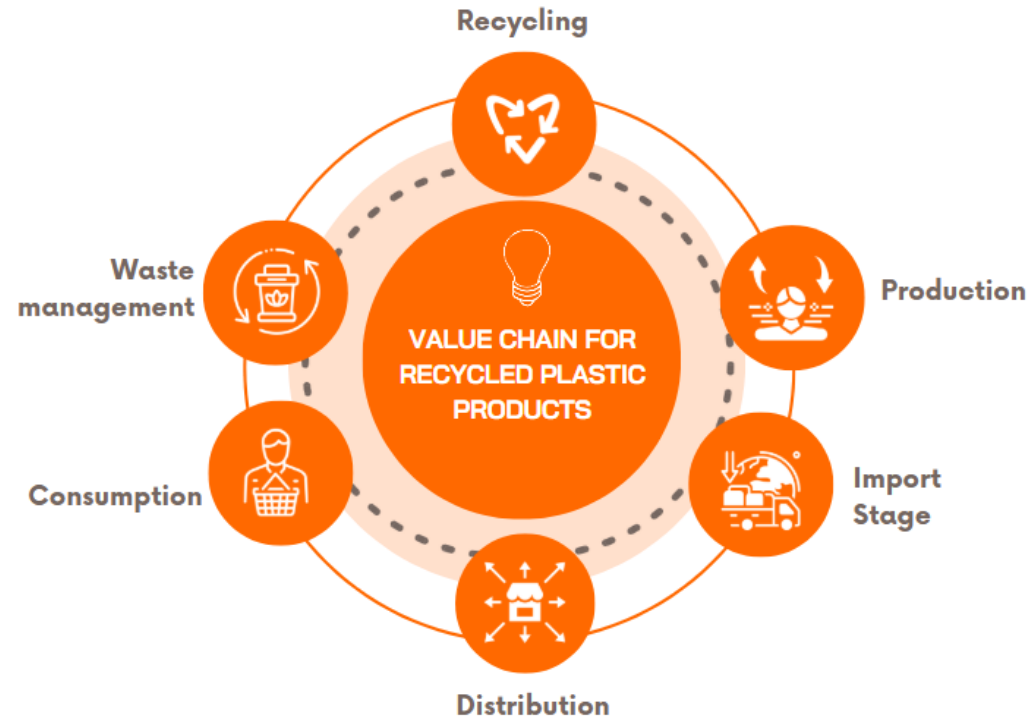


Plastics and Sustainability:

Turning Regulations into Responsible Action

Needs & Opportunities in the Plastic Sector

- 08/07/2025
- Recycled Plastic



AGENDA

01

Plastic
Regulation
Europe



02

EN 15343
Certification



03

Safety &
Recyclability
evaluation



04

Polymeric
Materials
Testing



05

Q&A



SPEAKERS



Ana María Masip

Product Certification Technical Director



Jose Guardiola

Environmental Product Certification
Specialist



Alejandro Belmez

Test Leader – Polymers Laboratory



Marilys Blanchy

Technical Expert in Materials



BUSINESS OVERVIEW

We strengthen our client's product competitiveness and innovative processes through testing and certification.

About Applus+ Group

Who we are and what we do

From where we operate

Core business

Applus+ Group

Applus+ is a global leader in inspection, testing and certification. Driven by our passion for progress and technological development, we'll keep moving towards a more sustainable future alongside our customers; re-enforcing our mission and company motto: **Together beyond standards.**

**26,000+**

People in 2023

**€2,058M**

Revenue in 2023

**66**

Countries in all continents

**Accredited**

By main international entities



Energy & Industry Division

**€ 1,084.4M**
revenue**16,000+**
personnel

Laboratories Division

**€ 290.3M**
revenue**2,744**
personnel

Automotive Division

**€ 391.8M**
revenue**4,300**
personnel

IDIADA Division

**€ 331.5M**
revenue**3,158**
personnel

Laboratories Division - Who we are and what we do

Testing Solutions

For an electrified, connected and greener world

- From lightweight materials to zero-emission aircraft
- From hydrogen pipes to wind turbine blades
- From IoT chips to electromobility

Certification Solutions

To build customer trust and open new markets

- Meet regulatory & industry requirements
- Get your product passport for global market access
- Show business commitment to Quality & CSR

Our 2024



2,744
Employees



12
Countries



€290.3M
Revenue



An electrified British double-decker bus tested in our full-vehicle EMC chamber in the UK.

State-of-the-art & multi-technological capabilities

Testing

Materials & Structures

From medical implants to wind blades, rail bodies or full-scale aircrafts.



Non-destructive Testing (NDT)

For Aerospace, from its initial design on to its final inspection.



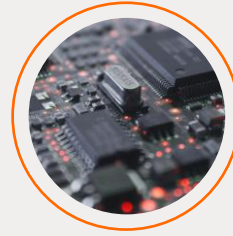
Electrical & Electronics

Ensuring safety, reliability and connectivity for e-mobility, consumer and industrial appliances.



Cybersecurity

Ensuring the security of chips, devices, systems, and networks.



Fire & Building Products

Ensuring fire safety on buildings, infrastructures and transports.



Test Benches and Engineering Solutions

Digital Solutions

Digital tools to enhance our testing solutions and customer services.



Certification

Product Certification

Certifying your products following market access, industry-led and voluntary certification schemes.

Global Market Access

Facilitating market access worldwide and across different industries.

Systems Certification

Helping companies to demonstrate their commitment to HSQE and CSR standards.

Metrology

Industrial calibration & Legal metrology.



Plastic Regulation Europe

Principles, Implications, and the Plastic Tax.

The European Green Deal

Main objectives



Climate Neutral

Drastic reduction of greenhouse gas emissions to make the EU the world's first climate-neutral area.



Circular Economy

New economic model in which products are reused, repaired and recycled, thus reducing waste and conserving resources.



A Clean Industry

It is committed to a cleaner, more sustainable and energy-efficient industry that thrives in the EU and on world markets.



A Healthier Environment

A plan to restore nature and work towards zero pollution to ensure a healthy environment for future generations.



More Sustainable Agricultural Practices

Greener farming practices to protect the environment while producing healthy and affordable food.



Justice and Climate Equity

A plan to ensure a fair and inclusive transition, supporting those most affected and leaving no one behind.

Regulatory framework for waste management

Circular economy: Reintegration of products into the market



REGULATION

- 2019**
 - **The European Green Deal**
 - **Directive (UE) 2019/904** reduction of the impact of certain plastic products on the environment
- 2022**
 - **Law 7/2022:** Waste and contaminated soils (Plastic Tax Law)
 - **Order HFP/1314/2022:** Model 592 and Model A22
 - **Royal Decree 1055/2022:** Packaging and packaging waste
- 2024**
 - **European Regulation 2024/1781:** Ecodesign requirements applicable to sustainable products (ESPR, Ecodesign Regulation)
- 2025**
 - **European Regulation 2025/40:** Packaging and packaging waste
 - **European Regulation 2025/351:** about materials and plastic objects intended to come into contact with food.
- 2027**
 - **Digital Product Passport (DPP)**



Waste Law

Establish a regulatory framework to promote sustainable practices



1. Prevention and reduction of waste:

Preventing waste generation is a priority, and actions are taken to reduce it.

2. Encouraging recycling and reuse:

The reuse of products and recycling of materials is promoted, setting specific targets to increase recycling rates.

3. Extended producer responsibility EPR-RAP:

Producers are responsible for the management of the waste they generate, including the collection, treatment and recycling of products at the end of their useful life.

4. Waste management systems:

More efficient management systems are established and collaboration between administrations, companies and citizens is encouraged to improve waste management.

5. Contaminated soils:

The law also addresses the remediation of contaminated soils, establishing procedures for their identification, assessment and decontamination.

6. Education and awareness-raising:

Environmental education and awareness-raising on the importance of proper waste management and environmental protection is promoted.

Waste Law

Establishes the known "Plastic Tax in Spanish Territory" on non-reusable plastic packaging

Art. 68 Scope and Object

- **Non-reusable packaging**
- **Semi-finished products** intended for the production of **packaging**, and/or containing plastic to enable **closure, marketing, or presentation**.
- Products **made of more than one material will be taxed based on the amount of plastic they contain**.

