RecyClass Unwrapped

How to build trust in circular plastic products?

22nd February 2023

RecyClass

Panel Participants

- Nathalie Jude, Director Sustainability Closures Global, **Aptar Closures**
- Detlev Schulz, Senior Mgr. Business Development, IP & Sustainability Global Tube Laminate, **Huhtamaki Flexible Packaging**
- David Dieryckxvisschers, Group Quality Manager, **Resilux Belgium**

RecyClass

Aptar case

SimpliCycle TPEs valve Recyclability

Aptar closures

Aptar Recyclability case – on PET bottle case

PP closure +SSQZ silicone (d>1 sinking)
+ PET bottle

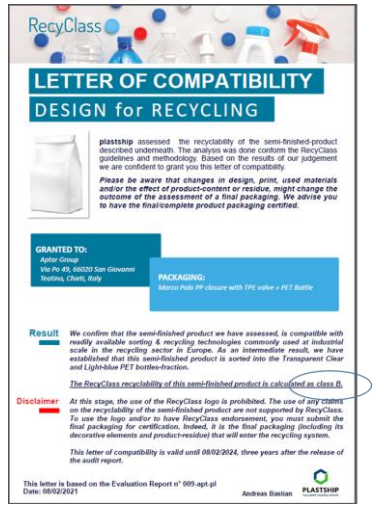
Not Recyclable

RecyClass
On-line tool rating

PP closure + SimpliCycle TPE valve (d<1 floating)
+ PET bottle

Recyclable

According to current DfR Recyclass guidelines the use of TPE-s is leading to -1 class ➔ „B“


RecyClass

LETTER OF COMPATIBILITY

DESIGN for RECYCLING

plastship assessed the recyclability of the semi-finished-product described underneath. The analysis was done conform the RecyClass guidelines and methodology. Based on the results of our judgement we are confident to grant you this letter of compatibility.

Please be aware that changes in design, print, used materials and/or the effect of product-content or residue, might change the outcome of the assessment of a final packaging. We advise you to have the final/complete product packaging certified.

GRANTED TO:
Aptar Group
Via Po 49, 66020 San Giovanni Teatino, Chieti, Italy

PACKAGING:
Marco Polo PP closure with TPE valve + PET Bottle

Result: We confirm that the semi-finished product we have assessed, is compatible with readily available sorting & recycling technologies commonly used at industrial scale in the recycling sector in Europe. As an intermediate result, we have established that this semi-finished product is sorted into the Transparent Clear and Light-blue PET bottles-fraction.

The RecyClass recyclability of this semi-finished product is calculated as class B.

Disclaimer: At this stage, the use of the RecyClass logo is prohibited. The use of any claims on the recyclability of the semi-finished product are not supported by RecyClass. To use the logo and/or to have RecyClass endorsement, you must submit the final packaging for certification. Indeed, it is the final packaging (including its decorative elements and product-residue) that will enter the recycling system.

This letter of compatibility is valid until 08/02/2024, three years after the release of the audit report.

