RecyClass Unwrapped

Towards circular flexible packaging

Moderated by
Brian Lodge | UK Design Director | Berry Global

22 September 2021

RecyClass

RecyClass

Circular Future of Flexible Plastic Packaging

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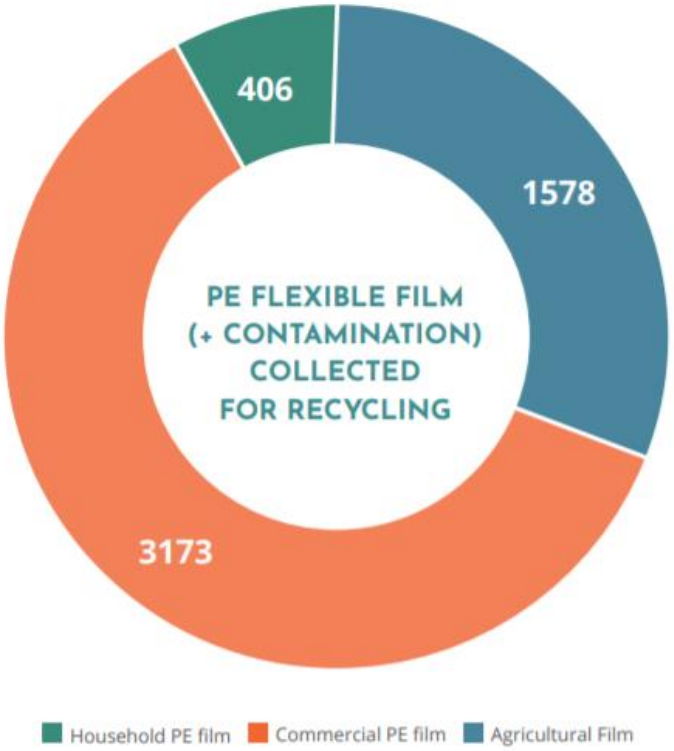
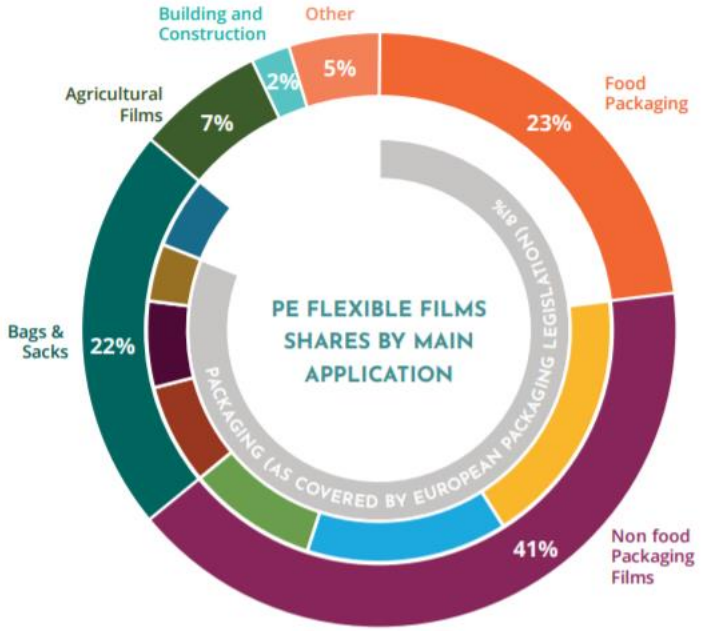
RecyClass Unwrapped Webinar – 22/09/2021

RecyClass | ONCE UPON A TIME...

RecyClass | STATE OF PLAY (data 2018)



- 13-15 MT flexible films (8.5 - 9MT PE) used
- Around 80% of flexible films used for packaging applications
- 46% collected in EU28+2 in 2018
- 2.7 MT PE flexible films sorted (data on PP not available)
- 2 MT recycled



Once deemed difficult to recycle, flexible household polyethylene waste recycling is a successful business case model of today

RecyClass | DESIGN FOR....

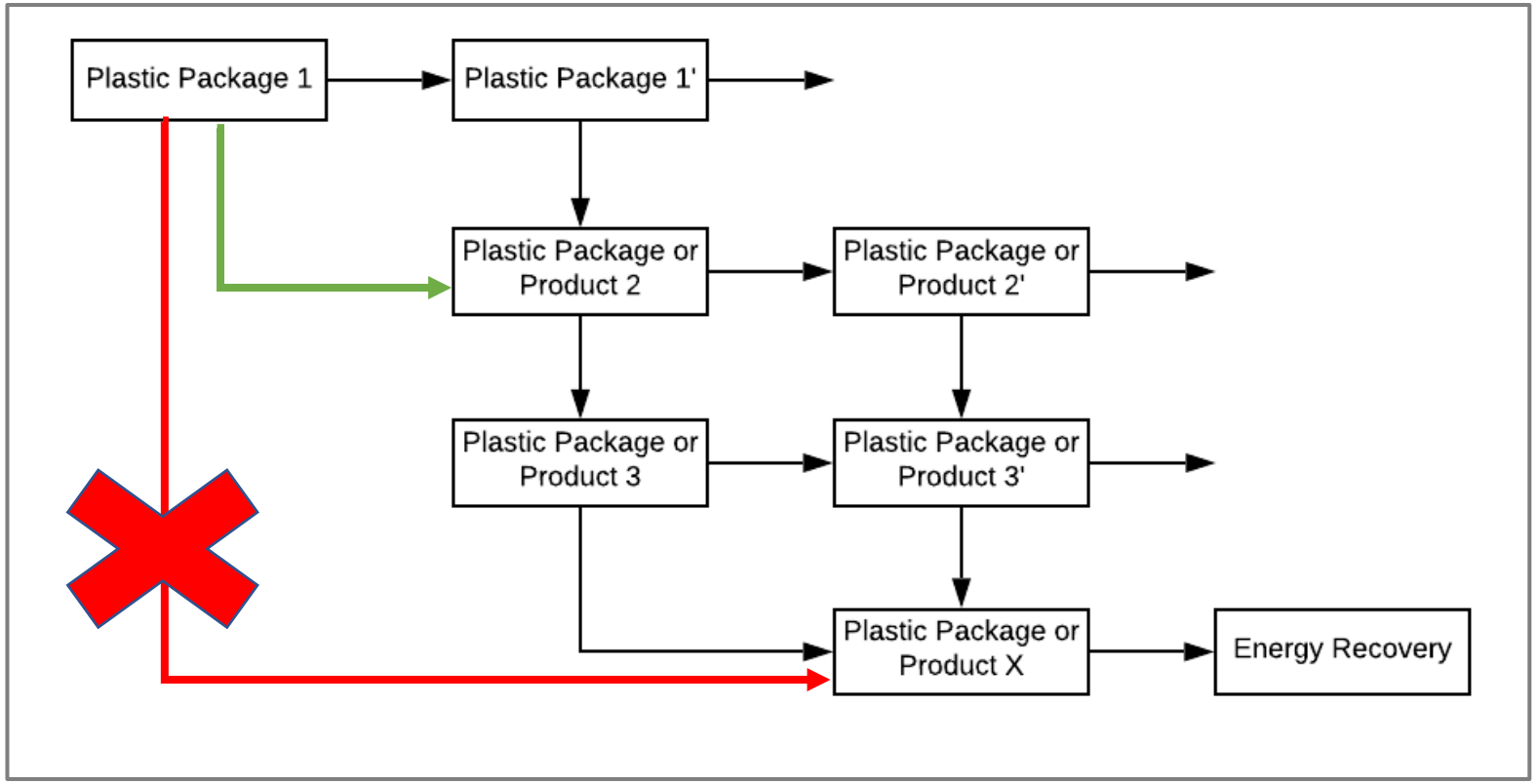
CIRCULATE

INNOVATE

ELIMINATE

RecyClass | KEEP THE VALUE

Design for RECYCLING



RecyClass | TIPS

95%

90%

- Prefer monomaterial: the highest concentration in one polymer is a prerequisite for a high recyclability score
- Prefer transparent or light coloured to extensive printing/decoration
- Follow fact-based design for recycling guidelines and avoid exotic guidelines
- Test innovative solutions by following RecyClass Sorting and Recyclability Protocols
- Self-assess the packaging recyclability for free by using the RecyClass Tool
- Certify your packaging for Recyclability (also Country specific) and for Recycled Content (based on Traceability and Chain of Custody) with RecyClass