Art. 75 - 76 – 77 - 78

- Exemptions: Products intended for the healthcare sector and the agricultural sector.
- Taxpayers: Importers, intra-community buyers, and manufacturers.
- Tax base: Quantity of non-recycled plastic, expressed in kilograms, requiring certification.
- Tax rate: **€ 0.45 per kg**.

Art. 82 General Management Rules

- Settlement period
- The Ministry of Finances defines models, deadlines, and conditions.



Companies can avoid or reduce the plastic tax if they...

Certify the amount of recycled plastic

Accredited under

EN 15343:2008



Demonstrate the reusable condition

Certified by third party
under

EN 13429:2005



Packaging and Packaging Waste Regulation

Effective from 11/02/2025

Objectives

Targeted at: manufacturers, importers, distributors, logistics service providers

- Establish obligations and requirements for the entire value chain (entire life cycle).
- Harmonize national measures on packaging and packaging waste.
- Support the transition towards a circular economy

Scope of Application

Types of packaging affected:

- All packaging and packaging waste.
- Any type of material except those explicitly exempted (light wood, fabric, ceramics, rubber, cork, porcelain, and wax).
- All sectors where packaging is used, regardless of industry.
- Imported packaging.
- Packaging that presents hazards



Packaging



Packaging

Any product made with materials of any kind that is used to contain, protect, handle, distribute, and present goods, from raw materials to finished articles, at any stage of the manufacturing, distribution, and consumption chain. All disposable items used for the same purpose will also be considered packaging.



Accessory Element

An element that is integrated into or attached to an item or accessory of an article intended to contain, support, or preserve, which is directly hung from the product or attached to it, and that performs a packaging function without being an integral part of the product. It is intended to be used, consumed, or discarded along with the product.



Service Packaging

An item designed and intended to be filled at the point of sale to dispense the product.



Disposable Item

A disposable item, sold, filled, or designed and intended to be filled at the point of sale, which performs the function of packaging.



Permeable Single-Use Unit

A permeable tea, coffee, or other beverage sachet, or a single-use unit of a tea, coffee, or other beverage system containing such a product that softens after use and is intended to be used and discarded along with the product.

Non-Permeable Single-Use Unit

A non-permeable single-use unit of a tea, coffee, or other beverage system, intended for use in a machine and to be used and discarded along with the product

Labelling Requirements

Sustainability Requirements

1. Requirements for substances present in packaging

- Minimize the presence of concerning substances.
- Pb, Cd, Hg, and Cr < 100 mg/kg
- No introduction of PFAS into the market

2. Minimum reduction of packaging

- Reduce weight and volume to the minimum necessary to ensure functionality (from 01/01/2030).

3. Minimum recycled content in plastic packaging

Established based on the type and composition of the packaging

4. Reusable packaging

- Used multiple times.
- Rotations.
- Emptying, unloading, reconditioning.
- Specific conditions for recyclable packaging.

5. Compostable packaging

- Packaging that must be compostable.
- Packaging that each EEMM (Member State) can require to be compostable.
- Packaging that has already been, will continue to be compostable.

6. Recyclable packaging

- All packaging placed on the market will be recyclable.
- By 01/01/2035 (separate collection).
- SDDR (Deposit, Return, and Refund System).
- Large-scale recycling and design for material recycling.

Community principle:

- RAP (Extended Producer Responsibility) is transferred to manufacturers ("Product Producer"), who must bear the costs of waste management generated by their products in the market.

PFAS: Perfluoroalkyl and Polyfluoroalkyl Substances

EEMM: Member States

SDDR: Deposit, Return, and Refund System

RAP: Extended Producer Responsibility - Extended responsibility systems (individual SIRAP and collective SCRAP)

Regulation on Eco-design of Sustainable Products (ESPR)

Effective 18/07/2024

Objectives

- Improve the circularity of design, energy performance, and reduce the carbon footprint of products, excluding food, feed, and medicines.
- Ecodesign requirements: durability, recyclability, and post-consumer recycled content.
- Digital product passport (DPP).
- Prohibition of destroying unsold products.
- Obligations for economic operators.
- Market surveillance.
- Sanctions

JRC 138903 Eco-design for Sustainable Products Regulation

Study to establish product priorities under the Eco-design Regulation.

- Priority final products: Textiles and footwear / Furniture / Tires / Mattresses / Detergents / Paints and varnishes / Lubricants / Cosmetics / Toys / Fishing gear / Absorbent hygiene products.
- Priority intermediate products: Iron and steel / Basic chemicals / Non-ferrous metal products (excluding aluminum) / Aluminum / Plastics and polymers / Paper and pulp / Glass



Digital Product Passport (DPP)

Regulation on Eco-design of Sustainable Products

- The European Commission (EC) proposes the DPP as a key tool to achieve a circular economy and create transparency.

Features of the DPP

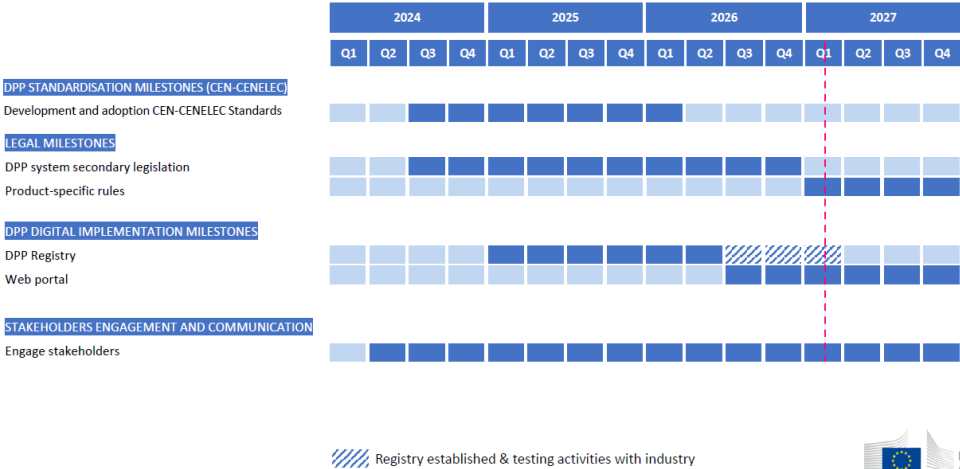
- An electronic register that will share detailed information about the product and its environmental sustainability throughout its lifecycle.
- An essential tool for managing and tracing goods.
- Will enable consumers and companies to make informed purchasing decisions.
- Priority industries: electronics, vehicles, textiles, plastics, construction and building, furniture, and chemicals.

International impact:

- Will affect imported products in the European market and components or intermediate products.
- Influence on global supply chains, requiring suppliers and producers outside the EU to collect and report data for the DPP

Digital Product Passport

Roadmap





EN 15343 Certification

% Recycled Plastic and related
Sustainability services

EN 15343

Recycled Plastics. Traceability and Conformity Assessment of Plastic Recycling and Recycled Content

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 15343

December 2007

ICS 13.030.50; 83.080.20

English Version

Plastics - Recycled Plastics - Plastics recycling traceability and
assessment of conformity and recycled content

Plastiques - Plastiques recyclés - Traçabilité du recyclage
des plastiques et évaluation de la conformité et de la teneur
en produits recyclés

Kunststoffe - Kunststoff-Rezyklate - Rückverfolgbarkeit bei
der Kunststoffverwertung und Bewertung der Konformität
und des Rezyklatgehalts

EN 15343 Standard

Standard that specified the procedures and requirements necessary to establish the traceability of recycled plastics, while also laying the groundwork to calculate the recycled content of a finished product.

Key points of the standard:

4. Methodology and Procedure

- 4.1 Control of incoming material.
- 4.2 Control of the recycling production process.
- 4.3 Characteristics of recycled plastics.
- 4.4 Traceability

6. Recycled content

Percentage of recycled content in the product:

EN 15343

4. Methodology and Procedure



4.1

Control of incoming material

Properly designed collection and sorting schemes for recyclable plastic waste

EN 15347-1 Standard

Material control



4.2

Control of the recycling production process

Recording of production process variables and conduct quality control tests

Identification and Traceability

All manufactured batches



4.3

Characteristics of recycled plastics

Demonstrate product quality and characteristics of recycled batches

Applicable Standards

EN 15342, EN 15344, EN 15345, EN 15346 and EN 15348



4.4

Traceability

Evidences and data from each of the previous phases. Identification and recording with applicable documentation and records

EN 15343

5. Quality Evaluation

Factory production control (Ej. 9001)

Manufacturing shall be Included within the Scope of the activities carried out by the organisation.