This letter is based on the Evaluation Report n° 009.apt.pl
Date: 08/02/2021

Andreas Bastian

PLASTSHIP

2021

Aptar
food + beverage

Aptar Recyclability case – on PP bottle case

PP closure + SSQZ silicone (d>1)
+ PP bottle

Partly Recyclable

RecyClass
On-line tool rating

PP closure + SimpliCycle TPE valve (d<1)
+ PP bottle

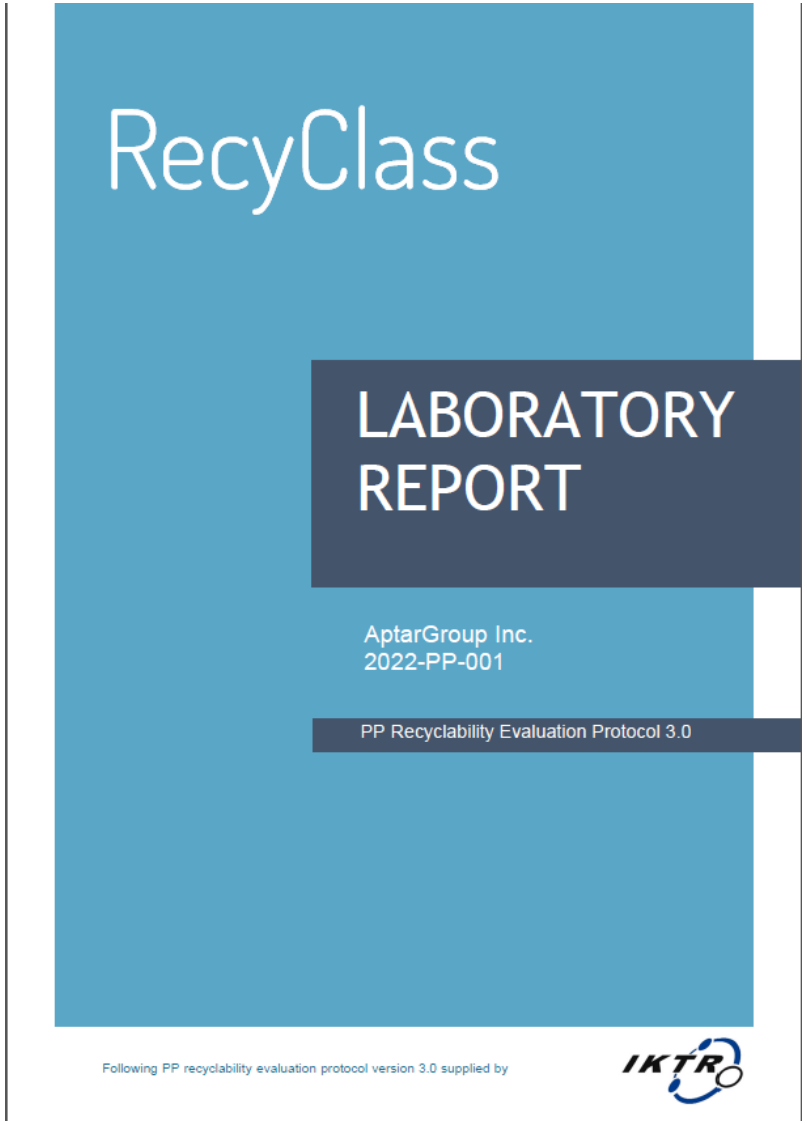
➔ No clear difference
even if we know it's better

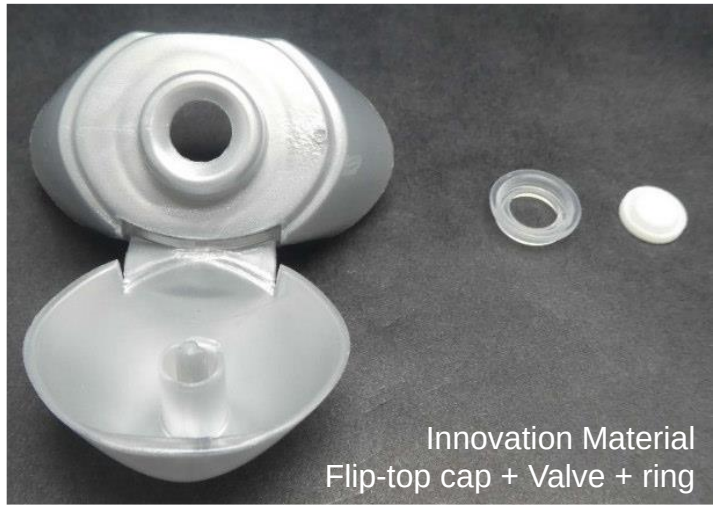
Need to do a technical Lab study
through the PP technical commitee

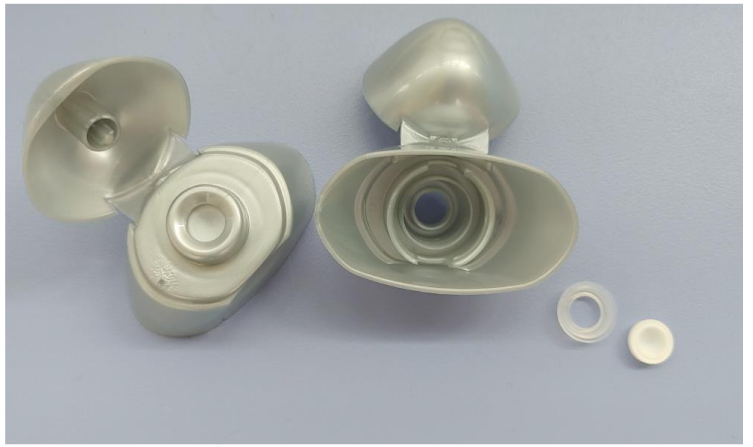
Aptar
food + beverage

Recyclass Aptar recyclability case

PP stream - 2022







The sample, provided by Aptar, was investigated according to the Recyclability Evaluation Protocol for PP Containers (Version 3.0, RecyClass).

