECHNOLOGY CENTRE



HDPE & PP Rigids
IKTR

HDPE & PP Rigids and Flexibles
IPC

PP Rigids & PE Flexibles
proplast

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Mutual recognition

RecyClass™

c/o Plastics Recyclers Europe
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1150 Brussels, Brussels

Phone: +32 2 315 24 60
info@recyclass.eu
www.recyclass.eu

Albéa

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 19th August 2020

The RecyClass HDPE Technical Committee was requested to carry out an assessment of the tube 'Greenleaf™ 2nd Generation' by Albéa to verify its impact on the quality of recycled HDPE containers.

The tube is a white coloured with green printing on the surface multi-layer tube excluding cap. The EVOH barrier concentration is 6% of the total weight of the packaging, with more than 3% PE tie layers grafte with at least 0,1 % maleic anhydride.

According to the results that were obtained from the laboratory tests done by Plastics Forming Enterprise and carried out as per the APR HDPE Critical and Application Guidance testing protocols, Albéa tube technology is compatible with coloured HDPE recycling.

Based on these results, RecyClass certifies that Albéa 'Greenleaf™ 2nd Generation' tube technology will not have a negative impact on the current European HDPE containers recycling if the concentration of this tube in the feedstock of HDPE waste packaging attaining the gate of a European recycler is not exceeding 5%, and provided the full packaging using this tube as the body is designed under the following conditions:

Association of Plastic Recyclers
1001 G Street, NW Suite 500
Washington DC 20001

www.plasticsrecycling.org

December 6, 2019

Mr. Gilles Swyngedauw
ZAC des Barbanniers, "Le Signac"
1 avenue du Général De Gaulle, 92230 Gennevilliers, France

Dear Mr. Swyngedauw:

APR, the Association of Plastic Recyclers, is pleased to recognize Albea S.A.'s Greenleaf Generation 2 tube consisting of a pigmented and decorated low melt flow medium density/high density polyethylene-based tube with less than 6% ethylene vinyl alcohol barrier layer and tie layer and low-melt flow index HDPE shoulder as meeting or exceeding the most strict APR HDPE Critical Guidance criteria and the APR HDPE Bottle-to-Bottle protocol. This APR recognition is based on the technical recyclability of the packaging tube innovation with HDPE bottles.

A Review Committee, appointed per the APR Recognition Operating Procedures, reviewed your October 21, 2019 data submission and concluded the data were correctly obtained by a qualified laboratory and were completely presented to show the tubes submitted meet or exceed the most challenging test conditions and strictest APR Critical Guidance criteria. APR thanks Albea for additional testing to further demonstrate the compatibility of the Greenleaf Generation 2 tube with HDPE bottle recycling processing. APR also thanks Albea for its work to replace the closure with a proper HDPE unit.

This APR Recognition applies to the tube on which data were submitted excluding any closure. The HDPE Critical Guidance and Bottle-to-Bottle documents that were used to evaluate the Greenleaf Generation 2 tube are the product of a multi-industry consensus process to identify and address certain key technical considerations related to the recycling of postconsumer HDPE bottles. The Documents direct innovators to conduct specific testing per established testing procedures and then provide the innovator with guidance to interpret the results. The protocols are intended to help improve the quality of the recycled bottle stream by aiding innovators to make informed decisions about the consequences of packaging innovations. APR thanks Albea S.A. for voluntarily submitting this packaging tube for Recognition. The impact of these protocols is beneficial to world-wide recycling efforts. Meeting the Critical Guidance Document and Bottle-to-Bottle guidelines are truly significant steps in demonstrating overall recyclability of your tube and decoration.

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Mutual recognition

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www.recyclass.eu

RECYCLASS TECHNOLOGY APPROVAL

Brussels,27th April 2020

Enkase™ Fluorinated HDPE bottles: new technology approval by RecyClass

The RecyClass HDPE Technical Committee was requested to carry out an assessment of the Enkase™ fluorination barrier technology by Inhance Technologies to verify its impact on the quality of recycled HDPE containers. Enkase™ barrier technology is used to prevent numerous ingredients found in product formulations from permeating through the container walls, thereby maintaining product efficacy and increasing its shelf life.

According to the results that were obtained from the laboratory tests by Plastics Forming Enterprise, carried out as per the APR HDPE Critical Guidance Document testing protocols and the Bottle-to-Bottle Protocol, Inhance Technologies' Enkase™ barrier technology is compatible with recycling.