Record of the quality controls carried out: A quality management system certified according to ISO 9001 can constitute an adequate guarantee of the consistent quality of the recycling. Factory production control (FPC) shall be assessed.

Calibration Evaluation

Applus+ Laboratories as a Metrology benchmark in Europe

The equipment involved in the manufacturing process of the products under the scope of certification shall:

- Perform calibration by accredited laboratories or by traceable standards (ISO/IEC 17025).

Table 1 – Information to be recorded as appropriate to the intended application

Origin	Type of materia / origin
	Type of product
	Type of waste, for example, preconsumer, post-consumer, demolition waste
	Where do they come from
Transport	Histoy of the waste (Contact with dangerous substances
	Pick-up (transport/type of transport
	Classification
	Size of the batch, identification and marking
	Pre-treatment (Washing, milling)
Test carried out before processing	Storage (External)
	EN 15347 Characterization of recycled plastics from plastic waste
	Or as appropriate for the final application
Process parameters Test carried out after the processing	Details of the used process as appropriated
	EN 15342
	EN 15344
	EN 15345
	EN 15346
	EN 15348
Intended application (suitable)	Or any other standard appropriated for the final application
	Details of the suitable applications and non suitable applications

EN 15343

6. Recycled Content

Percentage of Recycled content of a Product

Declaration of the recycled content

Only recycled materials of pre-consumer and post-consumer origin should count towards the recycled count (by an EN 15343 certified supplier).

Mass Balance

Validation of recycled content, evidencing plausibility

Being:

A = Sum of the amount of recycled raw material that has become part of the final products made available to buyers during the analysis period

AC = Amount of recycled raw material acquired during the analysis period.

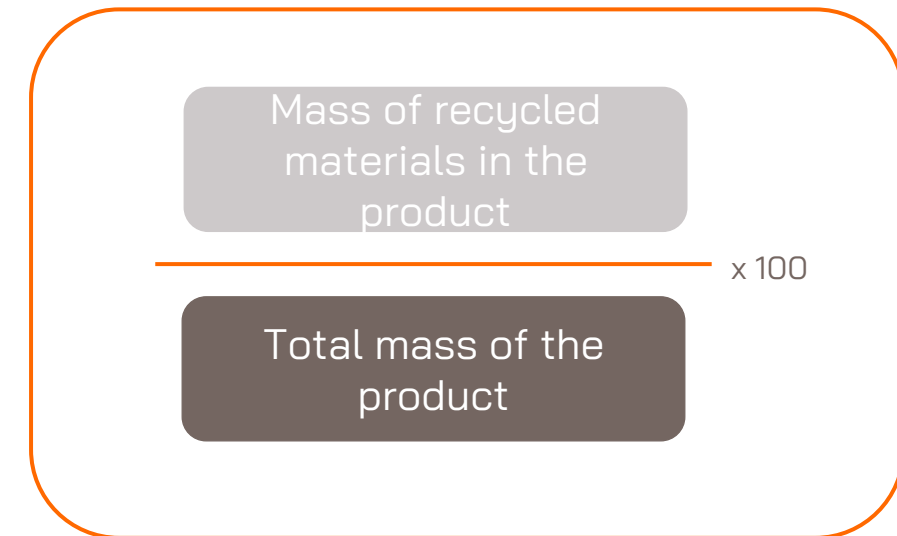
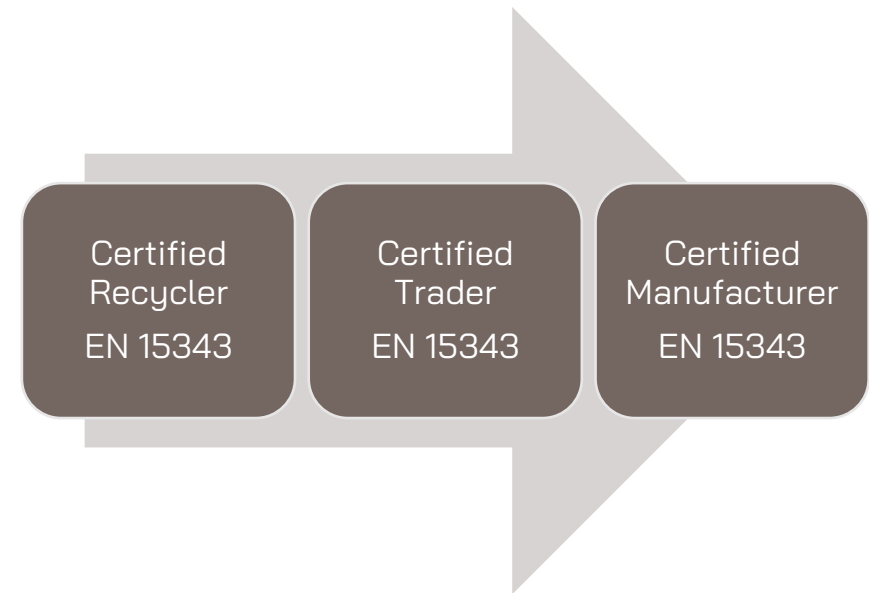
ASI = Quantity of recycled raw material in stock at the beginning of the analysis period

ASF = Quantity of recycled raw material in stock at the end of the analysis period

$$A = AC + ASI - ASF$$

Note: Only recycled raw material with a certificate according to the UNE EN 15343 standard, accredited or uncredited, and evidencing the requirements of table 1 (B.1) will be taken into account.

P = Total weight of recycled material of the products manufactured by the company during the analysis period (products included and not included within the scope of certification that contain recycled material).



Certification Process at Applus+

Included Certification schemes:



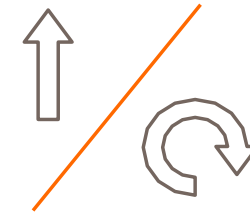
PCS 135
Particular Certification
System

Percentage Content of
Recycled Plastic in a Product



PCS 136
Particular Certification
System

Traceability and Conformity
Assessment of Plastic
Recycling

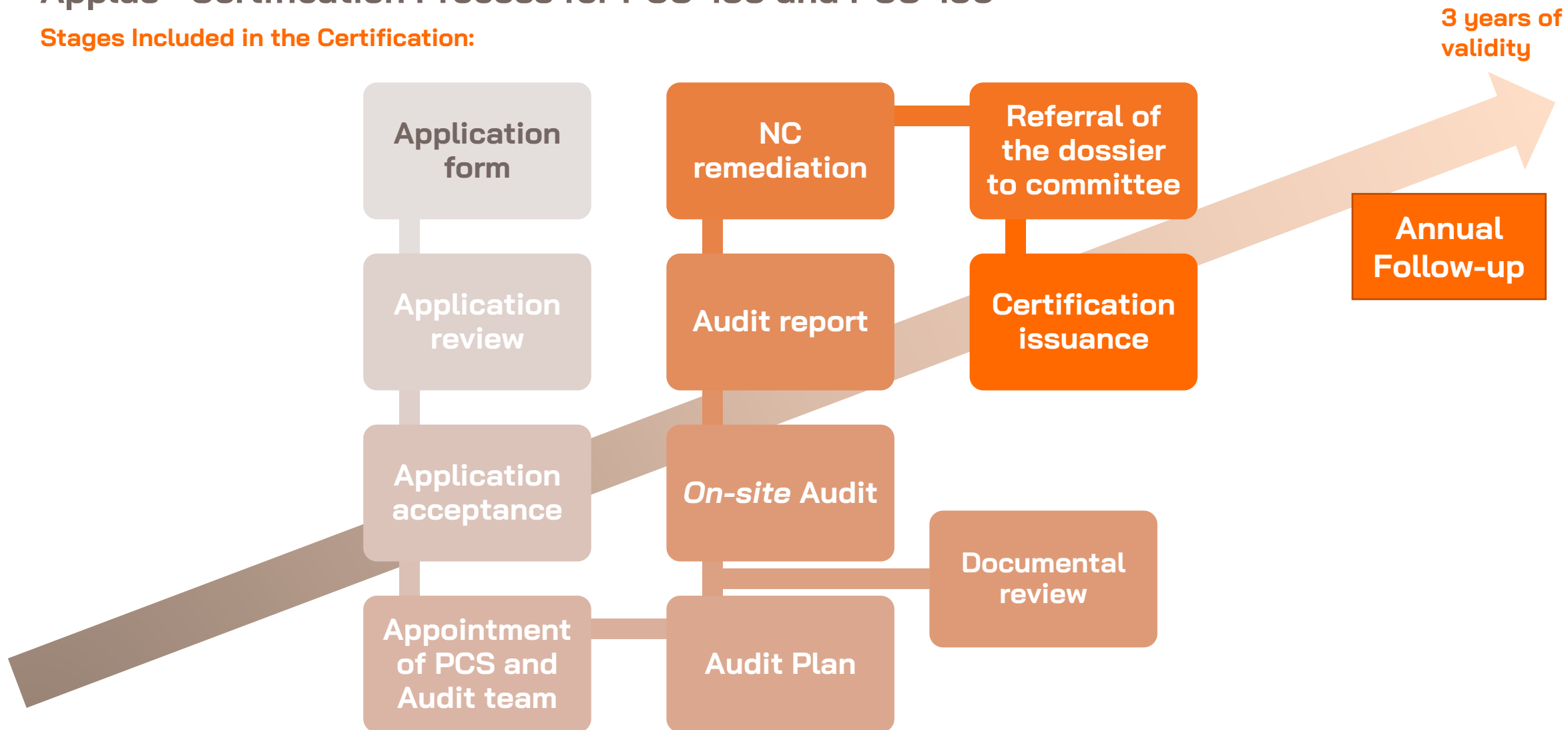


PCS 141
Particular Certification
System

Reuse of Packaging Containers

Applus+ Certification Process for PCS-135 and PCS-136

Stages Included in the Certification:



Certification Procedure at Applus+

135 – Percentage of Recycled Content in a Plastic Product

136 – Traceability and Conformity Assessment of Plastic Recycling

Site visit

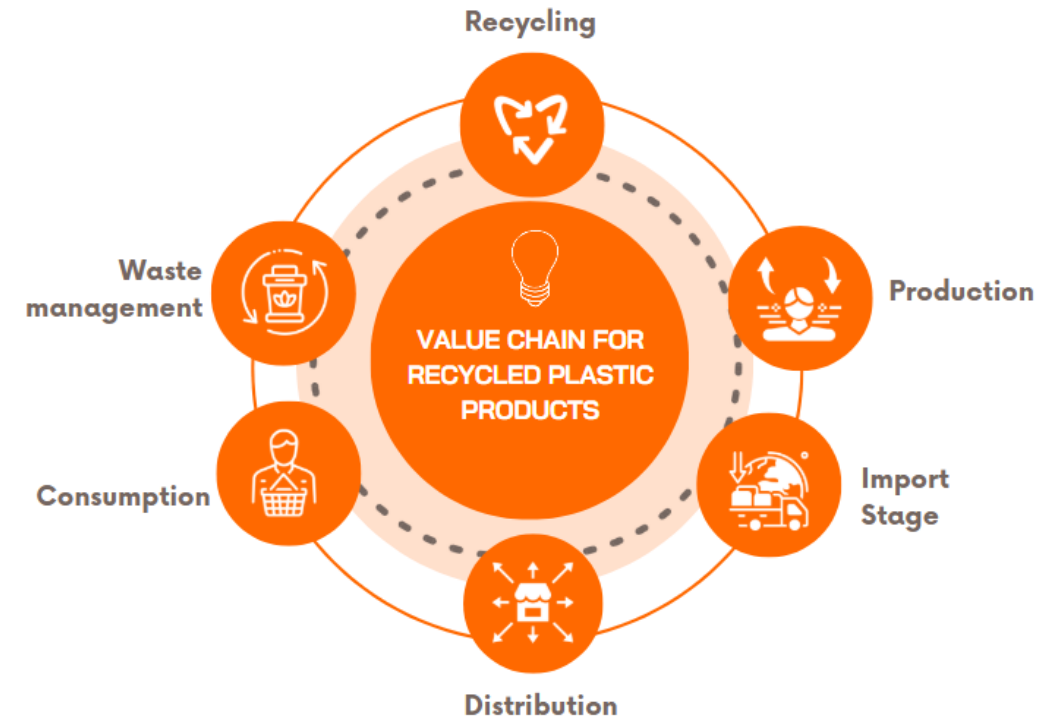
- Production control and Quality System
- Processes and Involved stages
- Verification of Recycled Material Content
- Traceability
- A+ Mark (if applicable)

Quality system

- Incoming recycled material control
- Calculation protocol control
- Traceability
- Recycled content declaration

Clasification scheme

- Required Characteristics of Plastic Waste (Characterisation)
- Optional Characteristics of Plastic Waste (Characterisation)



Certification procedure at Applus+

Particular Certification System (PCS) 141 – Reuse of Packaging containers

Describes the procedure applied by Applus+ Laboratories for granting the right to use the A+ Mark for Packaging classified as reusable in closed-loop, open-loop and/or hybrid Systems*

Relevant Clauses of the PCS:

- **Point 1:** Production / Quality control
 - ❖ Reuse control
 - ❖ Reconditioning or Refilling/Unloading Control
 - ❖ Traceability
 - ❖ Declaration of Reusable Packaging / Container
- **Point 2:** Specifications of Reuse Systems
- **Point 3:** Reconditioning System, Essential Elements
- **Point 4:** Declaration of Valorisation of Packaging / Containers after Use

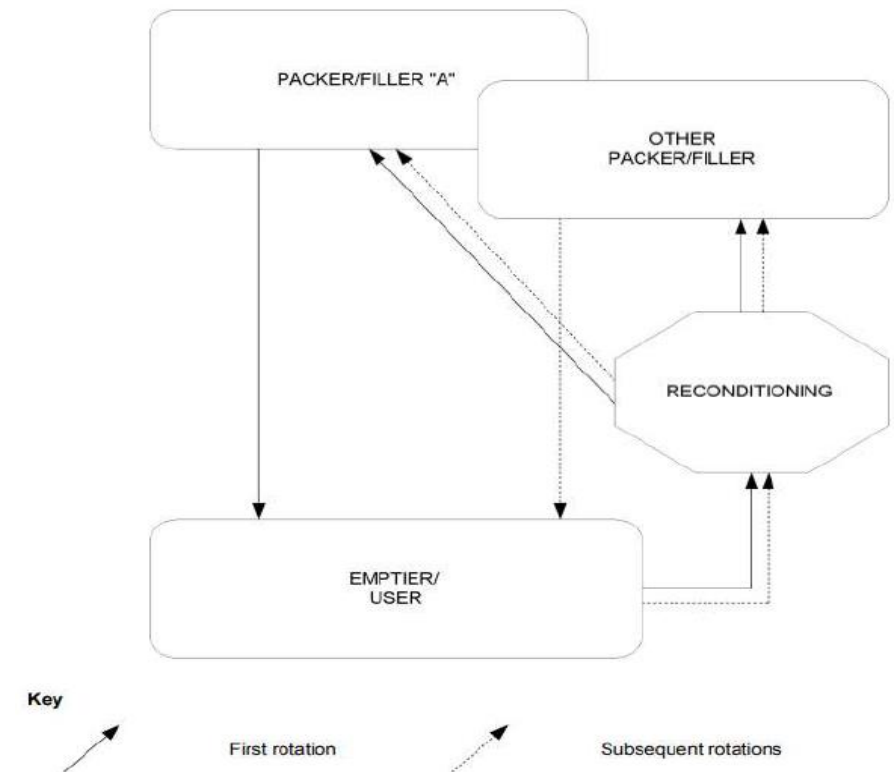


Figure 2 — Open loop system

The hybrid system Will disappear once the new Packaging and Packaging Waste Regulation is transponed.

