Guide to Recycled Plastics for Packaging, Part III – Certification & Legislation

This guide aims to empower brands and their suppliers with the knowledge necessary to replace virgin fossil plastic in their packaging with recycled plastic.

The ultimate goal of the guide is to advance the use of recycled plastics in packaging in order to reduce demand for virgin fossil plastics.

recycled material STANDARD

GUIDE

PACKAGING DESIGN

SPC's Mission

The Sustainable Packaging Coalition is a membership-based collaborative that believes in the power of industry to make packaging more sustainable. As the leading voice on sustainable packaging, we are passionate about creating packaging that is good for people and good for the environment.

Our mission is to bring packaging sustainability stakeholders together to catalyze actionable improvements to packaging systems and lend an authoritative voice on issues related to packaging sustainability.

SUSTAINABLE PACKAGING COALITION®

Recycled Material Standard (RMS)

The Recycled Material Standard is a third-party chain of custody standard that was developed by GreenBlue using a multi-stakeholder process. The RMS includes several accounting methods for tracking materials (controlled blending, mass balance, and book & claim). The RMS is currently focused on the plastics supply chain in North America and will expand to other geographies and materials in the future.

The purpose of the RMS is to advance the use of recycled materials and reduce the reliance on fossil-based plastics.

recycled material STANDARD

Navigating this Guide

Next/Prev Page

PART I

Topics highlighted in **blue** are covered in more detail in **Part I.**

PART II

Topics highlighted in **orange** are covered in more detail in **Part II.**

PART III

Topics highlighted in **green** link to external sources or to related sections of **Part III.**

Clickable Navigation

Appendix/More Info

Menu/TOC

1 **Purpose**
The "Why"

2 **Scope**
The "What"

3 **Guide**
The "How"

4 **Appendix**

PART I

Check Your Assumptions

Leverage Your Position in the Supply Chain

Understand "Fit for Use" for the Relevant Packaging Formats and Applications

Put Fit for Use into Context: The Policy and Certification Landscape

Continue the Journey

PART II

Plastics Quality and Specifications

Material Health & Food Grade Recycled Plastics

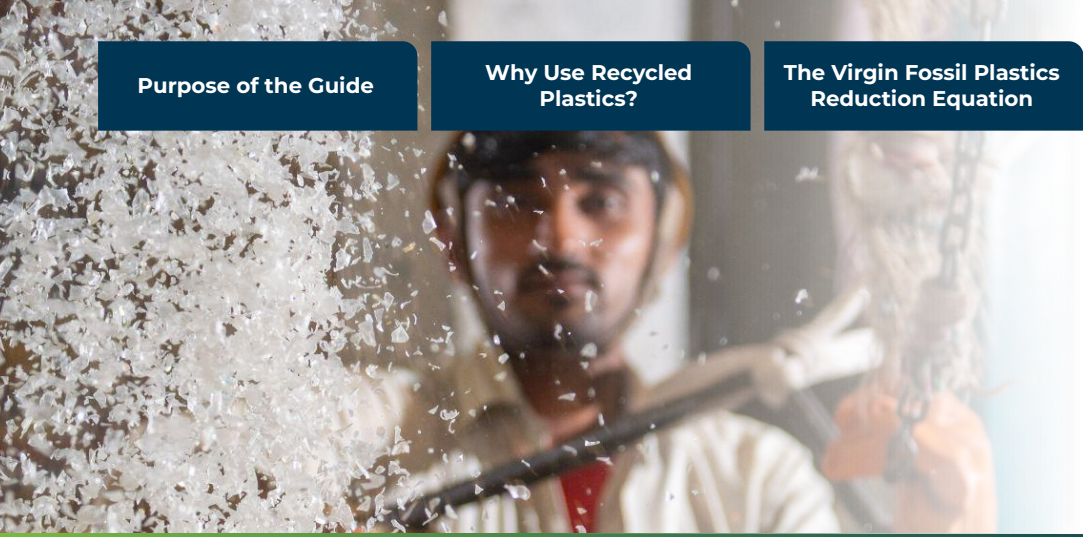
Processing Issues & Innovations

Resin and Format-Specific Considerations

PART III

Accounting & Claims

Legislation



The “Why”

Purpose of the Guide

This guide aims to empower brands and their suppliers with the knowledge necessary to replace virgin fossil plastic in their packaging with recycled plastic.