RecyClass certifies that Inhance Technologies' Enkase™ barrier technology will not have a negative impact on the current European HDPE containers recycling provided that containers are designed under the following conditions:

RecyClass

Association of Plastic Recyclers
1001 G Street, NW Suite 500
Washington DC 20001

www.plasticsrecycling.org

March 2, 2020

Dr. Prakash Iyer
Inhance Technologies, LLC.
22008 North Berwick Drive
Houston, TX 77095

Dear Dr. Iyer:

APR, the Association of Plastic Recyclers, is pleased to recognize Inhance Technologies LLC's Enkase™ fluorination coating on HDPE bottles as meeting or exceeding APR's HDPE Critical Guidance Protocol, HDPE CG-01, and APR's HDPE Bottle Applications Guidance, HDPE A-01, Bottle-to-Bottle Protocol requirements and hereby so states. This letter reflects changes in the fluorination coating brand name and company address, but is otherwise identical to our June 21, 2019 letter.

A Review Committee, appointed per the APR Recognition Operating Procedures, reviewed your March 27, 2019 data submission and concluded the data were correctly obtained by a qualified laboratory and were completely presented to show the coating meets or exceeds all critical guidance.

The HDPE Critical Guidance Document and Bottle-to-Bottle Protocol are the products of multi-industry consensus of key issues related to the recycling of postconsumer HDPE bottles. The documents direct innovators to conduct specific testing per established testing procedures and then provide the innovator with guidance to interpret the results. The APR recognition is based on the innovation meeting or exceeding the most challenging test conditions and strictest guidance criteria.

The Association of Plastic Recyclers

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Mutual recognition

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Kraton Polymers LLC

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 10 March 2022

DISCLAIMER

RecyClass recognition applies only to Kraton Polymers 'CirKular+ C3000' resin reported in Annex I. It, therefore, does not concern to a recyclability assessment of specific packaging using this resin.
Any specific packaging using this resin 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 resin 'CirKular+ C3000' by Kraton Polymers to verify its impact on the quality of recycled HDPE containers.

The resin is a Styrenic Block Copolymer (SBC) resin based on polystyrene and polybutadiene usually used as a compatibilizer or impact modifier. Pellets containing 5wt% of the CirKular+ C3000 resin blended in an injection moulding HDPE grade matrix were tested.

According to the results that were obtained from the laboratory tests done by Plastic Technologies, Inc. (PTI) and Plastics Forming Enterprise (PFE), carried out as per the APR Critical Guidance for HDPE Rigid Containers and converting step of the RecyClass Recyclability Evaluation Protocol for HDPE containers respectively,the RecyClass HDPE Technical Committee assessed the 'CirKular+ C3000' resin to be **fully compatible with HDPE recycling.**

Association of Plastic Recyclers
1776 K Street, NW
Washington DC 20006

www.plasticsrecycling.org

June 22, 2021

Dr. Kathryn Wright
Specialty Polymers Global Technical Director
Kraton Polymers LLC
15710 John F. Kennedy Blvd. Suite 300
Houston, TX 77032-2348

Dear Dr. Wright:

APR, the Association of Plastic Recyclers, is pleased to recognize Kraton Corporation's CirKular+™ C2000 and CirKular+™ C3000 performance enhancing additives for HDPE bottles at up to and including 5% loading as meeting or exceeding APR's HDPE-CG-01, *Critical Guidance Protocol for HDPE Colored or Natural Bottles with Resin Additives, Barriers, Layers or Closures,* most strict requirements and hereby so states. This APR recognition is based on the technical recyclability of the performance enhancing innovation resins with HDPE bottles.

A Review Committee, appointed per the APR Recognition Operating Procedures, reviewed your April 14, 2021 data submission and concluded the data were correctly obtained by a qualified laboratory and were completely presented to show the label substrate submitted meets or exceeds all critical guidance.

The *Critical Guidance Protocol for HDPE Colored or Natural Bottles with Resin Additives, Barriers, Layers or Closures* is the product of multi-industry consensus of key issues related to the recycling of postconsumer HDPE bottles. The Protocol directs innovators to conduct specific testing per established testing procedures and then provides the innovator with guidance to interpret the results. The APR recognition is based on the innovation meeting or exceeding the most challenging test conditions and strictest guidance criteria.

RecyClass Unwrapped: Global harmonisation for a circular plastic future
Joint Technical Workplan 2022/2023