The sample consisted of silvery PP caps and natural white PP bottle bodies.

As control material, one time extruded (220 °C) Borealis RB206MO was specified by RecyClass.

As virgin material virgin Borealis RB206MO was chosen by RecyClass.

The test included the pre-treatment (without washing and floatation), **extrusion and conversion** (i. e. bottle production, injection molding) of the material.

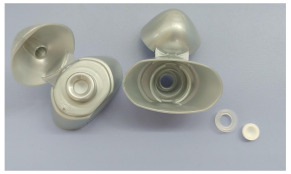
The pre-treatment started with the grinding of only the cap material. The obtained flakes had irregular shapes and a broad size distribution ranging from 3 to 8.0 mm.

Aptar closures

Extrusion **Pellet production**

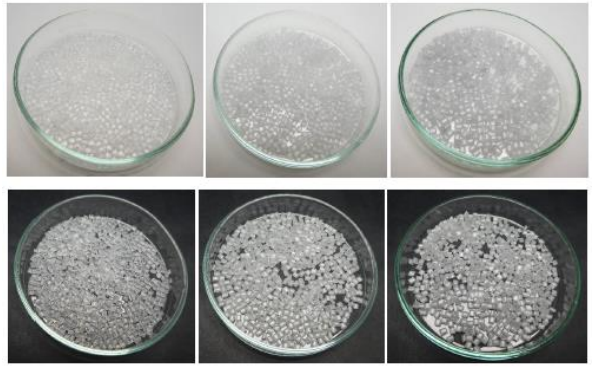
Table 8: Flake blends composition.

	A.0	A.50	A.100
Weight fraction of the innovation material	0 %	50 %	100 %
Weight fraction of the control material	100 %	50 %	0 %
Total mass of the blend	10.0 kg	10.0 kg	10.0 kg

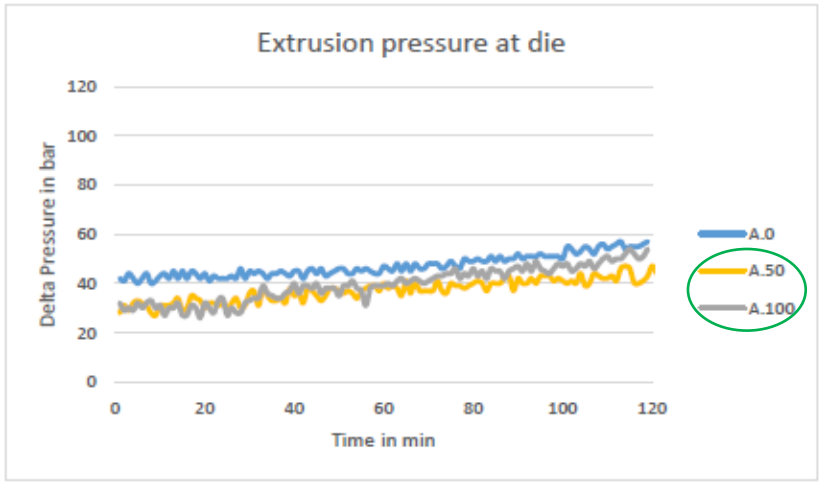


- Melt filters:
  After the extrusion process none of the melt filters showed plaque or residues.
  A new melt filter was used for each blend (Figure 8)

- The prepared pellets had a diameter of 3 mm and were natural white A.0 or slightly silvery A.50 and A.100 (Figure 9). They showed no signs of thermal degradation.