RecyClass | AN OCEAN OF… GUIDELINES AND CLAIMS

- **The importance of harmonised and scientific-based information**
- **Standard Evaluation Protocols and Design Guidelines are essential**
- **Recyclability and Recycled content Claims Guidance**

✓ Strengthens and gives credibility to the message;

✓ Provides for effective communication with stakeholders;

✓ Provides clear direction for design for recyclability policies within brands.

RecyClass | AN OCEAN OF... GUIDELINES AND CLAIMS

RecyClass

PE TRANSPARENT FLEXIBLE FILMS for Household and Commercial Packaging

	YES - FULL COMPATIBILITY	CONDITIONAL - LIMITED COMPATIBILITY	NO - LOW COMPATIBILITY
CLASS RANKING*	A-B	B-C	D-E-F
DESCRIPTION (Test Protocol)	Materials that passed the testing protocols with no negative impact OR materials that have not been tested (yet), but are known to be acceptable in PE recycling	Materials that passed the testing protocols if certain conditions are met OR materials that have not been tested (yet), but pose a low risk of interfering with PE recycling	Materials that failed the testing protocols OR materials that have not been tested (yet), but pose a high risk of interfering with PE recycling
MAIN MATERIAL	PE-LD, PE-LLD, PE-HD	Multilayer PE/PP with PP ≤ 5%	Multilayer PE/PP with PP > 5%; Any other polymer (e.g. PET, PVC, etc.)
MATERIAL COMPOSITION	A when PE content is > 95%; B when PE content is > 90%	C when PE content is > 70%	D when PE content is > 50%; E when PE content is > 30%; F when PE content is < 30%
COLOURS	Unpigmented; transparent	Light colours; translucent colours	Dark colours; black; carbon black
SIZE	> A4 or > 50 x 50 mm once compacted	< A4 format or between 20 x 20 and 50 x 50 mm once compacted (Sorting test)	< 20 x 20 mm
PRODUCT RESIDUES (Easy to Empty index)	A if the index is < 5%; B if the index is < 10%	C if the index is < 15%	D if the index is < 20%; E < if the index is < 25%; F if the index is > 25%
BARRIER	Barrier in the polymer matrix; SiOx and AlOx without additional coatings	< 5% EVOH (in polyolefinic combination film); metallized layers without coatings; EcoLam High Plus; VO+ LLDPE; <15% PA 6/66 copolymer with melting temperature < 192 °C and incorporating minimum 10% PE-g-MAH tie layers	> 5% EVOH (in polyolefinic combination film); Any other PA; barrier layer PVC, PVDC; any other barrier layer; foaming agents used as expanding chemical agents; aluminium
ADDITIVES	Additives that do not increase the density higher than 0,97 g/cm³		Bio-/oxo-/photodegradable additives Additives that do increase the density higher than 0,97 g/cm³ ($CaCO_3$, talc, glass fibers, etc.)
CLOSURE SYSTEM	PE-LD, PE-LLD, PE-HD	PP	Metal, aluminium, PVC, PET, PETG, PS, PLA, non PO or foams with density < 1 g/cm³
LINERS, SEALS AND VALVES	PE-LD, PE-LLD, PE-HD	PP, removable aluminium liddings	Metal, aluminium, PVC, PET, PETG, PS, PLA, foiled paper, non PO or foams with density < 1 g/cm³
LABELS	PE	PP, paper labels without fiberloss	Metallized labels, any other; paper labels with fibreloss
ADHESIVES FOR LABELS	Water soluble or water-releasable at less than 60°C		Adhesives non-soluble in water or non-releasable in water at less than 60°C
INKS	No inks	Non-toxic (according to EUPIA guidelines)	Inks that bleed; Toxic or hazardous inks.
DIRECT PRINTING	Laser marked print; Printed production or expiry date	Printing covering < 50%**	Printing covering > 50% **
OTHER ATTACHMENTS	PE-LD, PE-LLD, PE-HD	PP	Metal, aluminium, PVC, PET, PETG, PS, PLA, paper, foams with density < 1 g/cm³
RECYCLED CONTENT	No change in the recyclability assessment. A separate 'Recycled Content Traceability Certification' based on a Chain of Custody approach is available with RecyClass		

Last update - June 2021

** Class ranking resulting from the RecyClass assessment. B class is reported two times because of the 90-95% amount of PE in the packaging or because of slight incompatibilities in the design.*
*** temporary solution*

RecyClass | ONGOING WORK on Flexibles

LAMINATING WG

Ongoing tasks

- Test campaign on selected laminating adhesives to define the level of compatibility
- Define a Quick Test procedures to predict laminating adhesive issues

DECORATION TF

Completed tasks

- Terminology document
- Defining printing inks test campaign

Ongoing tasks

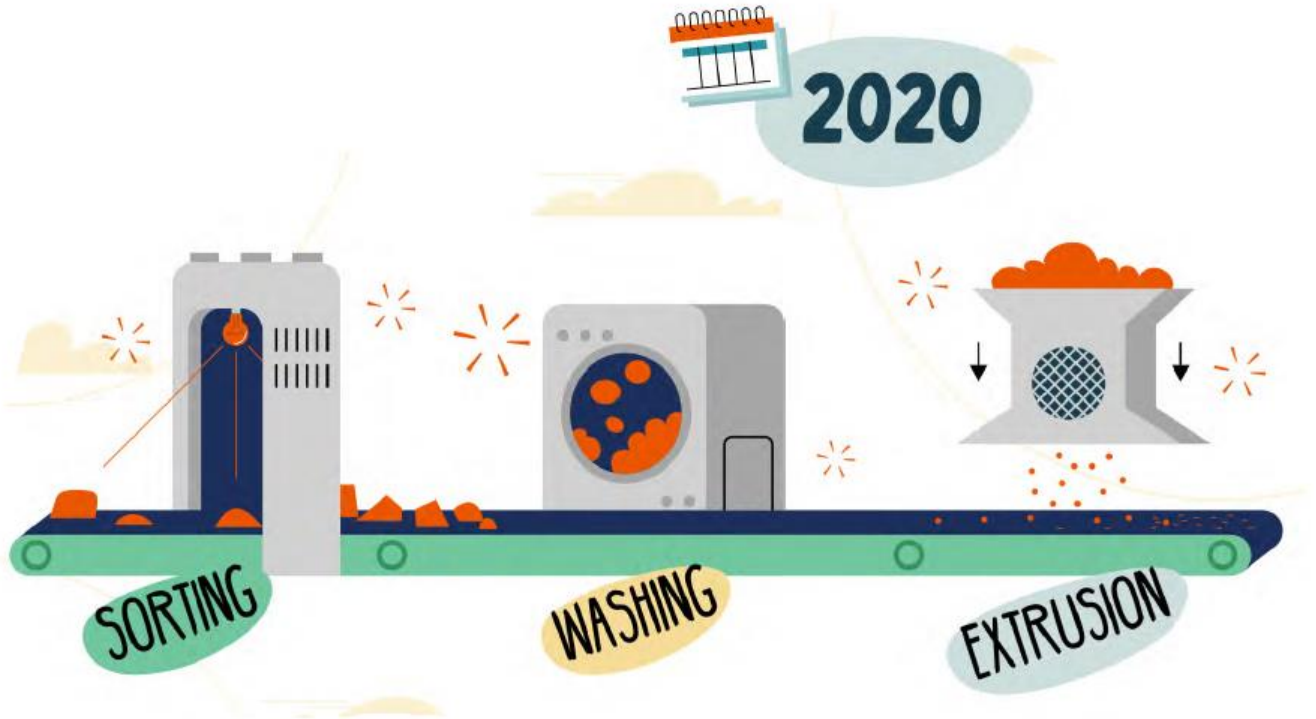
- Decorative technologies classification
- QT procedure on bleeding inks
- Testing on printing inks