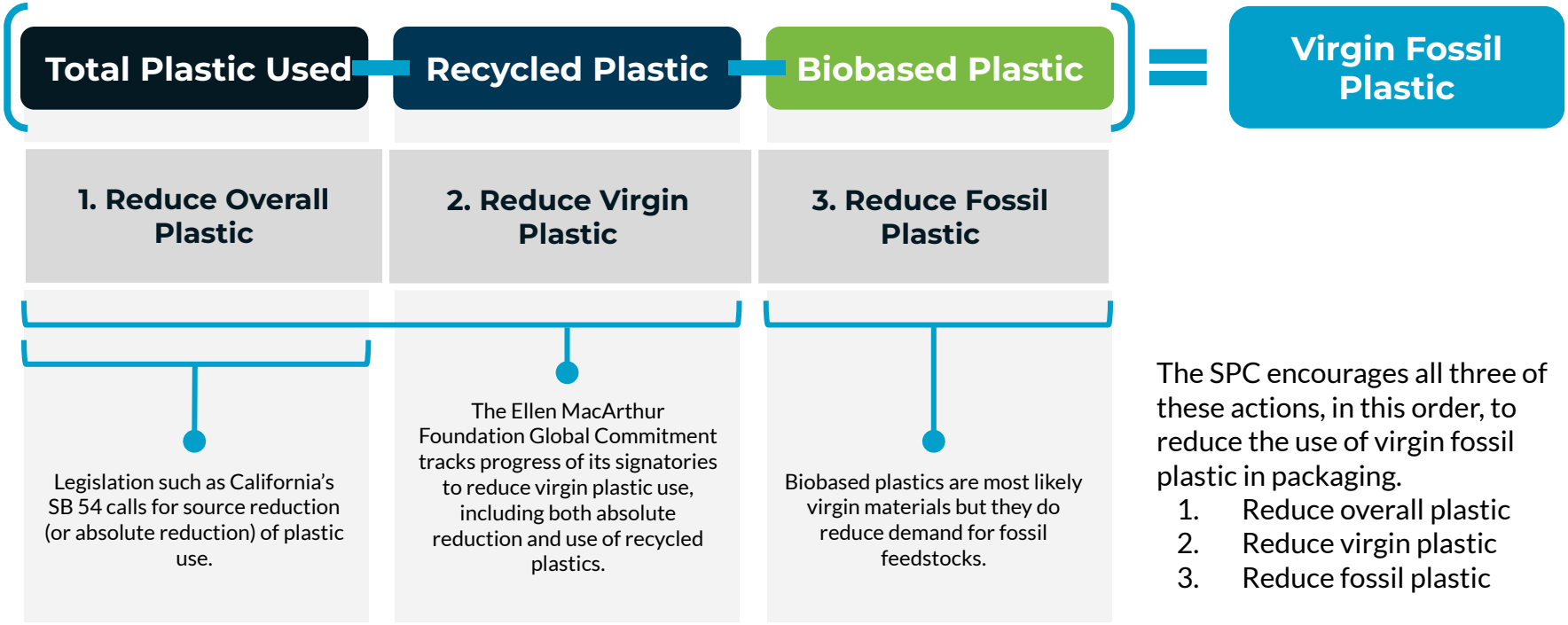
The ultimate goal of the guide is to advance the use of recycled plastics in packaging in order to reduce demand for virgin fossil plastics.

Why Use Recycled Plastics?

OUR ECONOMY MUST MOVE AWAY FROM DEPENDENCE ON FOSSIL EXTRACTION.

Most plastic (including plastic packaging) is currently made from fossil sources. In fact, according to the U.S. Department of Energy's 2023 Strategy for Plastics Innovation, *98% of plastic packaging is made from fossil feedstocks.*

It's imperative to reduce the production of "virgin" plastic from fossil sources. Aside from elimination, there are two strategies to move away from fossil sources for plastic: biobased plastics and recycled plastics.



The SPC encourages all three of these actions, in this order, to reduce the use of virgin fossil plastic in packaging.

1. Reduce overall plastic
2. Reduce virgin plastic
3. Reduce fossil plastic

More Reasons Why

***The primary reason to use recycled plastics is to reduce the demand for fossil feedstocks.* And there are several more good reasons beyond that!**

Recycled plastics often bring environmental benefits over the equivalent virgin plastics such as reduced embodied energy and carbon emissions from manufacturing. Waste plastic that is made into new products and packaging is prevented from becoming air, land, or water pollution.

Using recycled materials is also becoming more than a business strategy or voluntary sustainability target: increasingly, it's a legal requirement. It is recommended that companies proactively take steps to use more recycled plastics in packaging than required.

The "What"

What's in Scope?

This guide focuses on issues and opportunities related to incorporating recycled plastics into new packaging.

This guide addresses the following areas:

- sourcing considerations based on supply chain roles;
- recycled plastic quality, performance, and suitability for different packaging applications, including food contact applications;
- methods for tracking recycled plastic through the supply chain in order to make substantiated sustainability claims; and
- policy covering recycled plastics, such as recycled content minimum requirements.

The geographical scope of the guide is centered on the United States, although some global examples are included for additional context.

What's Out of Scope?

Goal setting, material selection, and life cycle assessment (LCA) should happen before embarking on efforts to introduce recycled content into plastic packaging, so these topics are out of scope for the guide.

To get ready to make the most of this guide, SPC specifically recommends that you:

1. Set sustainability goals for your packaging portfolio, and establish baselines according to those goals.
2. Using LCA and packaging performance tools, select the base packaging material to be used for each product or application in your portfolio.