- Pressure: A.50 and A.100 showed lower delta pressure than A.0



Aptar closures

Results Summary

Extrusion results (blends A.0, A.50 and A.100)

All melt filters were clean and there were no residues on the surfaces.
The delta pressures for A.50 and A.100 were lower than for A.0.
The prepared granulates were natural white (A.0, A.50, A.100) and did not show any sign of thermal degradation.
The material properties (i. e. bulk density, density, melt flow index, ash content, moisture, melting point, impurities, surface appearance, volatile content, PE content, variation of the delta pressure and delta pressure) were within the recommended benchmarks.

Conversion Injection molding results (blends A.0, A.50 and A.100)

No depositions were found on the tool and specimens.
The values for the stress at yield, stress at break and tensile modulus decreased from A.0 to A.100.
All other values showing an increase from A.0 to A.50 and A.100. The strain at break was the same for A.0 and A.50 and above the maximum elongation for A.100.
the samples for the optical tests (plates with geometry D1) did not show inclusions, black spots or gel spots for D.0, D.50 and D.100.
The color of D.0 was natural white, plates D.50 and D.100 were slightly greyish, with the color portion intensifying from D.50 to D.100.

Conversion Blow molding , (B.0, B.50 and B.100)

No depositions were found on the tool.
All bottles were intact. Their dimensions, weights, capacities, thicknesses, crushing yield loads and mean failure heights in the drop impact test were within the recommended benchmarks.
In the tensile tests, the specimens showed very similar behavior. There was an increase for the stress at yield and stress at break from B.0 to B.100.
The values for the strain at yield showed varying values. All values were within the recommended benchmark.

Recyclass Technology Approval letter

RecyClass

c/o Plastics Recyclers Europe
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1150 Brussels, Brussels

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info@recyclass.eu
www.recyclass.eu

Aptar

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 6 September 2022

DISCLAIMER

RecyClass recognition applies only to Aptar 'SimpliCycle TPE-S valve' technology repo
recyclability assessment therefore does not refer to the testing of a specific p
Any specific packaging using this valve would need to be tested indi
system of resin, adjuvants, label, closure, and printing conforms t
Protocol for PP containers, and that it is sorted in the PP rigi
Europe.
Publication of results of testing of this technology
approval letter. Partial reporting of the conditio
Additionally, any change in the formulation
Committee which will reassess the approv

The RecyClass PP Technical Co
'SimpliCycle TPE-S valve' by Ap

The technology is a thermop
that consisted of a white pe
silver cap. The TPE-S valve r
valve and cap represented 20.

According to the results that
Kunststofftechnologie und -recyclin
PP containers, 'SimpliCycle TPE-S va
recycling.

Based on these results, RecyClass acknowledges
have no negative impact on the current European PP
packaging using this valve is designed under the following cond

a) The 'SimpliCycle TPE-S valve' is used within a PP-based colourless
packaging only);
b) The 'SimpliCycle TPE-S valve' is used on a colourless PP container (for natural PP packaging only),
c) The 'SimpliCycle TPE-S valve' is colourless or white (for natural PP packaging only),

d) The 'SimpliCycle TPE-S valve' represents 1% of the total weight of the packaging or less;
packaging or less;

RecyClass concludes that Aptar 'SimpliCycle TPE-S valve' technology as per current market conditions and knowledge, is fully compatible with the existing European industrial recycling processes for PP containers. Indeed, the recycled plastic generated after the recycling process was successfully tested in injection moulding and blow moulding applications up to a concentration of 50% innovation[1].

In regard to RecyClass Recyclability Certification, the present full compatibility with PP containers recycling approval delivered to Aptar 'SimpliCycle TPE-S valve' technology, means that a packaging containing the Aptar 'SimpliCycle TPE-S valve' as mentioned in the aforementioned conditions will not be penalised with a Recyclability Class downgrade. Moreover, the amount of recyclable PP 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.

[2] RecyClass Recyclability Certification

RecyClass

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1150 Brussels, Brussels

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www.recyclass.eu

CLASS A
The packaging does not pose any recyclability issues and the recycled plastics can potentially feed a closed-loop scheme to be used in the same quality application.

CLASS B
The packaging has some minor recyclability issues that slightly affect the quality of the recycled plastic generated. However, majority of recycled plastics from this packaging can still potentially feed a closed loop.

CLASS C
The packaging presents some recyclability issues that affect the quality of the recycled plastics or lead to material losses during recycling. In the first case the recycled plastic could be used in a cascade open-loop scheme, whereas in the latter case the plastic could potentially feed a closed loop scheme.