Certification Procedure at Applus+

Certificate issuance

LGAI Technological Center, S.A. (APPLUS)
Campus UAB - Ronda de la Font del Carme s/n
08183 Bellaterra (Barcelona)
T +34 93 687 20 00
CIF: A-83207482
www.appluslaboratories.com



PRODUCTO CERTIFICADO APPLUS+
APPLUS+ CERTIFIED PRODUCT

No. **nº Certificate**

LGAI Technological Center, S.A. (APPLUS) certifica que el producto / *Certifies that the product:*

PORCENTAJE DE PLÁSTICO RECICLADO EN PRODUCTO Ver anexo
PERCENTAGE OF RECYCLED PLASTIC IN PRODUCT. **Kind of Product** *Annex*

De la empresa/ *Company:*

Name and address of the organization

Norma / *Is in accordance with the standard:*

UNE EN 15343:2008 (EN 15343:2007): PLÁSTICOS. PLÁSTICOS RECICLADOS. TRAZABILIDAD Y EVALUACIÓN DE CONFORMIDAD DEL RECICLADO DE PLÁSTICOS Y CONTENIDO EN RECICLADO.
PLASTICS. RECYCLED PLASTICS. PLASTICS RECYCLING TRACEABILITY AND ASSESSMENT OF CONFORMITY AND RECYCLED CONTENT

Once approved by the Certification Committee, the certificate will be issued with the following information:

- Unique certificate number
- Applicable standards (EN 15343 / EN 13429)
- Name of the certified company
- Address of the certified organization
- Technical annex (Products certified)

Product	Characteristics	Composition	% Recycled Content



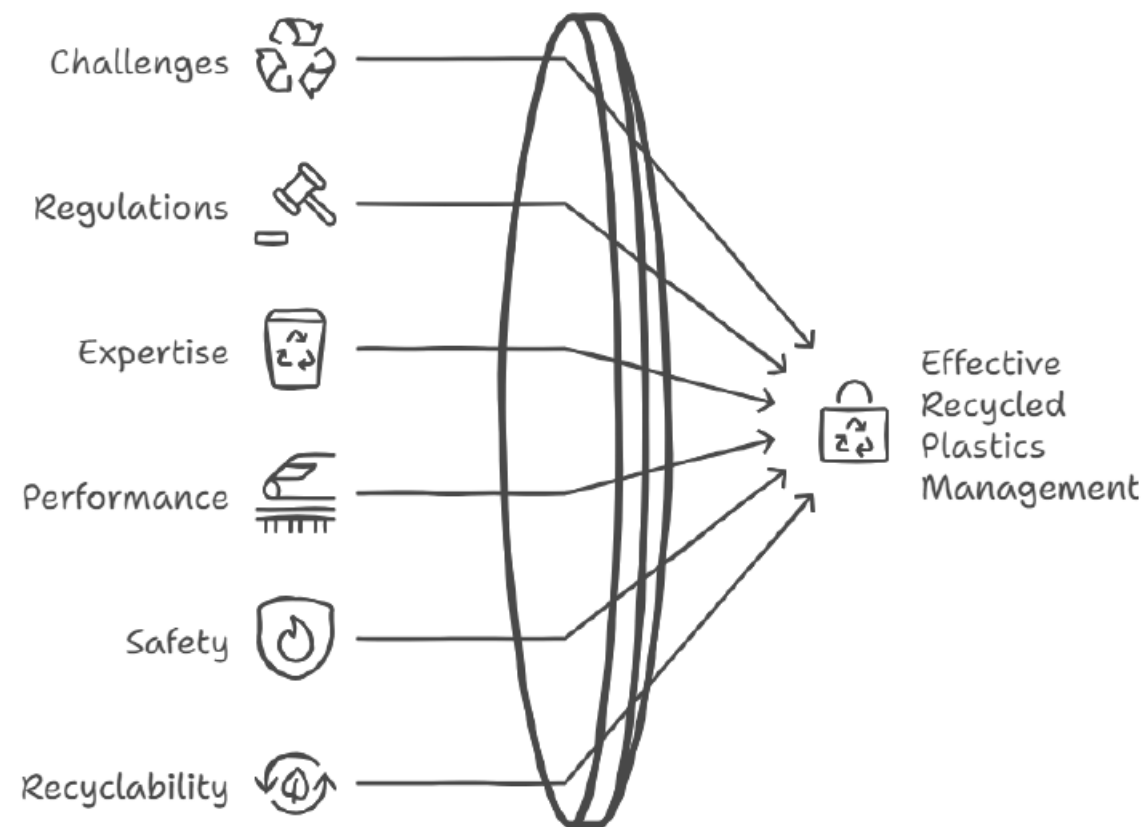
Safety & Recyclability Evaluation

What are the impact of product ?

How to ensure compliance with the latest regulation ?

Recycled Plastics: Challenges, Regulations, and Our Expertise

Integrating Plastics for Sustainability



Future legislations is expected to focus more on integrating environmental criteria into plastic safety standards, such as reducing the carbon footprint of plastics and improving the circular economy.

Navigating Plastic Regulations



Reg 2025/40 (PPWR)

Replace directive 94/62/CE and focus on the recyclability and by design a reduction of the use of plastic in packaging

Reg 2022/1616

Focus on the recyclability in food contact industry

Reg 1935/2004

Reg 10/2011 (2025/351)

Focus on food safety in plastic for FCM

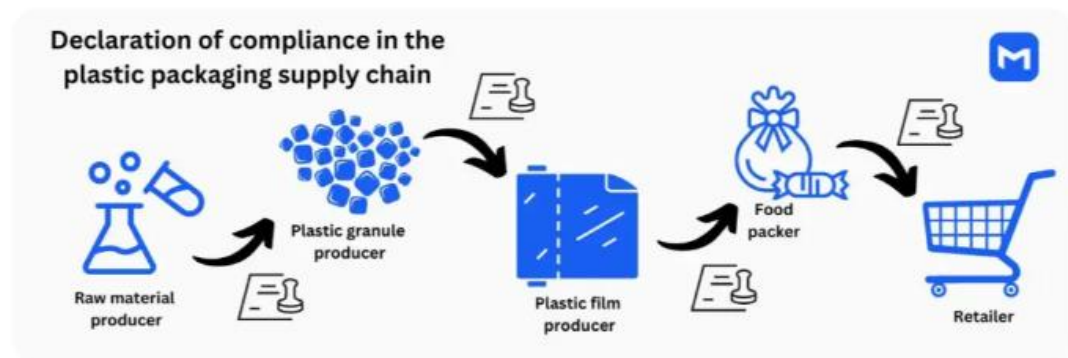
Reg 1907/2006 (REACH)

Focus on chemical assessment

(CE) N°1272/2008 (CLP)

Focus on Labelling

Declaration of compliance is required to verify the conformity to all regulation
→ *To be provided to competent authorities upon request*



Manufacturers within the production chain have to provide the DoC to their direct customers.

Stakeholder Responsibilities in Plastic Packaging Safety

Food Producers

Ensure compatibility with food and packaging aging.



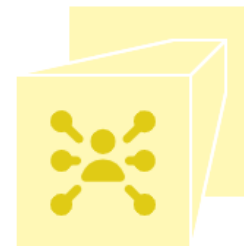
Packaging Manufacturers

Focus on food safety and packaging resistance.