Why should material selection happen ***before*** any efforts to incorporate recycled content?

Research from the Oregon Department of Environmental Quality indicates that the level of recycled content is not a good indicator of sustainability or relative "greenness" when comparing across different material types. However, once a material has been selected, increasing the amount of recycled content "almost always reduces overall environmental impacts."

1. This guide is not legal advice. It is intended as a starting point on what you need to know about using recycled plastics in packaging. Although the guide touches on issues of compliance, it is the responsibility of each company to conduct their own due diligence and understand their own legal obligations.

2. Examples of specific companies or brands using recycled plastics in their packaging are drawn from the respective company/brand websites and/or associated articles and announcements. They are not independently audited or verified by SPC.

3. Lists or examples of suppliers (of resins, additives, packaging materials, technologies, etc.) included in the guide are not comprehensive, nor are they an endorsement of the companies mentioned.

This is Part III of a three-part guide on recycled plastics in packaging. Part III dives deep into accounting, certifications, and claims, as well as legislation related to recycled plastics. The two remaining parts cover high-level tips for using recycled plastics and sourcing & qualification.

Put Fit for Use into Context: The Policy and Certification Landscape

The “How”

Put Fit for Use into Context: The Policy and Certification Landscape

Scrutiny on single-use plastic packaging is ever-growing, eroding the license to operate for companies using plastic packaging. Policy responses include bans, extended producer responsibility (EPR) programs, and mandates for the use of recycled content. There is active discussion among many stakeholders about the effectiveness of various policy approaches, and the policy space is rapidly evolving.

While the final outcomes of proposed bills and rules are not yet known, what is clear is that future policy will be putting more pressure on the companies that make and use plastic packaging. Whether or not current legislation affects your company, it is advisable to familiarize yourself with compliance requirements and to begin using tools such as third-party certification in anticipation of the future policy landscape.

Accounting & Claims

Topics covered in this section:

- What counts as recycled?
- Tracking and verifying recycled plastics
- Best practices for recycled plastics claims

Whether in the context of legal requirements or voluntary actions, properly tracking and accounting for recycled materials is necessary for measuring progress. This section covers categories of recycled plastics, types of plastics recycling processes, chain of custody, and certifications.

What Counts as Recycled?

Sub-topics covered in this section:

- What are categories of recycled plastics?
- Categories of recycled plastics
- Prioritize Post-Consumer Plastic from Consumer Collection
- What Processes Produce Recycled Plastics?
- Recycling Loops: Polymer, Monomer, and Chemical Feedstocks
- Efficacy of Recycling Depends on the Plastic
- Prioritize Plastic from Mechanical Recycling

Most people likely have a common sense understanding of what it means for an item to be made from recycled materials. ***When a new product is made out of the material from an old product, it's recycled.*** But is it really that simple?

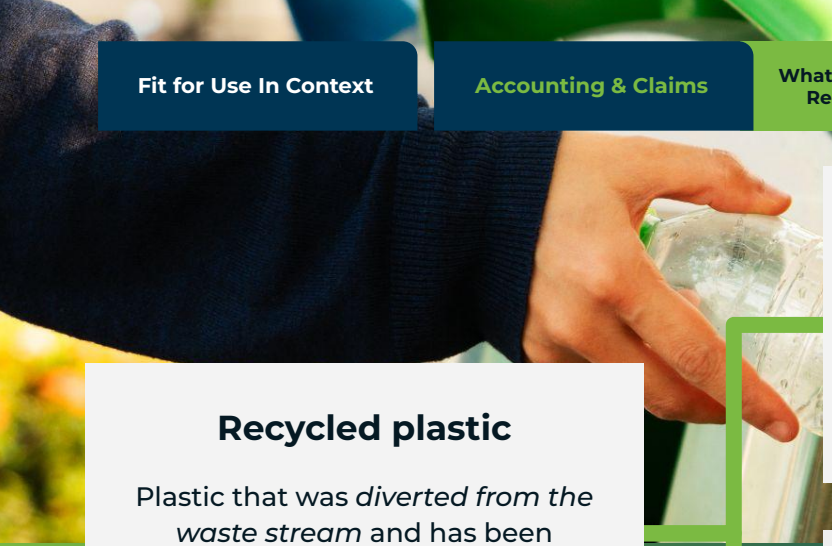
As companies strive to meet legislative mandates as well as their own sustainable sourcing goals, clarity about "what counts" as recycling or recycled content is fundamental to knowing whether companies' efforts are on track.

Part of the challenge is that the definition of recycled may not be the same in every context. For instance, what can be called recycled for the purposes of a state law may differ from what can be stated in a corporate sustainability report or marketed to consumers on-pack. Additionally, definitions and how they are applied change over time via rulemaking processes, through updates to guidance on environmental marketing claims such as the FTC Green Guides, and as recycling technologies that don't fit into traditional frameworks emerge onto the market.