Not started tasks

- PE and PP films guidelines update

RecyClass | NOTHING IS IMPOSSIBLE

Today 17% of recycled flexible polyethylene already finds outlet in film-to-film applications with non-food packaging and building & construction being its largest markets, while the forecasts show that PE film products could incorporate overall as much as 38% of recycled content by 2030.



To pursue these positive trends, nevertheless, the industry players must look towards long-term solutions and not quick fixes.

RecyClass | ...AND 'CHEMICAL RECYCLING'?

Is not a Game Changer

INPUT (+GENERATION)= OUTPUT (+CONSUMPTION)

Contamination in plastic waste = Contamination in chemical recycling products

The future of plastic flexibles is Film-to-Film

RecyClass

PLASTIC FUTURE IS CIRCULAR

Bostik

ATTACHED TO YOUR WORLD

Accelerating Circularity in Flexible Packaging

Recyclass Unwrapped Webinar - Sept 22nd 2021

W.Moraes

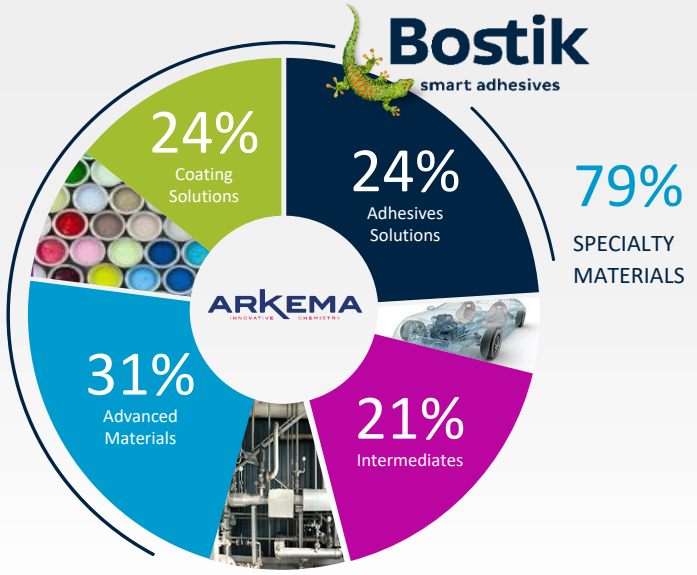
Bostik belongs to Arkema Group, Specialty Materials player

ARKEMA
INNOVATIVE CHEMISTRY

A global manufacturer of
specialty chemicals and advanced materials

€8.8bn	20,000	55	136	13
Worldwide Sales	Employees	Countries	Production Plants	R&D Centers

Adhesives represent nearly
a quarter of Arkema's portfolio.



ALTUGLAS BY ARKEMA · Bostik smart adhesives · COATEX ARKEMA GROUP · KEPSTAN BY ARKEMA · KYNAR BY ARKEMA · ORGALLOY BY ARKEMA · PEBAX BY ARKEMA · PLEXIGLAS BY ARKEMA · RILSAMID BY ARKEMA · RILSAN BY ARKEMA · SARTOMER ARKEMA GROUP

Bostik

Bostik is a world-class **Leader in Adhesive Technologies.**

KEY FACTS

€2.1 billion
Annual Sales 2019

6,000+
Employees

4 Global
Smart Technology Centers

OUR PRODUCTS

Our adhesives are almost everywhere
INDUSTRIAL | CONSUMER | CONSTRUCTION

including an expansive portfolio for the most challenging applications.

OUR EXPERTISE

- **Developing bonding solutions** addressing today's challenges
- **Innovating with customers** through joint development
- Building strong and collaborative **partnerships across the value chain**

Bostik

Bostik's Advanced Packaging Global BU

- Flexible Packaging
- Tapes & Labels
- Paper, board and consumer packaging

Lamination

Reclosable

Heat Seal

Cold Seal

Labels

Tapes

Kizen
(carton sealing)

Paper coating and sealing

Challenges ahead for the **Packaging Industry**

1.3 billion tons of **food wasted** every year

6,9 billion tons of plastic waste since 2015. **Circularity needed** !

IPCC confirmed: widespread, rapid, and intensifying **climate change**.

INNOVATION NEEDED

MATERIALS, STRUCTURES, PACKAGING DESIGN

Bostik

What is Bostik doing to accelerate Circularity in Flexible Packaging ?

Bringing solutions for recyclable **mono-material packaging**

Multi-materials
laminates

Not recycled today: systematically sorted out and incerated for energy recovery

Re-design

Mono-material laminates

Fit sorting and mechanical recycling

Need

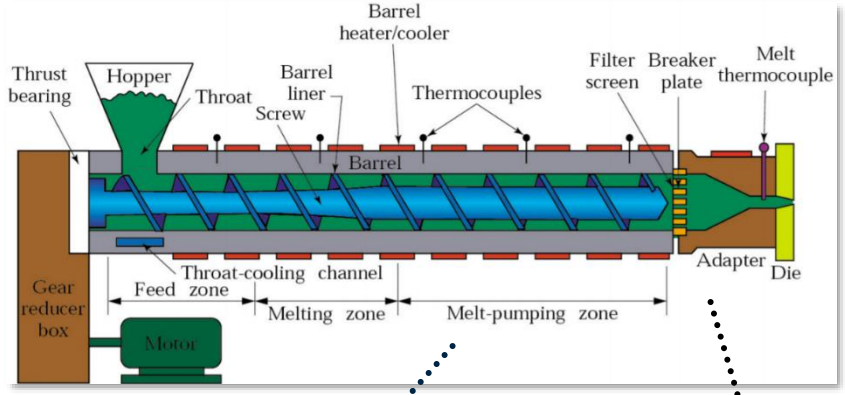
Lamination Adhesives compatible w/ recycling streams allowing maximum recyclate quality