Distributors

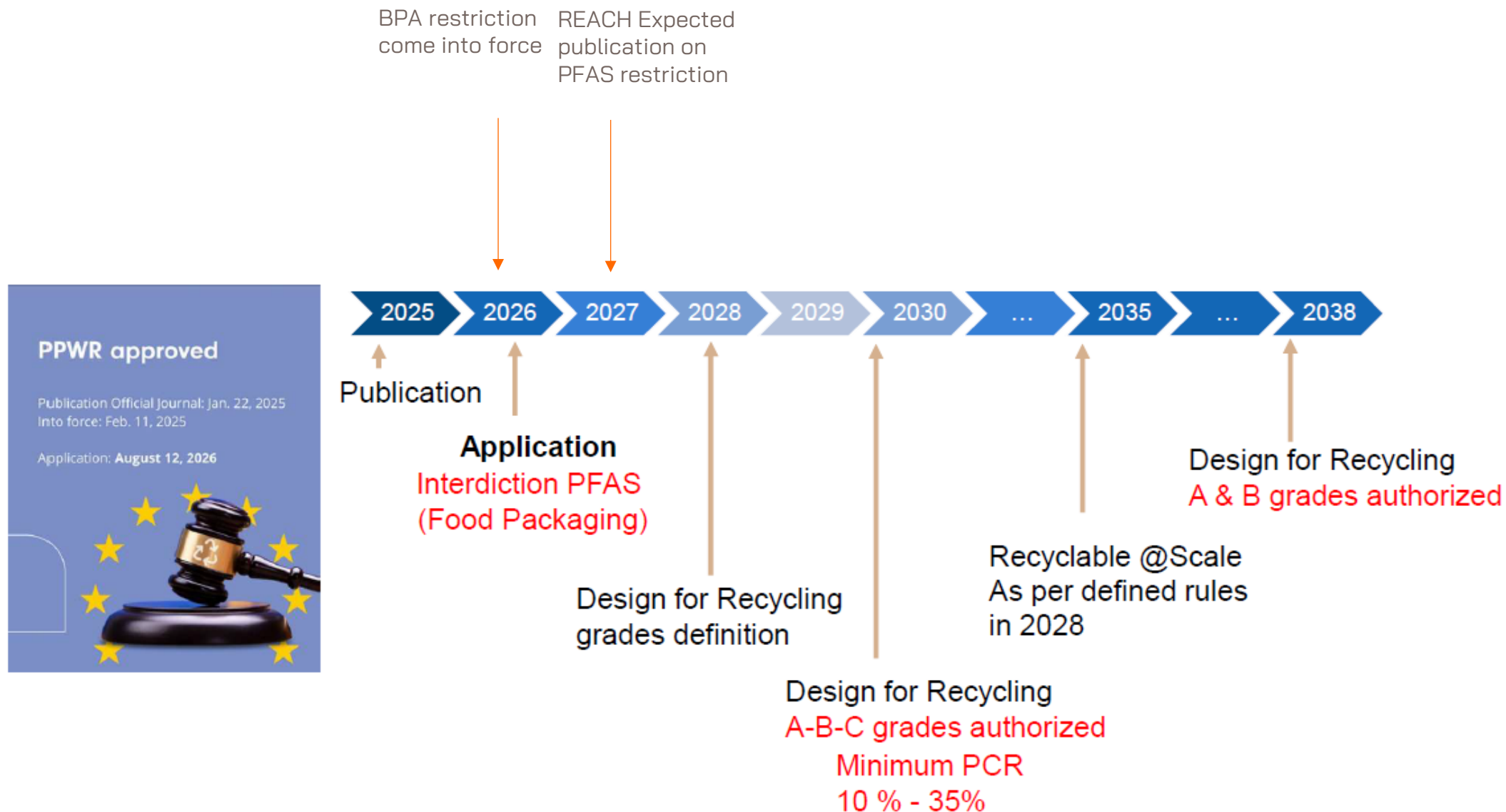
Verify compliance and traceability in distribution.



Recycled Resin Manufacturers

Emphasize purity and mechanical properties of recycled resin.





Focus on the design for recyclability (D4R) of packaging

Art 5. Requirements for substances present in packaging

- Minimize the presence of concerning substances.
- Pb, Cd, Hg, and Cr < 100 mg/kg
- No introduction of PFAS into the market

Art 10. Minimum reduction of packaging

- Reduce weight and volume to the minimum necessary to ensure functionality (from 01/01/2030).

Art7. Minimum recycled content in plastic packaging

Established based on the type and composition of the packaging

Art 11. Reusable packaging

- Used multiple times.
- Rotations.
- Emptying, unloading, reconditioning.
- Specific conditions for recyclable packaging.

5. Compostable packaging

- Packaging that must be compostable.
- Packaging that each EEMM (Member State) can require to be compostable.
- Packaging that has already been, will continue to be compostable.

Art 6. Recyclable packaging

- All packaging placed on the market will be recyclable.
- By 01/01/2035 (separate collection).
- SDDR (Deposit, Return, and Refund System).
- Large-scale recycling and design for material recycling.

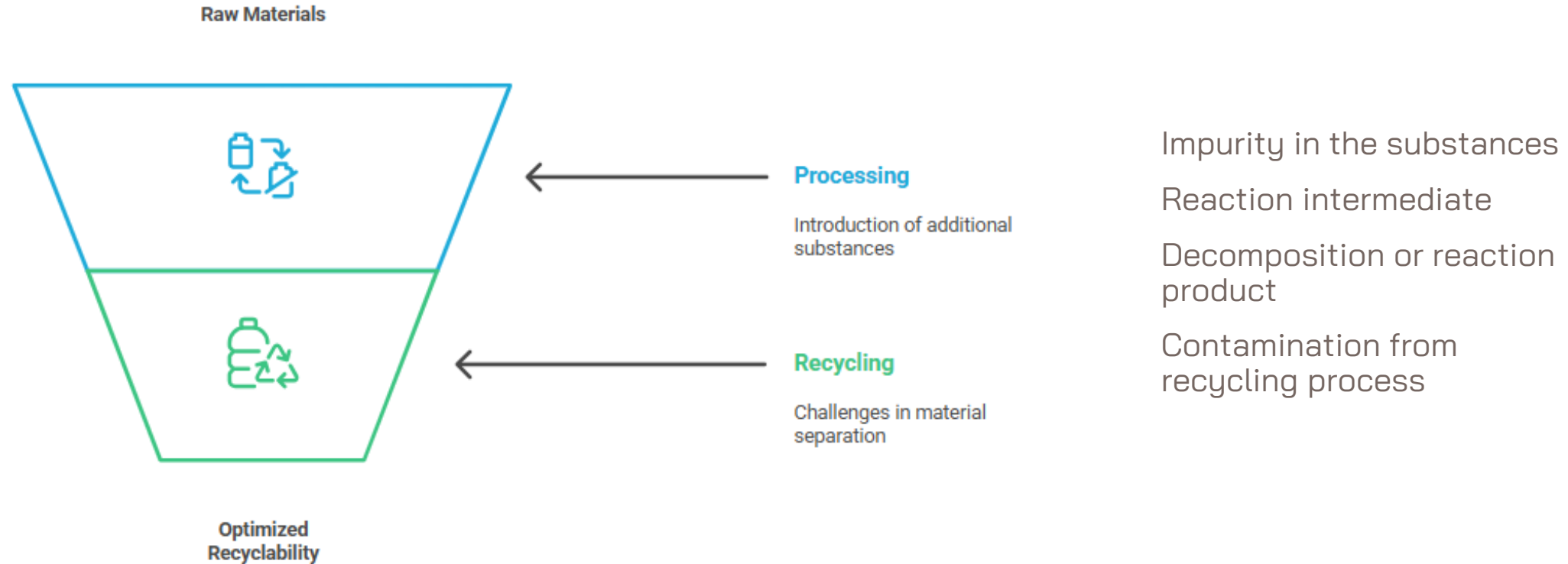
- Need to Design of the packaging
 - Accessories**
 - Materials**
 - Processes**
- Development
 - Evaluation of performances**
 - Evaluation of safety**

As well others regulation are requiring control and safety of material

Reg N°1223/2009 for cosmetic

Reg 1935/2003 for food contact material that come with Reg 10/2011(2025/351) for plastic material associated with Reg 2022

Specific focus will be addressed on recycled plastic potential to release substances that could present a risk for the environment or for the used



The occurrence of finding this type of product in recycled plastic is higher than in virgin material because of

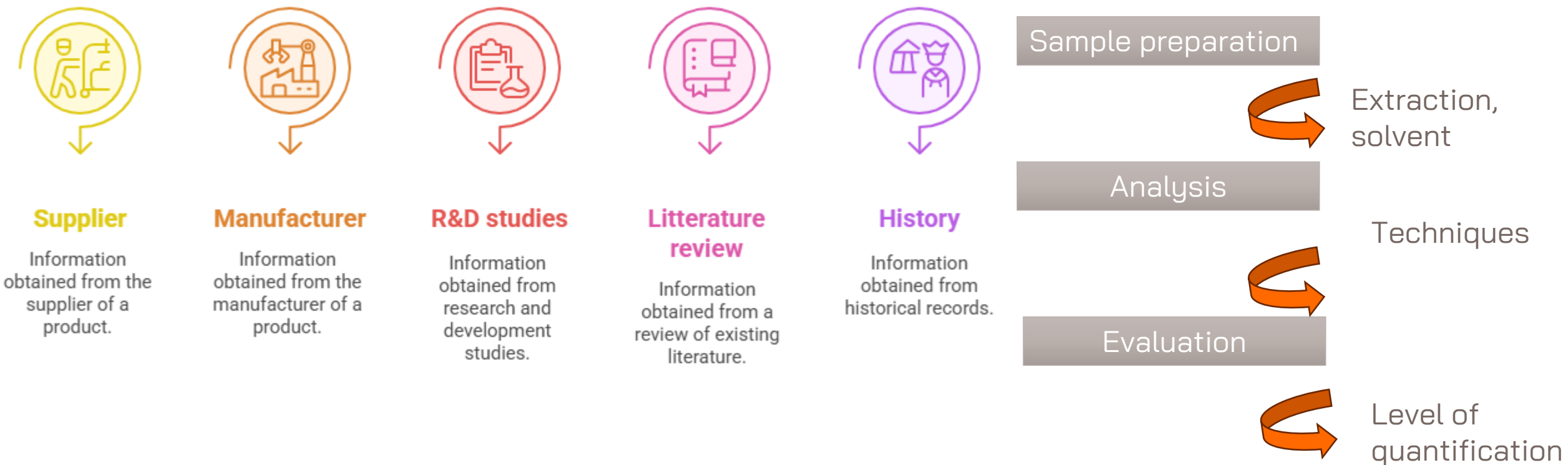
- Potential degradation during use
- Mis-use of the packaging