CLASS D
The packaging has significant design issues that highly affect its recyclability or imply large material losses. In both cases the recycled plastic can only be fed into low-value applications (i.e. the packaging will be downcycled).

CLASS E
The packaging has major design issues that jeopardize its recyclability or imply severe material losses. The packaging is not considered recyclable and can only be used in incineration with energy recovery.

CLASS F
The package is not recyclable at all, either because of fundamental design issues or a lack of specific infrastructure for collection, sorting and recycling in EU28+2.

Aptar closures

Aptar Recyclability case – with PP bottle case

PP closure +SSQZ silicone
+ PP bottle

Partly Recyclable

B
ABCDE

RecyClass
On-line tool rating

PP closure + SimpliCycle TPE valve
+ PP bottle

Fully Recyclable

RecyClass A ABCDEF RECYCLABILITY

Aptar
food + beverage

RecyClass

On-line tool rating

SimpliCycle (TPE valve - with D<1)

- A-score rating - Fully recyclable
- the valve « one fits all containers »

CLASS A
The packaging does not pose any recyclability issues and the recycled plastics can potentially feed a closed-loop scheme to be used in the same quality application.

CLASS B
The packaging has some minor recyclability issues that slightly affect the quality of the recycled plastic generated. However, majority of recycled plastics from this packaging can still potentially feed a closed loop.

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The packaging presents some recyclability issues that affect the quality of the recycled plastics or lead to material losses during recycling. In the first case the recycled plastic could be used in a cascade open-loop scheme, whereas in the latter case the plastic could potentially feed a closed loop scheme.

CLASS D
The packaging has significant design issues that highly affect its recyclability or imply large material losses. In both cases the recycled plastic can only be fed into low-value applications (i.e. the packaging will be downcycled).

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The packaging has major design issues that jeopardize its recyclability or imply severe material losses. The packaging is not considered recyclable and can only be used in incineration with energy recovery.

CLASS F
The package is not recyclable at all, either because of fundamental design issues or a lack of specific infrastructure for collection, sorting and recycling in EU28+2.

	On PET container	On PP container	On HDPE container
PP closure with SimpliCycle	A ABCDEF	A ABCDEF	B ABCDE *
PE closure with SimpliCycle	A ABCDEF	B ABCDE *	A ABCDEF

* Due to mono-material criteria

Aptar food + beverage

Becoming the first choice in sustainable packaging solutions

RecyClass Unwrapped

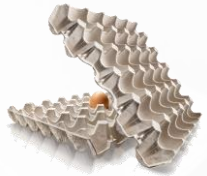
February 22, 2023

Dr. Detlev Schulz

Huhtamaki

Broadly serving food on-the-go and food on-the-shelf

	Food on-the-go		Food on-the-shelf	
Markets Customers				
	QSR	Food delivery	FMCG	Retail