What Are the Categories of Recycled Plastics?

Recycled plastic includes both **post-consumer** and **post-industrial** plastic. Both categories of recycled plastic are important contributors to decreasing the use of virgin fossil plastic in packaging.

However, for some purposes, such as achievement of Target 4 of the U.S. Plastics Pact as well as compliance with most recycled content mandates, only post-consumer recycled plastics are counted.



Categories of Recycled Plastics

Recycled plastic

Plastic that was *diverted from the waste stream* and has been collected, sorted, and reprocessed and converted into a feedstock to be used in a product.

Post-consumer recycled plastic (PCR)

Plastic *generated by households, or by institutional, commercial, or industrial facilities as end users of products*, that can no longer be used for its intended purpose. This includes returns of materials from the distribution chain such as obsolete inventory or damaged goods.

Post-industrial recycled plastic (PIR)

Plastic *diverted from the waste stream during a manufacturing process* that cannot be reclaimed within the same process producing the same product that generated it without reformulation of the input stream. Plastic which undergoes size reduction only (e.g. cutting, shredding, or regrinding) is not considered recycled material. PIR may also be referred to as pre-consumer plastic.

From RMS definitions based on ISO 14021: RMS Framework & RMS Plastics Module

Prioritize Post-Consumer Plastic from Consumer Collection

Aim for continuous improvement in using more challenging recycled plastics.

Post-industrial plastics

Post-industrial plastics are uniform and of known composition, making them the easiest category to reprocess. Using post-industrial plastics in packaging can be a low-barrier way to reduce dependence on virgin fossil plastic.

Post-consumer plastics from commercial collection

Post-consumer plastics from institutional, commercial, or industrial sources can be clean and consistent, making these plastics excellent for incorporating in new packaging.

Post-consumer plastics from consumer collection

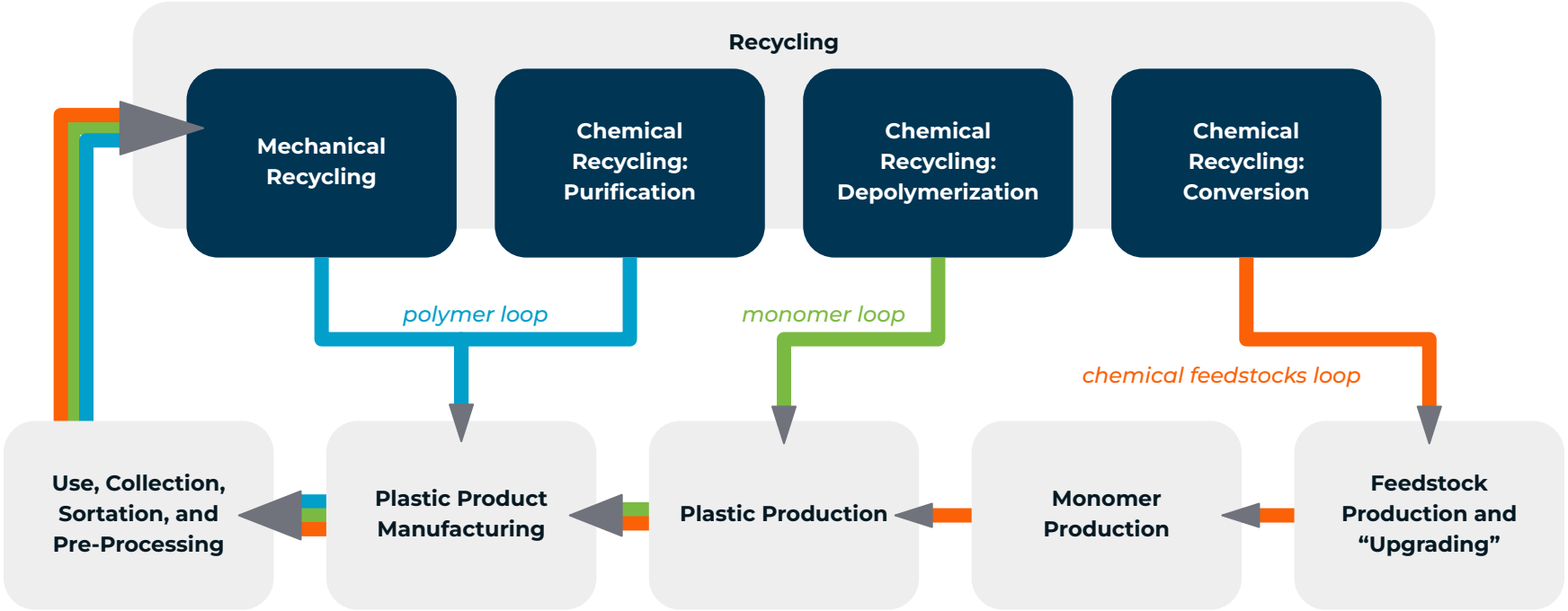
Except for a few widely recycled formats, post-consumer plastics from household or municipal sources can be the most challenging plastics to recycle, because their cleanliness and material composition vary widely. These challenging plastics are a top priority for incorporation into packaging whenever possible.