RecyClass™ **Technology Approval**

Bostik

LAMINATION ADHESIVE voyage during direct mechanical RECYCLING

Heavy duty recycling extruder



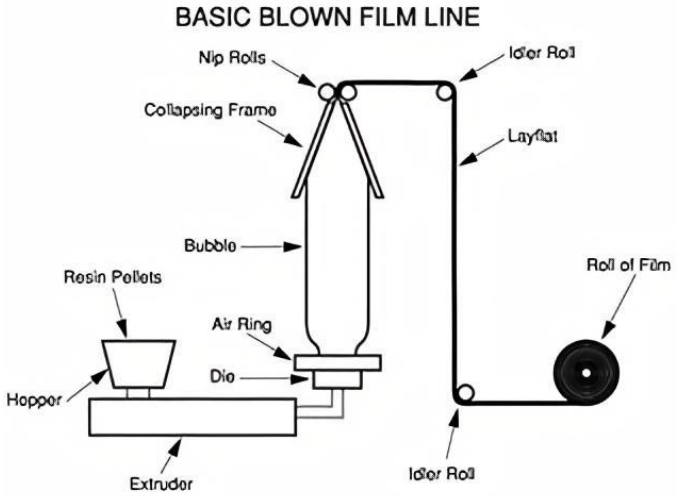
https://materialsection.files.wordpress.com/2011/02/9-2-composites.pdf

- High temperatures
- Shear stress

- Strain stress at filter

Recyclate

Blown film extruder



Adhesives must not generate gas, odor, yellowing, back pressure.

Adhesives must allow high quality films without gels, odor, yellowing, black spots. Not clogging filters or bursting the bubble.

Bostik

Concrete lamination SOLUTIONS TODAY

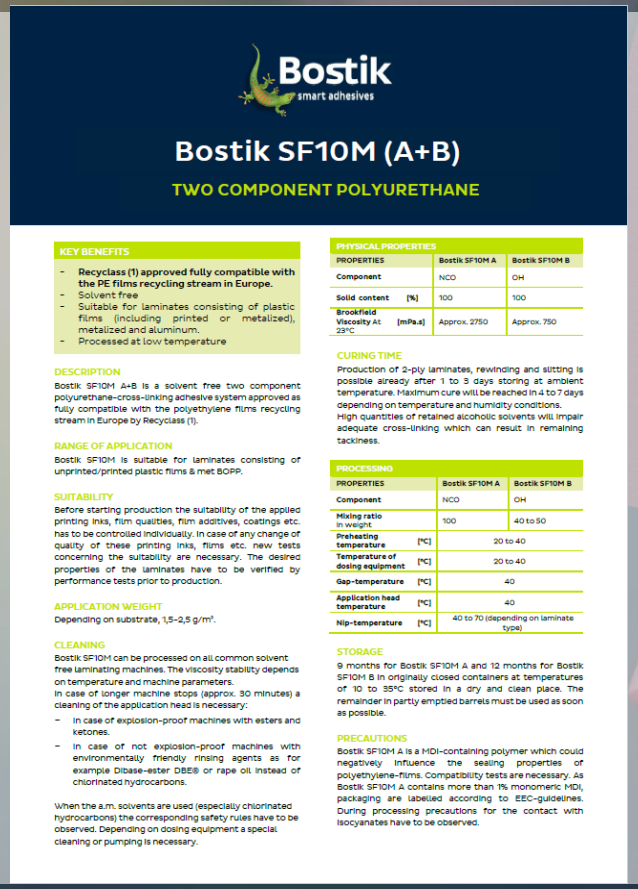
SF10M

RecyClass™ Recyclass Approved

“Fully compatible with PE flexibles recycling.”

“Compliant with Design guidelines for mono-PE packaging”

04 PE-LD



Bostik smart adhesives

Bostik SF10M (A+B)

TWO COMPONENT POLYURETHANE

KEY BENEFITS

- **Recyclass (1) approved fully compatible with the PE films recycling stream in Europe.**
- Solvent free
- Suitable for laminates consisting of plastic films (including printed or metalized), metalized and aluminum.
- Processed at low temperature

DESCRIPTION

Bostik SF10M A+B is a solvent free two component polyurethane-cross-linking adhesive system approved as fully compatible with the polyethylene films recycling stream in Europe by Recyclass (1).

RANGE OF APPLICATION

Bostik SF10M is suitable for laminates consisting of unprinted/printed plastic films & met BOPP.

SUITABILITY

Before starting production the suitability of the applied printing inks, film qualities, film additives, coatings etc. has to be controlled individually. In case of any change of quality of these printing inks, films etc. new tests concerning the suitability are necessary. The desired properties of the laminates have to be verified by performance tests prior to production.

APPLICATION WEIGHT

Depending on substrate, 1,5–2,5 g/m².

CLEANING

Bostik SF10M can be processed on all common solvent free laminating machines. The viscosity stability depends on temperature and machine parameters.
In case of longer machine stops (approx. 30 minutes) a cleaning of the application head is necessary:

- In case of explosion-proof machines with esters and ketones.
- In case of not explosion-proof machines with environmentally friendly rinsing agents as for example Dibase-ester DBE® or rape oil instead of chlorinated hydrocarbons.

When the a.m. solvents are used (especially chlorinated hydrocarbons) the corresponding safety rules have to be observed. Depending on dosing equipment a special cleaning or pumping is necessary.

PHYSICAL PROPERTIES

PROPERTIES	Bostik SF10M A	Bostik SF10M B
Component	NCO	OH
Solid content [%]	100	100
Brookfield Viscosity At 23°C [mPa.s]	Approx. 2750	Approx. 750

CURING TIME

Production of 2-ply laminates, rewinding and slitting is possible already after 1 to 3 days storing at ambient temperature. Maximum cure will be reached in 4 to 7 days depending on temperature and humidity conditions.
High quantities of retained alcoholic solvents will impair adequate cross-linking which can result in remaining tackiness.

PROCESSING

PROPERTIES	Bostik SF10M A	Bostik SF10M B
Component	NCO	OH
Mixing ratio in weight	100	40 to 50
Preheating temperature [°C]	20 to 40	
Temperature of dosing equipment [°C]	20 to 40	
Gap-temperature [°C]	40	
Application head temperature [°C]	40	
Nip-temperature [°C]	40 to 70 (depending on laminate type)	

STORAGE

9 months for Bostik SF10M A and 12 months for Bostik SF10M B in originally closed containers at temperatures of 10 to 35°C stored in a dry and clean place. The remainder in partly emptied barrels must be used as soon as possible.

PRECAUTIONS

Bostik SF10M A is a MDI-containing polymer which could negatively influence the sealing properties of polyethylene-films. Compatibility tests are necessary. As Bostik SF10M A contains more than 1% monomeric MDI, packaging are labelled according to EEC-guidelines. During processing precautions for the contact with isocyanates have to be observed.