As much information required for suitable analysis:

Material used (ink, adhesive, polymer)

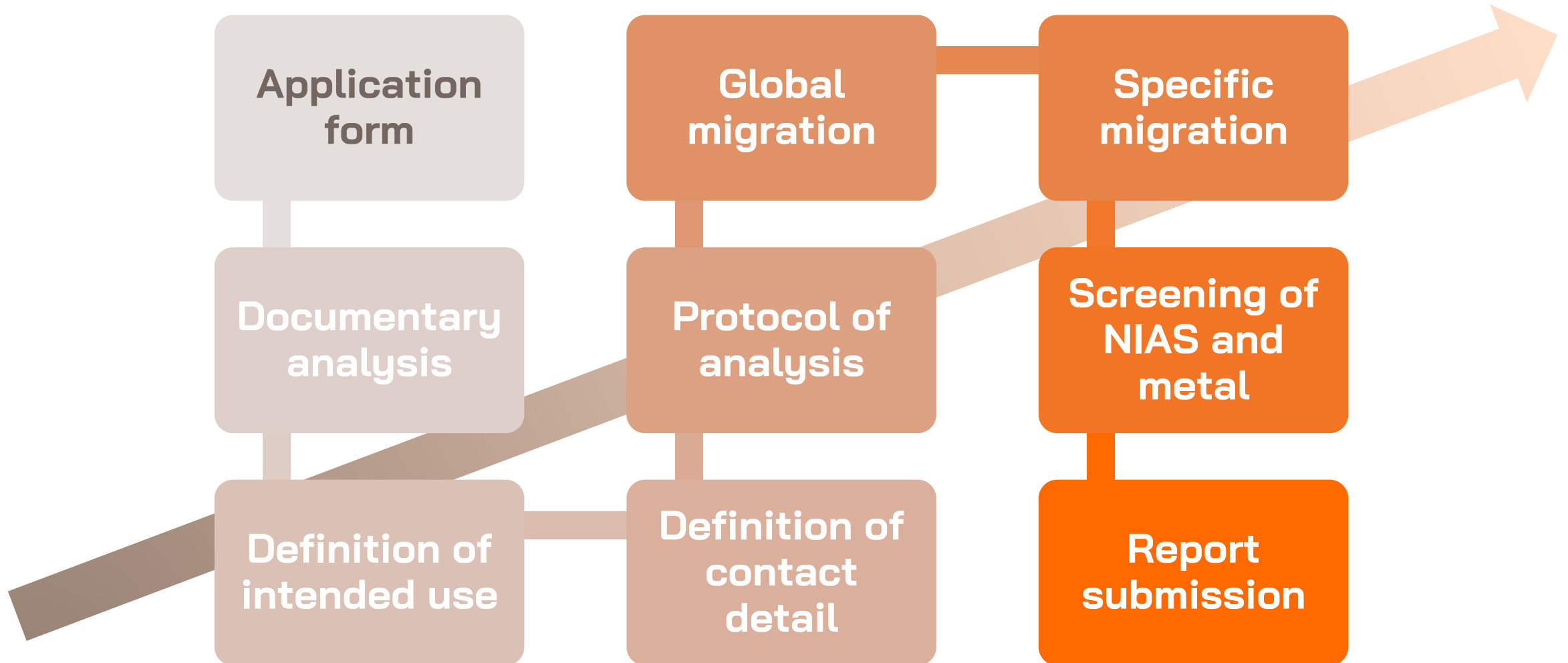
Additives, cleaning agent,

Information sources



Applus+ Certification Safety evaluation process

Stages Included in the Certification:



RecyClass | CASE STUDY

CLOSURE SYSTEM

- + Same material as container
- ~ PP; Other materials with density > 1 g/cm³
- x Aluminium, metal, PVC

ADHESIVE FOR LABELS

- + Water releasable or soluble adhesive
- ~ Non-water soluble or non-releasable adhesive approved by RecyClass in combination with filmic PO labels
- x Not approved adhesive

MAIN BODY OF THE PACKAGING

Ideally, packaging should be mono-material.

- + HDPE or multilayer PE with HDPE prevalence
- x Multilayer with PLA, PVC, PS, PET, PETG

COLOURATION

- + Light colours
- ~ Dark colours, black inner layer
- x Non-NIR detectable colours

BARRIER TECHNOLOGIES

- + <6wt% of EVOH with PE-based tie layer
- ~ >6wt% of EVOH with PE-based tie layer or <1wt% of EVOH with any other tie layer
- x >1wt% of EVOH with any other tie layer



LABEL & SLEEVE

- + Same material as container
- ~ PP, PO (density < 1 g/cm³); PET, PETG, PLA, PS (all with density > 1 g/cm³); paper without fibre loss
- x Labels/sleeves hindering the NIR detection, paper with fibre loss, non detachable PET labels

INKS & DECORATIONS

- + Direct printing representing < 1wt% of the total packaging
- ~ Direct printing; cold transfer and hot stamping
- x Inks that bleed; inks non-compliant with EuPIA; PVC binders; printing hindering the NIR-detection

- LEGEND**
- ~ One class deduction (15% rate deduction)
 - x 3 or 5 classes deduction (45% rate deduction)



Check the Design Book online!

MATERIAL COMPOSITION
(TOTAL AMOUNT OF PE & AMOUNT OF
PP ATTACHMENTS IN THE PACKAGING)

DESCRIPTION
(TEST PROTOCOL)

DESCRIPTION
(METHODOLOGY)

MATERIAL *

COLOURS

SIZE

PRODUCT RESIDUES
(EASY TO EMPTY INDEX)

BARRIER

ADDITIVES

CLOSURE SYSTEM

LINERS, SEALS AND VALVES

OTHER COMPONENTS

COLOURS

INKS

LABELS MATERIALS
(PSL, WET-GLUE LABELS,
WRAP-AROUND LABELS, INK)

ADHESIVES FOR LABELS

SLEEVES

DIRECT PRINTING

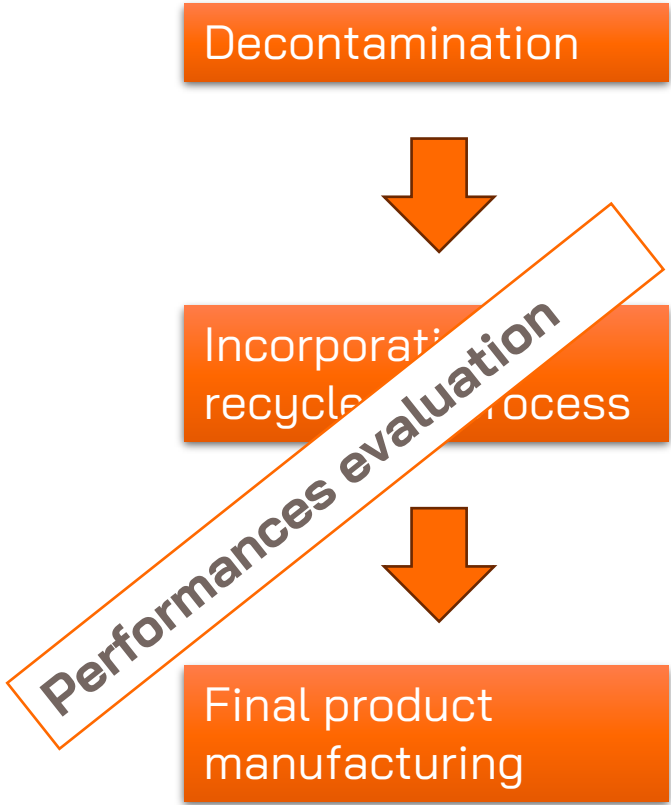
OTHER DECORATIVE
TECHNOLOGIES

EVOLUTION OF RECYCLABILITY CRITERIA

	2030	2035	2038
Grade A > 95%	Recyclable	Recycled at scale	Recycled at scale
Grade B > 80%	Recyclable	Recycled at scale	Recycled at scale
Grade C > 70%	Recyclable	Non recyclable	Non recyclable
Non recyclable	Non recyclable	Non recyclable	Non recyclable