What Processes Produce Recycled Plastics?

Mechanical recycling is reprocessing plastic by grinding it into small pieces and remelting it. **Chemical recycling** is an umbrella term for other reprocessing approaches, including technologies that dissolve and purify plastics, technologies that revert plastics to their base monomers, and technologies that convert plastics into basic chemical building blocks similar to those found in fossil feedstocks.

Both mechanical and chemical recycling may apply to post-consumer plastics, post-industrial plastics, or a combination of the two categories.

Some of the very same technologies and even the same facilities that produce feedstocks for new plastics through chemical processes also produce energy or fuels. Energy or fuels produced this way can be considered “recovered” but are *not* recycled materials.


Recycling
Mechanical Recycling
Chemical Recycling: Purification
Chemical Recycling: Depolymerization
Chemical Recycling: Conversion
polymer loop
monomer loop
chemical feedstocks loop
Use, Collection, Sortation, and Pre-Processing
Plastic Product Manufacturing
Plastic Production
Monomer Production
Feedstock Production and "Upgrading"

Efficacy of Recycling Depends on the Plastic

There are two main types of plastics that are recycled at scale today: polyolefins (which includes PE and PP) and PET. Polyolefins are a completely different class of plastics than PET, so there are differences in how easily they can be recycled and which processes can be used.

Chemical recycling processes most often work for either PET or polyolefins but not both. While mechanical recycling works for polyolefins and PET, it doesn't work equally well. Compared to polyolefins, PET is much easier to decontaminate and to adjust its physical properties to fit the end application than either PE or PP.

Prioritize Plastic from Mechanical Recycling

Aim for continuous improvement in sourcing from lower impact recycling processes.

Chemical recycling

Chemical recycling provides alternative sources of recycled plastic when appropriate quantities and/or qualities of recycled plastics are not available from mechanical recycling. Although comparison of impacts among different chemical recycling technologies is complex, as a general rule, the fewer steps to get back to plastic, the better.

Mechanical recycling

Mechanical recycling is less energy-intensive than chemical recycling, because it requires fewer processing steps to get back to a useable plastic. SPC encourages prioritizing recycled plastics sourced from mechanical recycling.

Tracking and Verifying Recycled Plastics

Sub-topics covered in this section:

- Key Concept: Mass Balance
- Key Concept: Book & Claim
- Comparison of Chain of Custody Models
- COC Models in Action
- Prioritize Certified Recycled Plastic Robust Chain of Custody
- Choosing a Certification: Brand Owners
- Choosing a Certification: Manufacturers, Converters

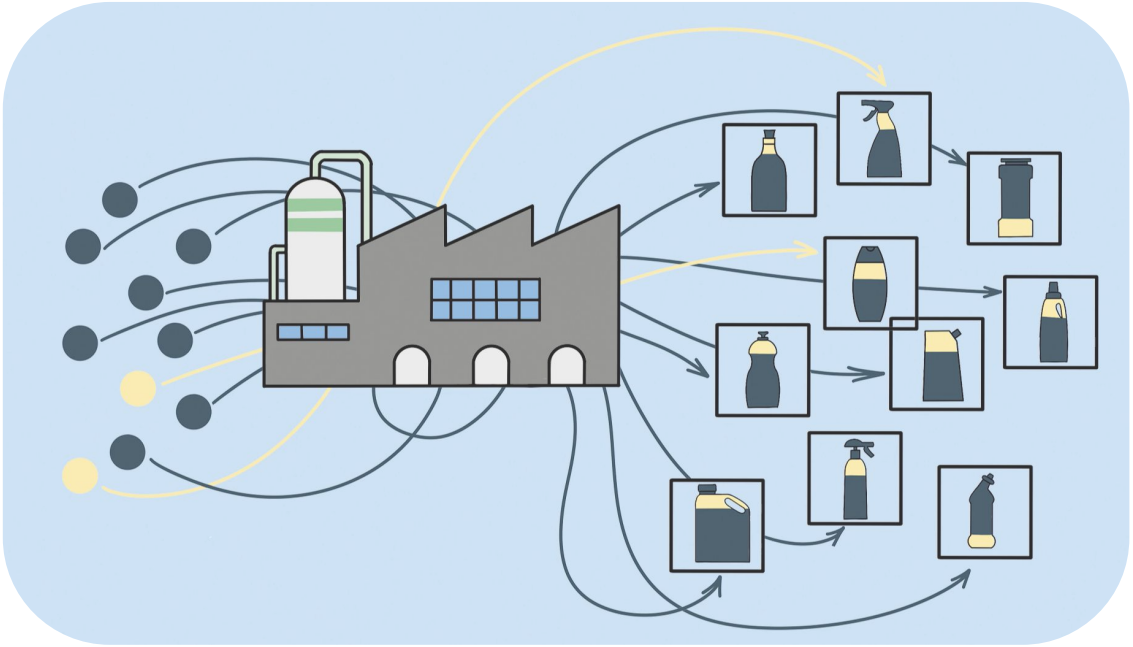
The best way to account for recycled plastics for any purpose is to track them through the supply chain using chain of custody. There are multiple chain of custody models (defined by ISO 22095), but the commonality is that materials and their associated attributes are tracked and documented as they pass from one supply chain player to the next. Chain of custody provides visibility into the origins and history of a material, and it enables the end user of the material to make substantiated sustainability claims.