Commercial and available

Bostik

Bostik **SUSTAINABLE LAMINATION PROGRAM** (SLP)

Internal Program aiming to deliver laminating adhesives that fit

> **Mechanical Recycling** for mono-material structures
Enabling Circularity

> **GHG** emission reduction and energy savings
Environmental Care

> Flexible packaging **free of all substances of concern**: PAA, Glymo, Cyclic esters, BPA. Peace-of-mind **!**
Food Safety, anticipate Regulatory Restrictions

> **Efficient.** Curing time reduction, streamlined processes, …
Converting Efficiency

R&D and SCIENCE at the heart of CIRCULARITY IN FLEXIBLE PACKAGING

Smart

Cooperation

Internal technologies and R&D

+ Concrete collaborations for specific projects

> **Now and short term:**
> **Mono-material mechanical recyclability**

> **A step forward future possible** advanced recycling
> **Selective de-bonding and de-inking systems**

External complementary R&D

> **General collaboration in adhesives recycling**

> **Fundamental understanding**

> **Adhesive impact modeling**

Reducing food waste and circular

Avoiding **FOOD WASTE** and enabling **RECYCLABILITY** in Food trays

Re-closable lidding films

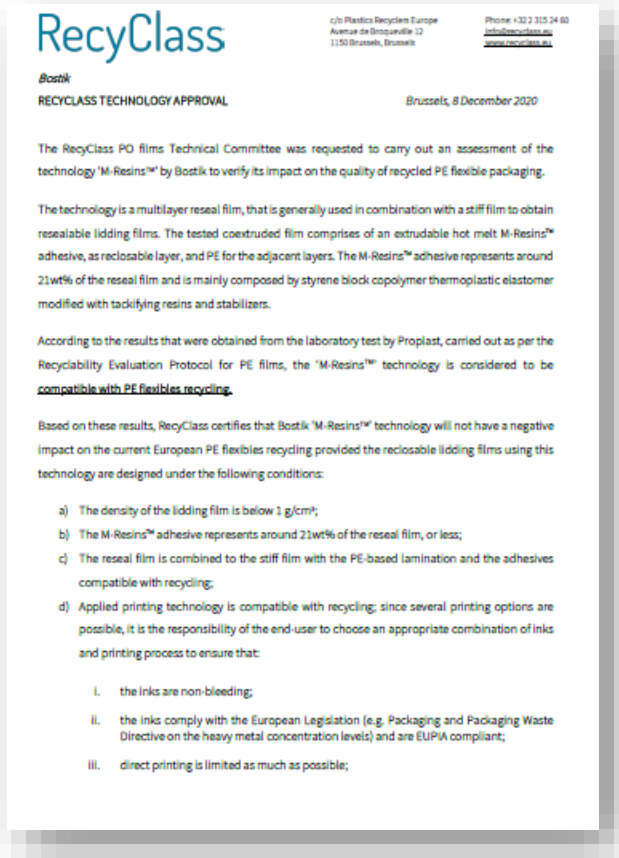
- ✓ **Keeps left-over food fresh longer. Reduce food waste.**
- ✓ No re-packing in Tupperware® or zipper bags → Brand visibility !
- ✓ Highly appreciated by consumers. Convenient.
- ✓ No capex needed in the packaging workshop
- ✓ Bostik is pioneer and leader offering over 18 years of experience

Typical applications:

- ✓ Cheese: pre-sliced / crumbled / shredded
- ✓ Sausages, ham, charcuterie
- ✓ Fresh cuts, produce, vegetables and fruits
- ✓ Bakery

Avoiding **FOOD WASTE** and enabling **RECYCLABILITY** in Food trays

M-Resins *for re-closable lid comply with Recyclability Guidelines*



RecyClass

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1150 Brussels, Brussels

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info@recyclass.eu
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Bostik

RECYCLASS TECHNOLOGY APPROVAL

Brussels, 8 December 2020

The RecyClass PO films Technical Committee was requested to carry out an assessment of the technology 'M-Resins™' by Bostik to verify its impact on the quality of recycled PE flexible packaging.

The technology is a multilayer reseal film, that is generally used in combination with a stiff film to obtain resealable lidding films. The tested coextruded film comprises of an extrudable hot melt M-Resins™ adhesive, as reclosable layer, and PE for the adjacent layers. The M-Resins™ adhesive represents around 21wt% of the reseal film and is mainly composed by styrene block copolymer thermoplastic elastomer modified with tackifying resins and stabilizers.

According to the results that were obtained from the laboratory test by Proplast, carried out as per the Recyclability Evaluation Protocol for PE films, the 'M-Resins™' technology is considered to be compatible with PE flexibles recycling.

Based on these results, RecyClass certifies that Bostik 'M-Resins™' technology will not have a negative impact on the current European PE flexibles recycling provided the reclosable lidding films using this technology are designed under the following conditions:

a) The density of the lidding film is below 1 g/cm³;
b) The M-Resins™ adhesive represents around 21wt% of the reseal film, or less;
c) The reseal film is combined to the stiff film with the PE-based lamination and the adhesives compatible with recycling;
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. direct printing is limited as much as possible;

RecyClass™

*"Recyclass concludes that **Bostik M-Resins** technology is compatible with the existing European Industrial recycling processes for PE flexibles"*

info@recyclass.eu

RECYCLABILITY GUIDELINES FOR THERMOFORMED PET TRAYS

PLASTIC SENSE FOUNDATION

PLASTIC SENSE FOUNDATION
recyclable PET trays

RECYCLABILITY ASSESSMENT

Madrid, 19 January 2021

The PLASTIC SENSE FOUNDATION certifies that the following adhesives references **M-Resins™** and **Vitel®** manufactured by the company **Bostik, Inc.** comply with the Recyclability Guidelines for Thermoformed PET Trays (attached in Annex 1) not disturbing the recycling process of thermoformed PET packaging and are, therefore, **approved for their use in processes and products to be certified under ECOSENSE and RETRAY schemes supported by the Foundation.**

This statement is based on the following considerations:

M-Resins™ is an extrudable hot melt pressure sensitive adhesive used in the reseal layer of multilayer LDPE flexible lidding films which characteristics are described in its technical data sheet attached in Annex 2. Plastic Sense Foundation certification applies only to this reference (M650.F) and takes also into account the results of the Recyclability Evaluation Protocol for PE films for the RecyClass Technology Approval obtained by Bostik the 8th December 2020 (attached in Annex 3).

Vitel® is an extrudable copolyester resin adhesive that it is used, among other applications, in the reseal layer of multilayer PET flexible lidding films. The characteristics are described in the technical data sheets attached in Annex 2. Plastic Sense Foundation certification applies only to these references (1916NSB.F, 2200B.F, 2700B.F and 1250.F) and takes also into account the results obtained from the laboratory tests performed by Sulayr that are following described.

Eight samples of thermoformed packaging, that were composed of a mono PET tray base and a multilayer PET flexible lid sealed with the **Vitel®** resealable adhesive, were sent by Bostik to be tested by Sulayr at their recycling facilities in Spain.

The flexible lids were removed of each sample confirming that adhesive residues remained in the perimeter zone of bases and lids. The multilayer PET lids were not tested as they are removed without any problem in the standard recycling process complying with the Recyclability Guidelines.