APR x RECYCLASS WORKPLAN 2022

PACKAGING TYPE	TOPIC	OUTCOMES	ACTIONS	TIMELINE
All	Recyclability evaluation protocols	Better alignment of the results & mutual acceptance of APR / RecyClass lab reports	-Compare protocols & underling gaps -Make tests if necessary -Close gaps and release closer versions	Q3 / Q4
All	Sorting protocol	Better alignment of the procedure	-Compare protocol & underling gaps -Make tests if necessary -Close gaps and release closer versions	Q3 / Q4
PE & PP flexibles	Metallization	Common update of DfR guidelines	-RecyClass and APR to share results and discuss guidelines' recommendations	Q1
PE & PP flexibles	EVA	Common update of DfR guidelines	-APR to share results with RecyClass -RecyClass to review APR results & complete with additional tests	Q2
PE & PP flexibles	COC	Common update of DfR guidelines	-RecyClass to evaluate results & recognition delivered by APR	Q1 / Q2
PE & PP flexibles	Printing inks	Common update of DfR guidelines	-RecyClass to share results with APR and discuss guidelines' recommendations	Q2
HDPE rigids	EVOH	Alignment on EVOH and tie layers	-APR to ask RecyClass for the relevant tests and check if enough to align guidelines	Q2
HDPE rigids	PP content	Better understanding and DfR recommendations on PP contents in HDPE packaging	-Mapping of all tests already performed by APR and RecyClass -Make additional tests if necessary -RecyClass and APR to share results and discuss guidelines' recommendations	Q2 / Q3
HDPE rigids	RFID	Evaluate new RFID technologies and their compatibility with recycling	-APR to evaluate new technologies with specific companies. RecyClass to support	Q2 / Q3
All	Single vs twin screw extruder	Confirm type of extruder for recyclability protocols	-APR & RecyClass to share results / studies	Q2

RecyClass APR

Global Guidelines Harmonization

On the way to make plastic circular globally

Colgate®

September 7, 2022

Global Packaging Recyclability Guidelines Harmonization

Why do we need global guidelines harmonization?

- In current world, one source can produce for multiple locations

- Many brands nowadays have a Global Footprint
  Complex to design packaging considering guidelines of a specific country that could have / present issues in another one

- Difficult to stay on top of all the guidelines and changes at global level

Global Packaging Recyclability Guidelines Harmonization

We understand that we might not be able to get to a 100% alignment given that:

- Collection, Sorting and Recycling Infrastructure differs from Region/Country
- Region/Local Organizations take a different approach and in some cases get to different definitions
- Region/Local regulations coming with new guidelines (e.g. EcoLabel)

Source: https://www.millenniumrecycling.com/resources/

Current Status

We know that RecyClass has been in exchange with other organizations:

EPBP

CITEO

Together, let's give
our products a new life.

APR The Association of Plastic Recyclers

As members of Consumer Goods Forum, we have contributed as well to the initiative to define common guidelines across the global industry.

What we should aim for

Even if we cannot harmonize all details, we should aim for acceptance and simplification:

- Standardization of protocols

- Leverage data / outcome of testing conducted in certified laboratories
  - Across regional lab certification
  - A great example is PFE (Plastic Forming Enterprises) certification from PRE/Recyclass

- Consider as valid, in some cases and after review, the testing conducted in another region

Recyclable tube

Colgate developed the technology of the tube that could get recycled with HDPE bottles and certified it following APR protocol
Recyclass reviewed prior testing conducted, *but still we had to conduct additional testing*
Outcome: The tube got recognized in both regions as ready to go into the recycling stream

Association of Plastic Recyclers
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www.plasticsrecycling.org

April 28, 2020

Dr. Jun Wang
Packaging Innovation - Global Design & Packaging
Colgate-Palmolive Company Technology Center
909 River Rd.
Piscataway, NJ 08855

Dear Dr. Wang:

APR, the Association of Plastic Recyclers, is pleased to recognize Colgate-Palmolive Company's tube made from the Samson™ Technology, which consists of pigmented HDPE, 5% or less ethylene vinyl alcohol barrier layer and tie layer, direct printed decoration, and a PET insert, as meeting or exceeding the most strict APR HDPE Critical Guidance criteria. This recognition is similar to that of April 9, 2019 as the tube has very similar components, but is constructed by a different process. This APR recognition is based on the technical recyclability of the packaging tube innovation with HDPE bottles.

Source: https://plasticsrecycling.org/images/Critical-Guidance-Letters/APR-CGR-HDPE-tube-barrier-colgate-2020.pdf

Samson HDPE tube technology with Colgate Total artwork approved by RecyClass

Independent laboratory testing confirmed that the 'Samson Tube with Colgate Total artwork' technology by Colgate can be recycled in the high-density polyethylene containers (HDPE) and back into high-end applications.

The 'Samson Tube with Colgate Total artwork'' technology in question is a tube technology destined mostly for Oral Care products. It is a fully printed HDPE tube containing EVOH-barrier compatibilized with maleic anhydride grafted polyethylene (PE-g-MAH). Decoration of the tube consists of printed blue and red tones, and it represents less than 1% of the total weight of the tested technology[1]. Colgate's barrier-tube technology is provided with HDPE shoulders and a PET insert which was already anaylsed and approved by the RecyClass in 2020[2].