Products					
	Convenience	Food safety	Food availability	Food waste reduction	

Packaging			
	Foodservice packaging	Molded fiber packaging	Flexible packaging

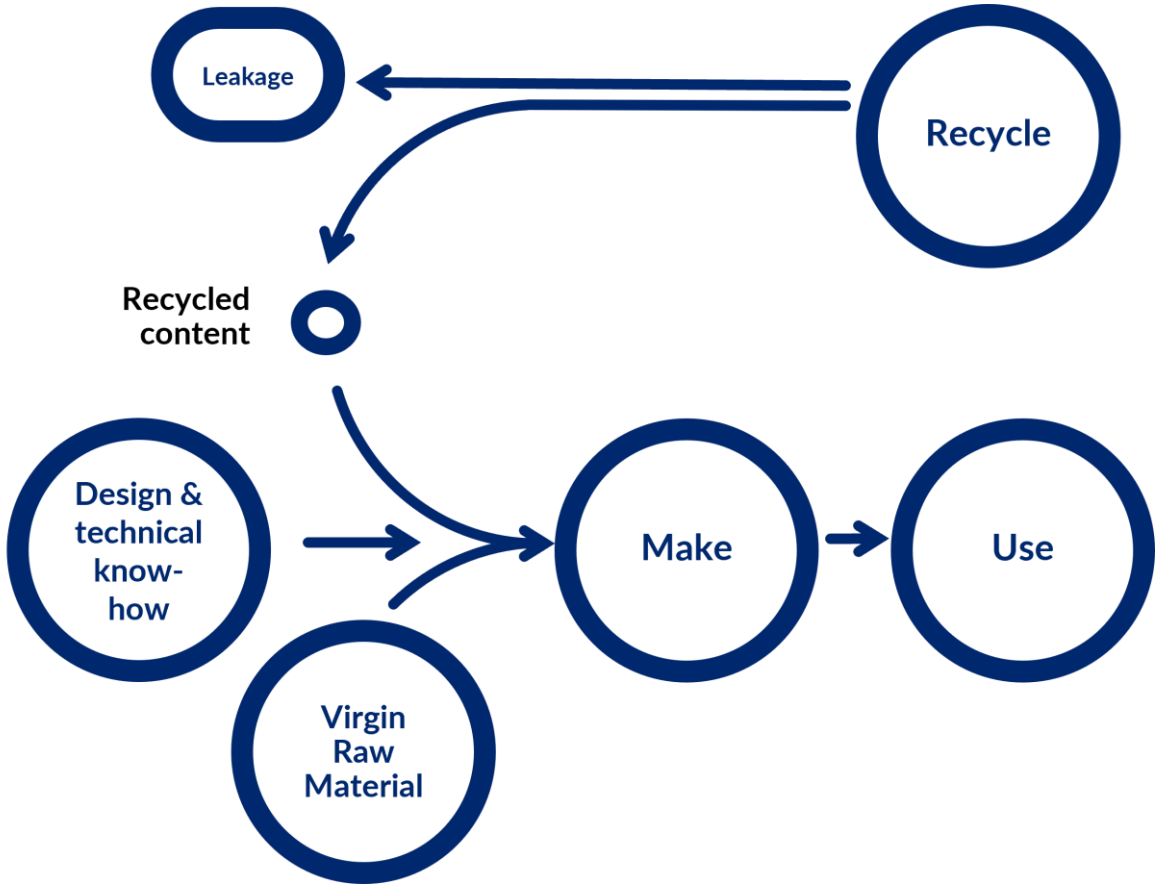
We innovate the future!

Huhtamaki

Design is the key to Huhtamaki blue**loop**™ circular packaging

Our design principles

- Promote mono-material (PE, PP) solutions with high yield in proven recycling processes
- Utilise performance coatings and coextrusion to reduce level of foreign materials
- Avoid critical polymers (e.g. PVC, PVDC)
- Integrate PCR (post consumer recycled) material when beneficial/possible
- Don’t compete with human food (bio-based)
- Composting OK when collection/recycling not possible
- Holistic packaging design for circularity



We innovate the future!