Each PET tray base was treated following the same procedure. The perimetral zone with adhesive residues was cut obtaining flakes, of around 10 mm diameter size, that were afterwards introduced to

https://fundacionplasticsense.eu/en/

Avda. de España 17, 2ª planta, Oficina 1, 28100 Alcobendas (Madrid)
T. +34 91 836 38 23

*"The PLASTIC SENSE FOUNDATION certifies that the adhesives **M-Resins** manufactured by the company **Bostik** comply with the Recyclability Guidelines for Thermoformed PET Trays"*

https://fundacionplasticsense.eu/en/

Bostik
smart adhesives

Avoiding **FOOD WASTE** and enabling **RECYCLABILITY** in Food trays

Polyester sealing for lidding films

- ✓ **Seals directly on monomaterial APET trays facilitating recycling**
- ✓ Clam-shell replacement. Less plastic.
- ✓ Easy opening – peelable
- ✓ Fresh produce, bakery, meat
- ✓ Ovenable
- ✓ Anti-fog built-in

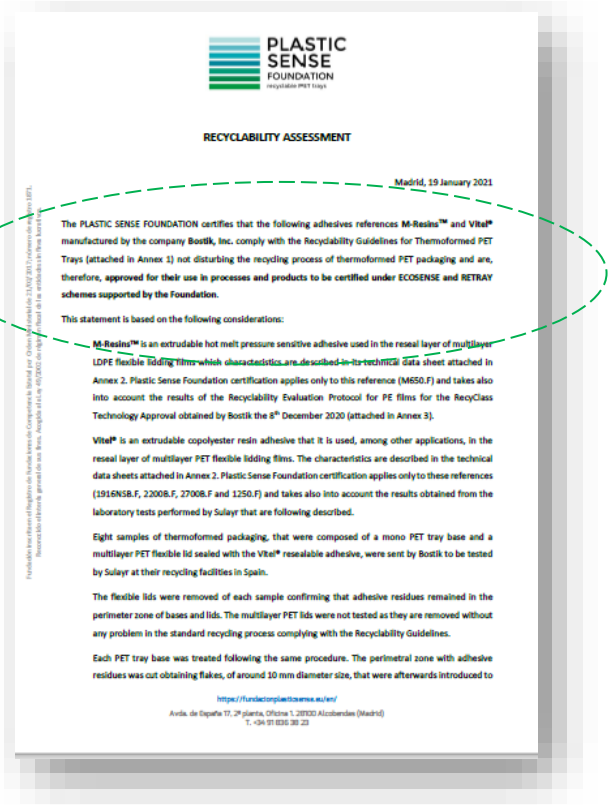
Vitel® Heat Seal polyesters

Lidding film seals onto mono-APET

Bostik

Avoiding **FOOD WASTE** and enabling **RECYCLABILITY** in Food trays

***Vitel® resins** used as a sealing layer comply with Recyclability Guidelines*



PLASTIC SENSE FOUNDATION

RECYCLABILITY ASSESSMENT

Madrid, 19 January 2021

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The PLASTIC SENSE FOUNDATION certifies that […] selected **Vitel®** manufactured by the company **Bostik, Inc.** comply with the Recyclability Guidelines for Thermoformed PET Trays (attached in Annex 1) not disturbing the recycling process of thermoformed PET packaging and is, therefore, **approved for its use in processes and products to be certified under ECOSENSE and RETRAY schemes supported by the Foundation**.

In collaboration with sulayr Recycling PET Trays info@sulayrgs.com

Bostik smart adhesives

Collaboration within the value chain

Avoiding **FOOD WASTE** and enabling **RECYCLABILITY** in Food trays

Cross Company Collaboration

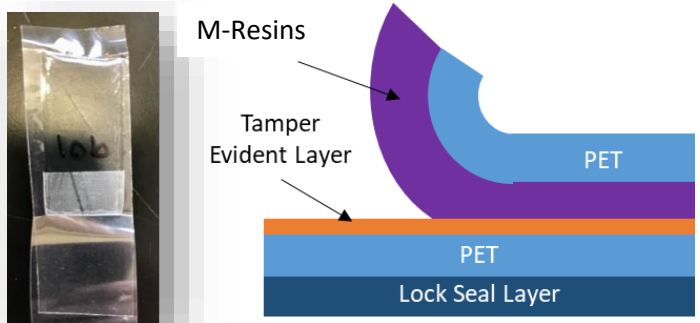
- Combining Terphane's specialty BOPET films and Bostik's M-Resin™ to create optimal reclosable packaging lid
- Overcome drawbacks of current structures, particularly for produce applications

Collaboration is key !

Multilayer re-closable lid PET

Smart tamper-evident layer that becomes white/matte after first opening

Multilayer re-closable lid



Take aways: the Bostik's way towards SUSTAINABLE SOLUTIONS

Truly engaged supplier

Bostik is a **top global adhesive supplier**, committed to **sustainable solutions.**

Adhesives that do more

Our products offer more than simple bond with **a unique set of technologies** and valuable functionalities**.**

Value chain partnerships

Strong partnerships with key actors of the packaging value chain to accelerate and enhance **innovation**.

Let's work together on your project of sustainable packaging !

Active members of:

RecyClass™

CEFLEX
A CIRCULAR ECONOMY FOR FLEXIBLE PACKAGING

SUSTAINABLE PACKAGING COALITION®

APR
The Association of Plastic Recyclers

PRESERVE

CPRRA
China Plastics Reuse and Recycling Association

Bostik

Bostik. Attached to the World…..

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Bostik industrial

www.bostik.com

Bostik Smart Technology Center of Venette, France

Bostik

RecyClass Unwrapped

Towards circular flexible packaging

P&G All in One Laundry Pouches

Challenges when designing Circular Flexible Packages

L. Van Rompaey
P&G BIC

AMBITION 2030

Packaging Strategy for Circular Economy "closing the loop"

P&G IT'S OUR HOME

We will find solutions so no P&G packaging will find its way to the ocean

1. Design for Recycling / Circularity
(Eco-design)

RecyClass – PLASTICS RECYCLERS EUROPE

All of our packaging will be recyclable or reusable

2. Access to Collection

3. Participation / Education

HolyGrail 2.0 Intelligent Sorting – Driven by AIM European Brands Association – Powered by Alliance to End Plastic Waste

OPRL – The On-Pack Recycling Label

BLISTER BIJ PLASTIC AFVAL

Fostplus

Collection

4. Separation

CLOSED LOOP partners – THE RECYCLING PARTNERSHIP

We will advance recycling solutions (HolyGrail…)

RecyClass – PLASTICS RECYCLERS EUROPE

HolyGrail 2.0 Intelligent Sorting – Driven by AIM European Brands Association – Powered by Alliance to End Plastic Waste

PIONEER PROJECT

Sorting

5. Production Innovation

RecyClass – PLASTICS RECYCLERS EUROPE

We will advance recycling solutions (Verso Vita)

PURECYCLE TECHNOLOGIES

Reduce our use of virgin petroleum plastic by 50%

(~ 300kty of virgin)

- Mechanical recycling **plastics**
- Advanced recycling **plastics**
  - Dissolution recycling
  - Feedstock recycling

P&G

Problem Statement prior Development

Historical introduction of PET/PE laundry pouches were a first step in driving package sustainability on our single unit dose business.

Strong & Safe package whilst being light weighted versus initial tub package ☺ …

2017

2019

…however PET/PE bag being not considered recyclable ☹ per RecyClass guidelines.