Source:
https://recyclass.eu/news/samson-hdpe-tube-technology-with-colgate-total-artwork-approved-by-recyclass/

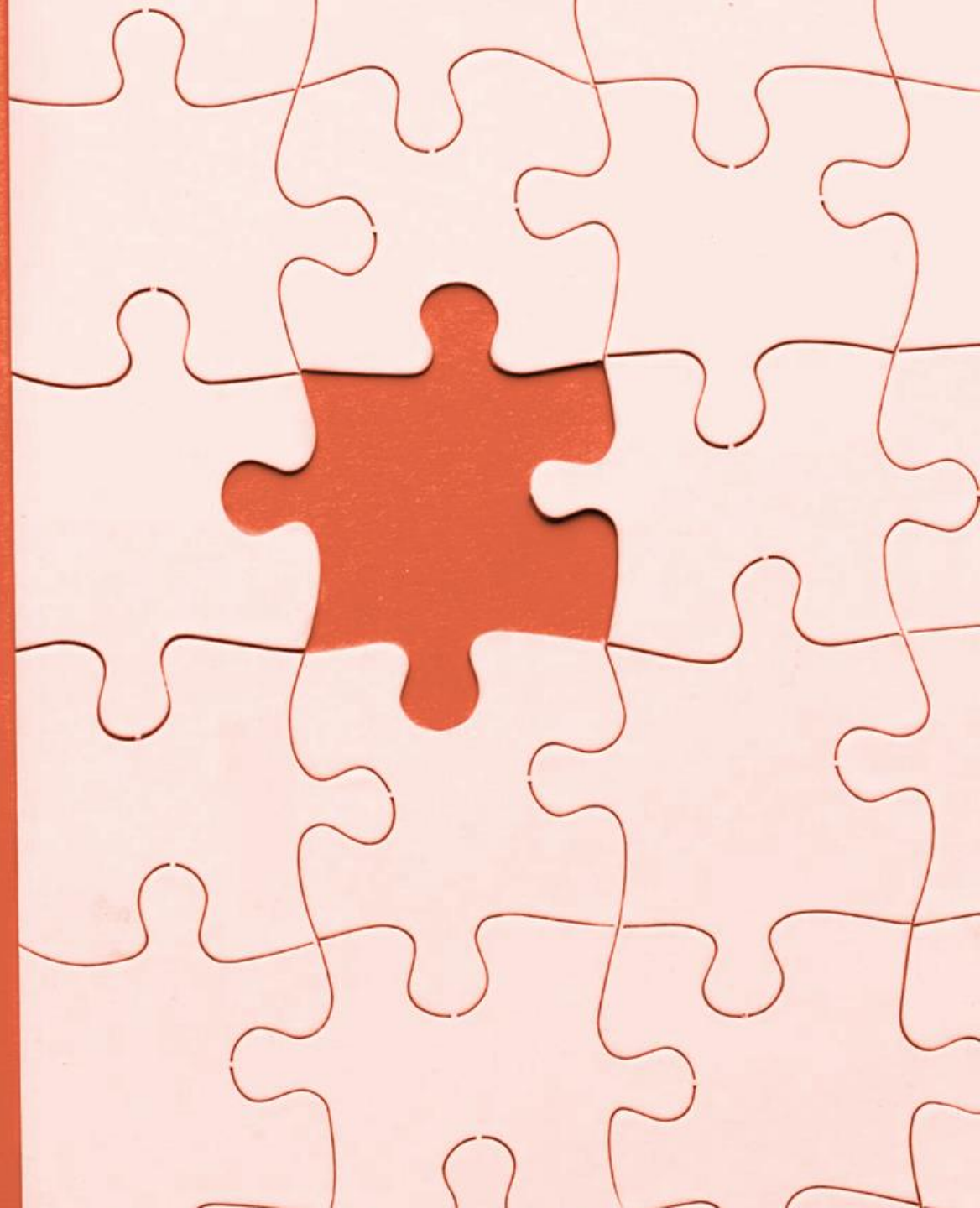
Additional potential areas for harmonization

Small size threshold (Including small size testing/protocol)

Sleeves used for PET bottles with washable inks

Percentage of area coverage of bottles with sleeves and labels (to allow proper sorting)

Industry effort will be needed
We all have to work together



Thank you!

Oscar Xoy
Global Packaging Innovation & Development - Focus on Sustainability
oscar_xoy@colpal.com

RecyClass Unwrapped

Global harmonisation for a circular plastic future

Kamal Mahajan

Sr. Principal Engineer – Beverage Packaging R&D (Sustainability)

PepsiCo

RecyClass

The Association of Plastic Recyclers

Questions & Answers

Use the Q&A box at the top-right corner of your screen

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Thank you for participating!

Save the date for the next webinar:
16 November

RecyClass

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