Huhtamaki

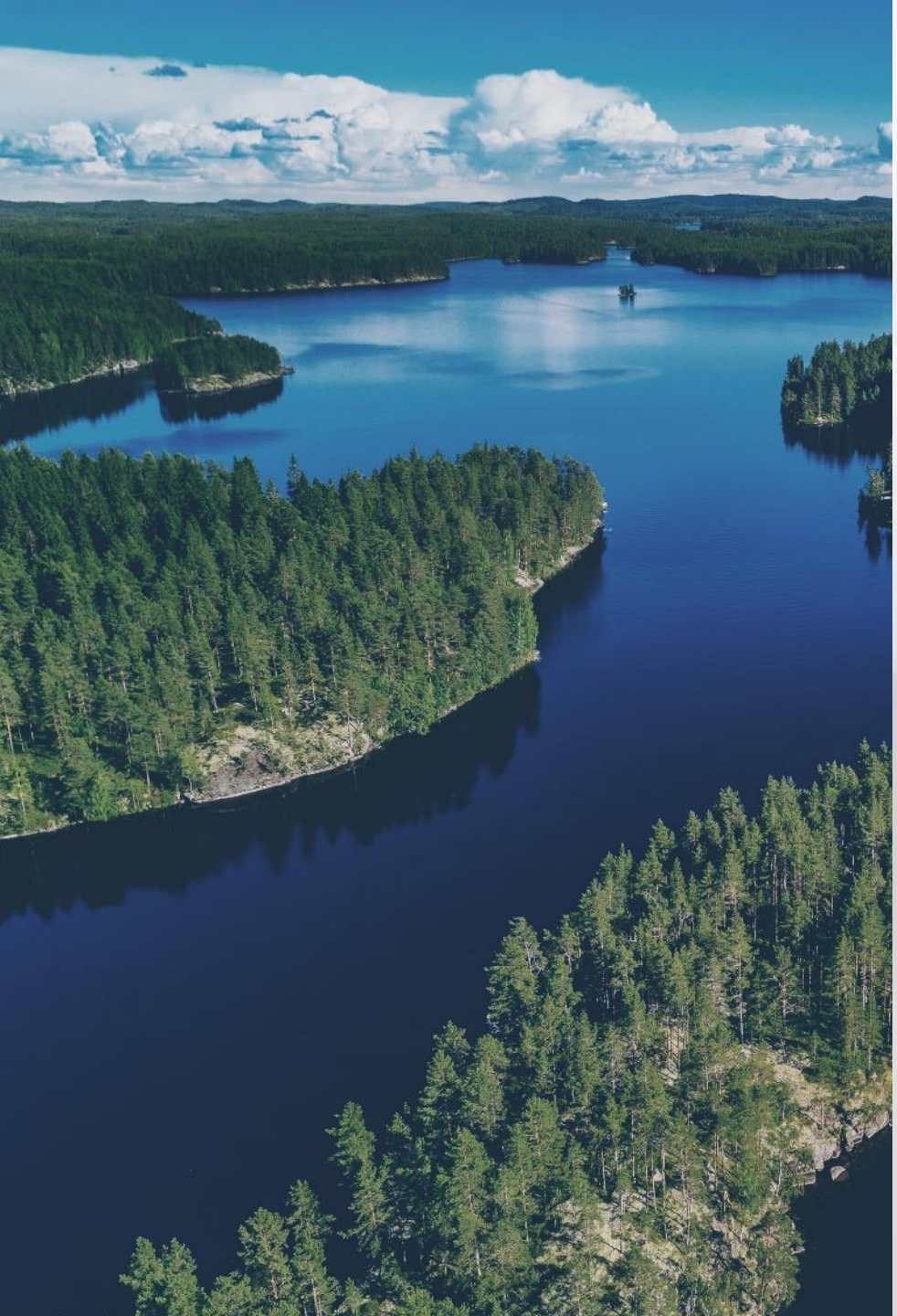
Huhtamaki Global partner for recyclable solutions

We innovate the future!

Our blue**loop**™ tube portfolio
is 100% recyclable

We innovate the future!

Huhtamaki



Huhtamaki **blueloop™** program

blueloop™
designed for recycling

Huhtamaki **blueloop™** addresses the issues created by a linear consumption model.

As we understood the needs, we developed several sustainable tube laminates already, which are certified by at least one of the organizations:

	Recycling Assessments	
blueloop™ tube HD (210, 220, 250 & 300)	✓	✓
blueloop™ tube pure PP 250	✓	
blueloop™ tube PIR 300	✓	
blueloop™ tube green 300	✓	
blueloop™ tube lite	✓	
PBL 240/3-7	✓	
PBL 300/15	✓	
PBL 400 standard	✓	

More information on www.recyclass.eu

We innovate the future!

Huhtamaki

Thank you!

Dr. Detlev Schulz
Senior Manager, Business Development, IP and Sustainability
Detlev.Schulz@huhtamaki.com

Huhtamaki

We innovate the future!

David Dieryckxvisschers
Group Quality Manager
Resilux Belgium

Resilux
The power of PET

RecyClass

Panel Discussion

What is your strategy for the circular plastic future?

RecyClass

Panel Discussion

How important is consumer trust & how to secure it?

RecyClass

Panel Discussion

What are the key ingredients for reliable product claims?

RecyClass

Panel Discussion

What is the role of RecyClass in a circular plastic future?

RecyClass

Panel Discussion

How are the RecyClass Certifications & other RecyClass tools helping you achieve the targets?

RecyClass

Panel Discussion

What are the main challenges & opportunities for a circular plastic future?

RecyClass

Questions & Answers

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

RecyClass

Thank you for participating!

Save the date for the next webinars:
26 April
5 July

RecyClass