Development Design Targets

Develop a monomaterial pouch solution <u>without compromising on</u>:

- ***<u>Child Safety</u>*** (AISE <u>P</u>roduct <u>S</u>tewardship <u>P</u>rogram Standard):
  - Need for fully opaque package!
  - Must contain child impeding closure (CIC)
  - Resistant bag mechanical properties to young children
- ***<u>Consumer Acceptance</u>***: FMOT/SMOT
- ***<u>Manufacturing Capability</u>***

+ Demonstrate ability to be <u>fully recyclable</u>

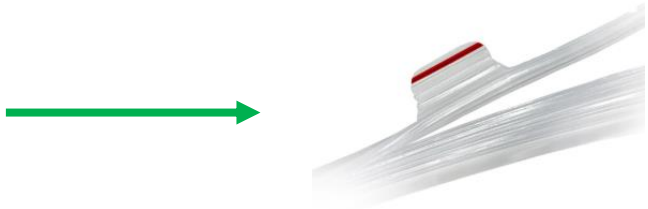
DfR = 1.COLLECT + 2.SORT + 3.RECYCLE

RecyClass™

Paradigm # 1: Recyclability & Safety

Deliver a mono material PE film vs PET/PE being a strong material benchmark in delivering sufficient tear + puncture resistance

Develop a monomaterial PE closure solution and meet PSP



Original closure system made of mixed plastic (PP slider and PE zipper)

New closure system made of mono material PE

A·I·S·E

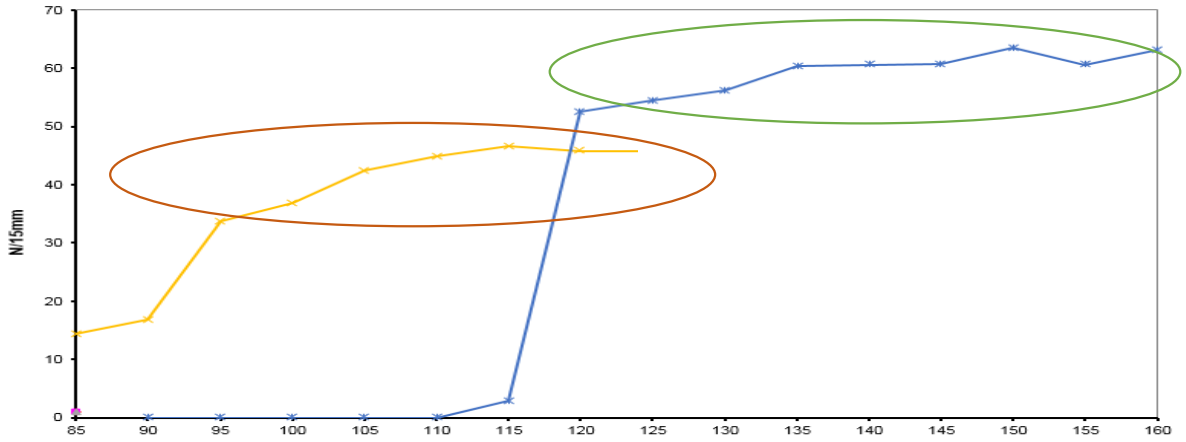
CERTIFIED

Paradigm # 2: Recyclability & Manufacturing Feasibility

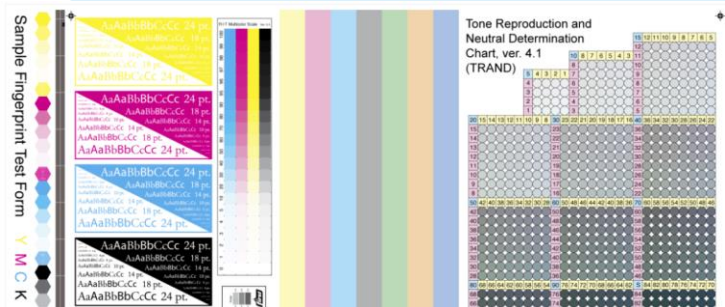
=> Engineer film properties that delivers robust sealing at variable speed converting.

Historical PET/PE giving a large operating window to process stand up pouches

- Good thermal stability thanks to PET
- Wide sealing temperature range: Tm PET (260C) vs Tm LDPE (105C)



=> Adapt print settings t[illegible] PE vs PET.



RecyClass On Line Tool Assessment - Coloured PE film

= self-assessment tool to analyze recyclability of a plastic packaging.

RESULTS OVERVIEW

Interim result after Question Part 1: CLASS A
Interim result after Question Part 2: CLASS B
Interim result after Question Part 3: CLASS B
Interim result after Question Part 4: CLASS B
Interim result after Question Part 5: CLASS B

RecyClass

- **CLASS A**: The package does not pose any recyclability issues and it can potentially feed a closed-loop scheme to be used in the same application.
- **CLASS B**: The package has some minor recyclability issues and could even potentially feed a closed loop scheme.
- **CLASS C**: The package has some recyclability issues that affect the quality of its final recyclate.
- **CLASS D**: The package has some significant design issues that highly affect its recyclability.
- **CLASS E**: The package has major design issues that put in jeopardy its recyclability.
- **CLASS F**: The package is not recyclable either because of fundamental design issues or a lack of specific waste stream widely present in the EU. If your package obtains this class in one of the question areas, then the analysis is completed.

Elements that prevent "A" classification linked to Part 2 (Compatibility)

Printing covering more than 50% of surface (-)

-> Driven by AISE child safety package design standard: need for opaque pack!

RecyClass Industrial Sorting Test – Flexible PE bag

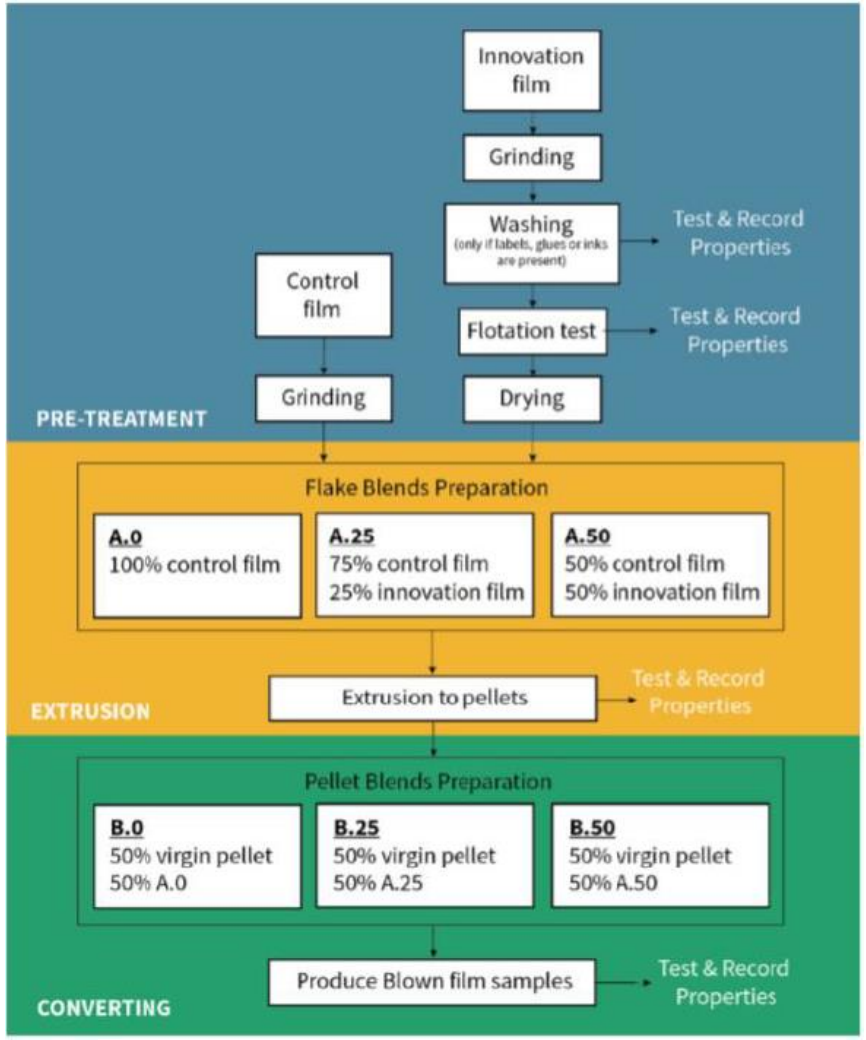
Following the Recyclass sorting protocol, **P&G All in One monomaterial Laundry Pouches can be sorted easily into the LDPE fraction -> η = 1**