Matériaux	Catégories (Annexe II)
Plastique	PET rigide
	PE rigide, PP rigide, PEHD et PP rigides
	Films/souples (PP, PE, PET)
	PS, XPS, PSE
	Autres plastiques rigides (PVC, multi matériaux)
Papier/carton	Biodégradable (rigide et souple)
	Papier/carton (sauf pour liquides)
Métal	Carton d'emballage pour liquides
	Aluminium
Verre	Acier
Bois	Verre
Autres	Bois, liège
	Textiles, céramique/porcelaine et autres

- Easy to collect separately
- Sorted into specific waste streams without contamination
- Recycled on a large scale



Packaging format	By 2030 or 3 years from EIF of implementing act establishing methodology for calculation and verification of the targets	By 2040
- Contact sensitive packaging		
a) Made from PET as a major component, except SU plastic beverage bottles	30%	50%
b) Made from plastic materials other than PET, except SUP beverage bottles	10%	25%
c) Single-use plastic beverage bottles	30%	65%
d) Other plastic packaging	35%	65%

NB: EPR fees may (voluntary) be modulated based on the percentage of recycled content in packaging. The modulation shall consider sustainability criteria and environmental costs of the recycling technologies



Material characterisation

Tests required to obtain
certification of recycled plastic

Polyethylene (PE)

- Packaging such as bottles or bags, film for food use, pipes, wiring, among others

Polypropylene (PP)

- Packaging for the cosmetic or pharmaceutical industry, plastic parts in the automotive industry, pipes, textile industry (upholstery, carpets or backpacks), among others

Polystyrene (PS)

- Trays and containers for the food industry, insulation panels in construction, plastic parts in the automotive industry, housings or insulators in the electronics industry, among others.

Polyvinyl chloride (PVC)

- Pipes, electrical wiring, internal parts in the automotive sector, windows or floors in construction

Polyethylene terephthalate (PET)

- Packaging, food processing machinery components, textile industry, electronics industry



Mandatory tests for the certification of recycled plastic

An analysis with the tests required by applicable regulations must be provided for each batch of recycled material. Samples will be periodically sent to an accredited external laboratory to validate the internal results.

PE (UNE-EN 15344)

No differentiation between PE grades

Mandatory tests

- Melt Flow Index ISO 1133-1 *
- Shape (visual inspection)
- LDPE content ISO 11357-3
- Density ISO 1183-1 *
- Filtration level

PP (UNE-EN 15345)

No differentiation between PP grades

Mandatory tests

- Shape and colour (visual inspection)
- Density ISO 1183-1 *
- Charpy impact ISO 179-1 * or Izod impact ISO 180
- Melt Flow Index ISO 1133-1 *

PS (UNE-EN 15342)

For PS-I there is no need to perform impact test

Mandatory tests

- Shape and colour (visual inspection)
- Charpy impact ISO 179-1 * or Izod impact ISO 180
- Particle size
- VICAT temperature ISO 306 *

* Testing laboratory accredited by ENAC in file 9/LE1680

Mandatory tests for the certification of recycled plastic

An analysis with the tests required by applicable regulations must be provided for each batch of recycled material. Samples will be periodically sent to an accredited external laboratory to validate the internal results.

PVC (UNE-EN 15346)

Differentiation between "unplasticized" PVC (PVC-U) and "plasticized" PVC (PVC-P). Also between micronized and non-micronized.

Mandatory tests

- Shape and colour (visual inspection)
- Bulk density ISO 60 (only for micronised)
- Particle size distribution (only for micronised)
- Tensile test ISO 527-2* (only for PVC-P not micronised)
- Flexural test ISO 178* (only for PVC-U not micronised)
- Hardness test ISO 868* (only for PVC-P)
- VICAT temperatura ISO 306* (only for PVC-U not micronised)

PET (UNE-EN 15348)

Diferenciación between PET in pellets and PET in flakes

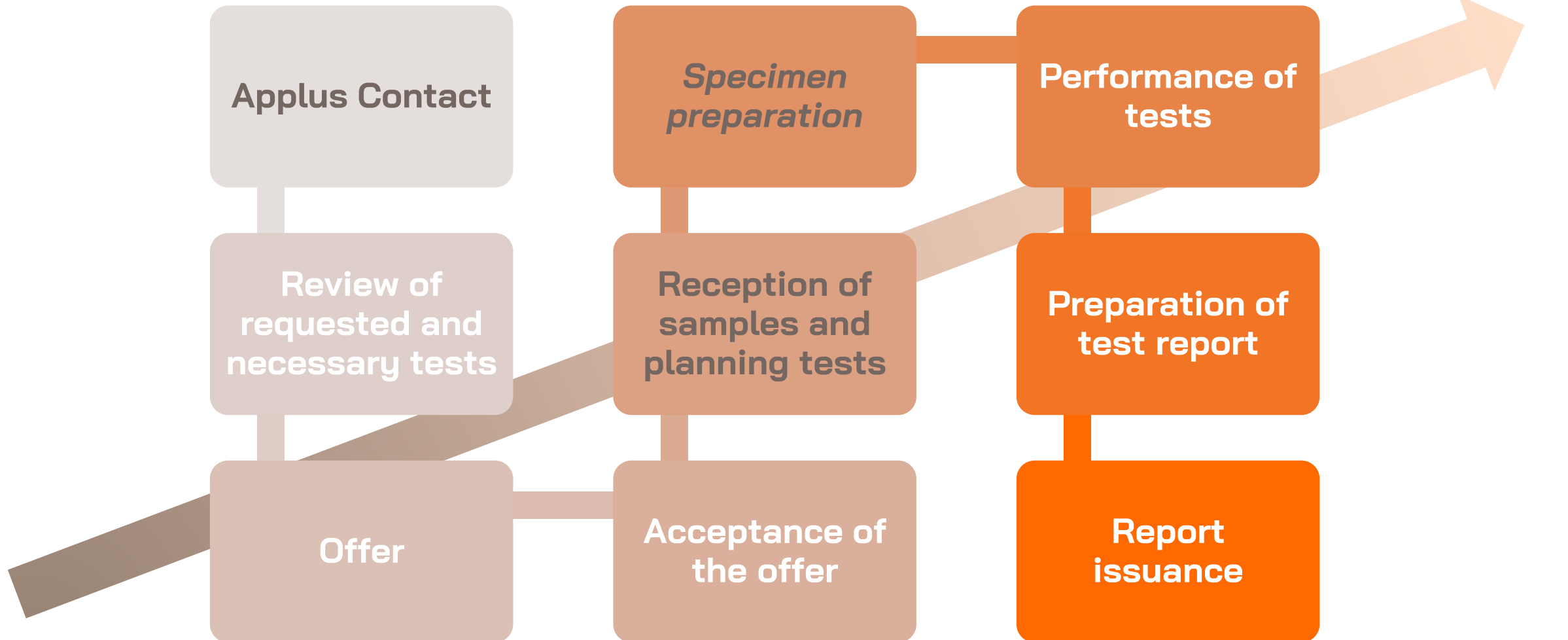
Mandatory tests

- Shape and colour (visual inspection)
- Fine particle content and bulk density ISO 60 (only for PET in flakes)
- Pellet size (only for PET in pellets)
- Melt Flow Index ISO 1133-2 (only for PET in pellets)
- Colour coordinates ISO/CIE 11664-4 (only for PET in pellets)
- PVC, polyolefin and other visible contaminant content (only for PET in flakes)
- Melting point ISO 11357-3 (only for PET in pellets)

* Testing laboratory accredited by ENAC in file 9/LE1680

Testing process at Applus+

Stages included in the performance of tests:





QUESTIONS & ANSWERS

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Thanks!



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