Third-party certification, especially certification according to a standard based on chain of custody, reduces risk and provides the highest level of assurance along the supply chain. Guidelines such as the U.S. Plastics Pact's PCR Certification Principles can help when choosing a recycled plastics certification program.

Key Concept: Mass Balance

Mass balance is a way of making sure that when materials from different sources are mixed, the amount of outputs from a process matches the amount of inputs. In the case of recycled plastics, mass balance reconciles the amount of recycled plastic inputs with the amount of recycled plastic in the final products, after accounting for yield loss. Mass balance is often associated with chemical recycling, but it can be applied to both mechanical and chemical recycling processes. Because the plastic supply chain is complex, mass balance is a critical enabler for incentivizing and advancing the use of recycled plastics. Several characteristics of mass balance may vary among standards:

- Reconciliation of amount of recycled plastics in inputs and outputs may happen at the batch level, the site or facility level, or at the company level.
- Mass balance schemes typically require proportional allocation of materials among co-products but may allow “free” allocation among polymer outputs, non-fuel outputs, or all outputs.
- Time span for reconciliation of inputs and outputs can differ.
- Rules for accounting for process losses also differ.



When plastics from different sources are mixed, it's not realistic to determine exactly where each molecule ends up. Mass balance accounting enables tracking and verification of the overall amount of recycled plastic in final products based on the amount of recycled inputs. Third-party certification is essential for mass balance accounting.

video explainer

Key Concept: Book & Claim

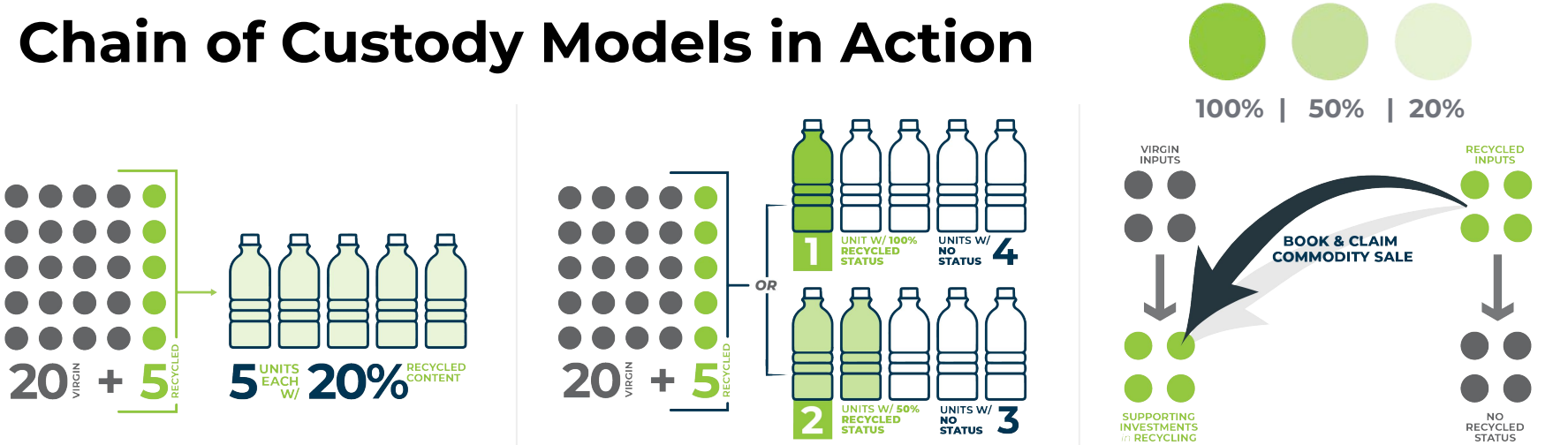
Book & claim accounting is another method used to meet sustainable sourcing commitments when fit-for-use recycled material is unavailable. Book & claim accounting separates the attribute of being recycled from the material itself, allowing the recycled attribute to be sold as a commodity. As a transitional solution, book & claim commodities can be used to "make up the difference" toward recycled plastic targets while providing investment in the recycling system so that more and better recycled material will be available in the future. ***The U.S. Plastics Pact is the first reporting framework to establish PCR certification principles laying out acceptance of book & claim commodities as part of reporting progress toward 2025 and 2030 commitments.***

Extra care must be taken to ensure transparency and robustness of claims related to recycled plastic commodity trading – for instance, claims that a package is "made from" or "contains" recycled content should *not* be made based on book & claim accounting. Claims about supporting investments in the expansion of recycling are a better reflection of the value of book & claim commodities. Commodities should demonstrate additionality, meaning they are created from new, not existing, recycling capacity, and they must not allow double counting.