Sieving drum

Wind Sifter

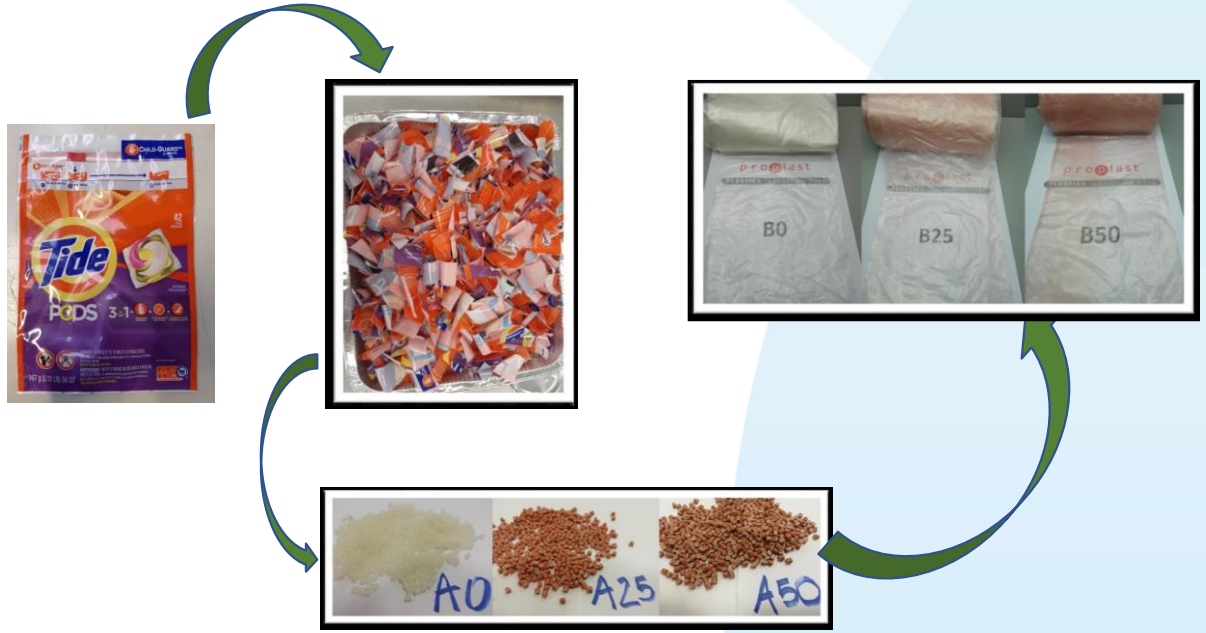
NIR sorting behaviour

RecyClass External Lab Testing - Coloured PE film



= lab test following RecyClass test protocol to evaluate recyclability of a plastic packaging.

=> Objective: lab scale simulation end-to-end recycling stream



proplast

RecyClass Certification

RecyClass

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www.recyclass.eu

For immediate release

PRESS RELEASE

Brussels, June 2021

Single Unit Dose laundry pouch pack by Procter & Gamble approved by RecyClass

Recyclability increased with polyethylene closure system

Procter & Gamble's 'Single Unit Dose laundry pouch pack' is compatible with the European flexible polyethylene (PE) stream recycling, an independent laboratory confirmed. The recycled material can be now used back in high-end, or even closed-loop applications.

RecyClass™

B
RecyClass

RECYCLABILITY RATE CERTIFICATE

THIS CERTIFIES THAT

Procter & Gamble
Soluble Unit Dose All in One Pouch
Monomaterial PE pouch

Has successfully been certified conform the RecyClass standard.

The packaging scored
80,82 % recyclability
This value represents the amount of material that will be effectively recycled during a recycling process.

HolyGrail 2.0: intelligent sorting

exciting news to share: #HolyGrail2 to start semi-industrial trial in Copenhagen led and supported by: AIM - European Brands Association Alliance to End Plastic Waste #recycling #circulareconomy #sustainability

LOOKS LIKE THIS

PERFORMS LIKE THIS

HolyGrail 2.0 Intelligent Sorting

Driven by AIM European Brands Association

Powered by Alliance to End Plastic Waste

Pellenc ST
5,279 followers
4d •

Breaking news: >95% ejection rate achieved on Pellenc ST brand new Mistral+ prototype, combining NIR/VIS infrared and #DigitalWatermarks technology for the first time.
This sorter is now ready to be installed in Københavns Kommune to start the semi-industrial test phase. Join
the #DigitalWatermarks Initiative #HolyGrail2 driven by AIM - European Brands Association and powered by Alliance to End Plastic Waste to learn more and contribute.

#circulareconomy #recycling #Digimarc #sorting
#Brands4Sustainability #Brands4Innovation+ #CityofCopenhagen


ORIGINAL
50
All in 1 PODS
ARIEL


COLOR
40
All in 1 PODS
ARIEL


New
40
All in 1 PODS
ARIEL
+ REVITA BLACK


Lavons plus froid. Chaque degré compte.
Was op lagere temperaturen. Elke graad telt.
ALPINE
40
All in 1 PODS
ARIEL
LIMITED EDITION


NEW
XXL PACK
50
All in 1 PODS
ARIEL
x2 LONGER LASTING FRESHNESS**


НОВАЯ
КРИСТАЛЬНАЯ ЧИСТОТА ДАЖЕ НА СЛОЖНЫХ ЗОНАХ
СЕМЕЙНАЯ УПАКОВКА
Tide
Всё в 1 PODS
Альпийская Свежесть


STRALEND SCHOON, ZELFS IN KOUD
PROPRETÉ ÉCLATANTE, MÊME À FROID
Dash
All in 1 PODS
44


NOWOŚĆ
Vizir
ALL IN 1 PODS
WIĘKSZA SIŁA ODPLAMIANIA
54


FRESHNESS
Dash
All in 1 PODS
Lenor La Collection
42


NEW
PINK WEDNESDAYS EDITION
BRILLIANT CLEAN
All in 1
Bold
Peony Blush
Fetch


NEW
WASH COLDER, REDUCE CO2 EMISSIONS*
45
BRILLIANT CLEAN
All in 1
Bold
SPRING AWAKENING
Brilliant cleaning even in a cold wash


NEW
MEGA PACK 40 WASHES
40
BRIGHT CLEANING
DAZ
ALL IN 1 PODS
WHITES & COLOURS


Kindersicherer Verschluss
NEU
38 PODS VORTEILSPACK
75% weniger Plastik
All in 1 PODS
Lenor
WASCHMITTEL
APRILFRISCH


CHILD-LOCK
P&G Professional
50
FAIRY
PLATINUM
NON BIO
Voted #1 dermatologist brand for sensitive skin*
OUR BEST SOFTNESS +EXTRA STAIN REMOVAL*


SÉCURITÉ ENFANT
FORMAT FAMILIAL
1 Nettoie
2 Rafraîchit
3 Adoucit
4 Protège
All in 1 Pods
Dash & Lenor
Caresse Aérienne

Questions & Answers

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

RecyClass

Thank you for participating!

Join us at future sessions:
20 October 2021
17 November 2021
9 December 2021

RecyClass