Book & Claim	Mass Balance	Controlled Blending	Segregation
Material and claims are transferred separately	Material and claims are reconciled to match over time and/or geography	Material and claims are transferred together	
No physical presence of recycled material	Physical presence of recycled material may be low or is uncertain	Physical presence of recycled material is known	
Use claims such as "supports investment in recycling." Claims may only apply to items made of the same resin type as the plastic that was recycled.	Avoid percent-based claims on-pack as recycled plastic is may not be physically present. Portfolio-wide percentages may be included in sustainability reporting.	Allows percent-based claims on-pack and in sustainability reporting. PCR and PIR may be tracked and reported separately or together. PCR must be tracked separately from PIR for percent-based PCR claims.	Segregation is a means to transfer claims between supply chain actors where there is no modification of the attribute or specific claim. Materials with recycled status are separated from others and no blending occurs.

greater flexibility ⟷ greater control

Chain of Custody Models in Action



controlled blending

mass balance

book & claim

For the sake of simplicity, the examples presented here do not reflect any losses from the manufacturing process. In practice, very few processes have 100% conversion efficiency.

Prioritize Certified Recycled Plastic with Robust Chain of Custody

Aim for continuous improvement in using more robust and transparent accounting methods.

Recycled but not certified

Using recycled material at all is worthwhile, but without certification there is a greater risk of not being able to fully substantiate claims.

Book & claim

Book & claim recycled plastic commodities offer flexibility, but the link between claims and actual physical recycled material is less transparent.

Mass balance

Mass balance is a more flexible option than controlled blending and segregation, allowing reconciliation of the amount of recycled material.

Controlled blending

Blending virgin and recycled materials (or PCR and PIR) at the batch level ensures the relative amount of each in the product is well known.

Considerations for brand owners choosing a standard or certification program

Questions to Ask	Why It Matters
Does the standard entail full chain of custody?	Full chain of custody assures traceability from recycler to finished package.
What chain of custody models (segregation, controlled blending, mass balance, and/or book & claim) are offered?	If making on-pack percent recycled content claims is important, look for segregation or controlled blending chain of custody models. If flexibility is important and/or if supply of fit for use material is low, look for mass balance or book & claim models.
Does the standard cover PCR, PIR, or both?	PCR is higher priority material, but PIR also replaces virgin material. Accounting for both PCR and PIR allows complete tracking and reporting of non-virgin plastics.
What mass balance allocation methods are allowed? Are fuels excluded from counting toward recycled content claims?	Some standards require proportional allocation for co-products, while others allow “free” allocation of claims among various products from a reclamation process. Of the standards that allow free allocation, some restrict allocation to polymer products or specifically exclude fuel products from counting as recycled material.
Does the standard align with relevant third party certification principles?	If your company is a signatory on goals laid out by the U.S. Plastics Pact or a similar program, pay attention to what chain of custody models and/or claims qualify as progress toward those goals.

Considerations for reclaimers, manufacturers, or converters choosing a standard or certification program

Questions to Ask	Why It Matters
Does the standard entail full chain of custody?	Full chain of custody assures traceability from recycler to finished package.
What chain of custody models (segregation, controlled blending, mass balance, and/or book & claim) are offered?	Segregation or controlled blending chain of custody models will allow your customers to make bolder recycled content claims. However, mass balance or book & claim models offer more flexibility to align the value of recycled content claims with market demand.
Does the standard enable multi-site certification and/or group certification? Can book & claim commodities be transferred across sites?	Multi-site certification can reduce audit burden, and group certification lowers the barrier to entry for small companies. Cross-site commodity transfers allow claims to be used where market demand exists without the need to ship materials.
What mass balance allocation methods are allowed? Are fuels excluded from counting toward recycled content claims?	There is a growing consensus that fuel production should not count as recycling, so polymer-only or fuel exclusion allocation methods are preferable to completely “free” allocation.
Does the standard align with relevant third party certification principles?	If your customers are signatories on goals laid out by the U.S. Plastics Pact or a similar program, pay attention to what chain of custody models and/or claims qualify as progress toward those goals.

GreenBlue's Recycled Material Standard (RMS) was launched in 2021 as the most comprehensive third-party standard available for recycled materials. The RMS was born from a need identified by SPC members for a robust, transparent framework for certifying recycled materials, and it was developed through a multi-stakeholder consensus process.

Today, the RMS applies to post-consumer and post-industrial recycled plastics, with a focus on resins used in packaging. Any organization that processes or trades recycled plastic materials is eligible to seek RMS certification.

Within the versatile RMS framework, controlled blending, mass balance, and book & claim commodities (called Attributes of Recycled Content, or ARCs) all work in concert. Given the multitude of materials, applications, and supply chain configurations, leading companies will likely need to use all of these chain of custody accounting methods as part of their recycled plastic strategy.

Best Practices for Recycled Plastics Claims

- ***Do not*** use the chasing arrows symbol to signify recycled content. There is evidence that consumers understand this symbol to mean an item is recyclable.
- ***Do not*** make claims based on mass balance accounting that counts fuel products toward the amount of "recycled" material. Production of fuels is not recycling, even if it involves the same reprocessing technologies as recycling.
- ***Do not*** make percent-based claims on-pack when using mass balance or book & claim accounting models. There is evidence that consumers perceive percent-based claims as material being physically present, so consumer-facing percent recycled claims may be considered misleading if the actual physical presence of recycled material is not known. Include a qualification about the accounting model being used, or use a more general claim such as "mix supporting recycling."

Best Practices for Recycled Plastics Claims

- ***Do*** report both your PCR and PIR usage in your sustainability reporting.
- ***Do*** take a proactive approach to certification. Certification increases confidence in claims, and companies using certified material are well-positioned for regulatory developments.
- ***Do*** strive for continuous improvement in sourcing certified recycled plastics. This can start with establishing a preference for certified suppliers, and then progress to influencing these suppliers to obtain more certified input materials, setting targets for sourcing certified plastics, increasing targets over time, setting a preference for certain standards, and moving toward more robust chain of custody models over time.

Legislation

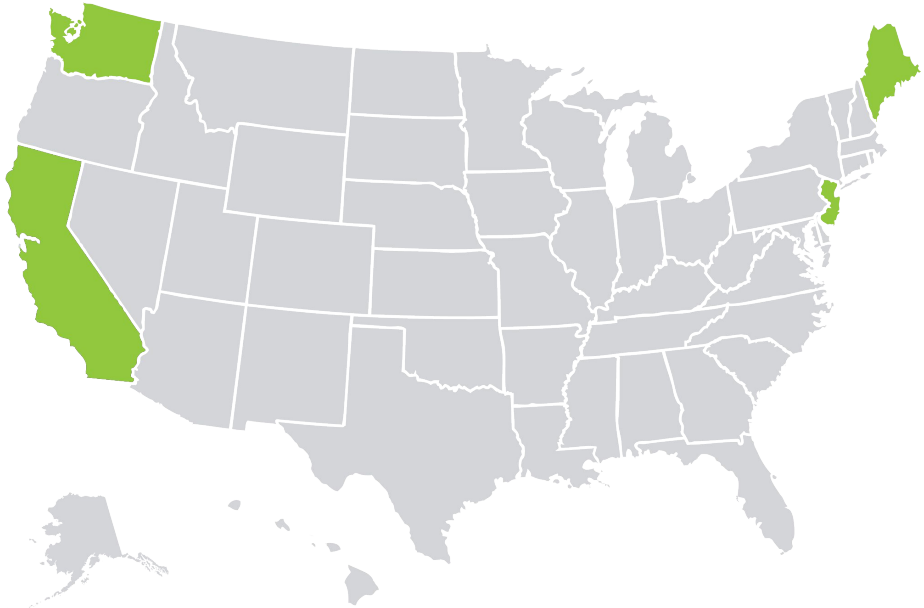
Topics covered in this section:

- Recycled content mandates
- Recycled plastics in food contact packaging
- EPR & eco-modulation
- Procurement

There are four main legislative issues related to recycled plastics in packaging: recycled content mandates, recycled plastic in food contact packaging, EPR, and procurement. This section gives a brief overview of each and goes into more depth on recycled content mandates for plastic packaging and recycled plastics in food contact packaging.

Recycled Content Mandates

While use of recycled plastic in packaging is still driven largely by voluntary goals and initiatives, this is changing. Several state laws setting minimum levels of recycled material in plastic beverage bottles, rigid containers, carryout bags, and other packaging formats have come onto the books in the past several years, most notably in California, New Jersey, Maine, and Washington. Similar mandates also exist in Europe.



Compliance with Recycled Content Mandates

1. How does legislation define the covered packaging format(s)?
2. Is my company considered a producer of this packaging?
3. Which recycled plastic categories count toward requirements?
4. Is third-party certification required?
5. Does the recycling process matter?

How does legislation define the covered packaging format(s)?

The most common plastic packaging formats covered by recycled content mandates are plastic beverage bottles, rigid plastic containers, and plastic bags.

For these and other covered formats, the exact definitions, covered products, and exemptions vary by state. For example, New Jersey law specifies that rigid plastic containers means non-beverage containers. In Washington State, plastic containers for household cleaning and personal care products are classified separately from beverage containers (excluding wine & dairy) and wine & dairy containers, and each classification has its own rates and dates for compliance.

Because of these state-by-state differences, it's critical to pay close attention to the definitions of "container" and other terms as written in statute.

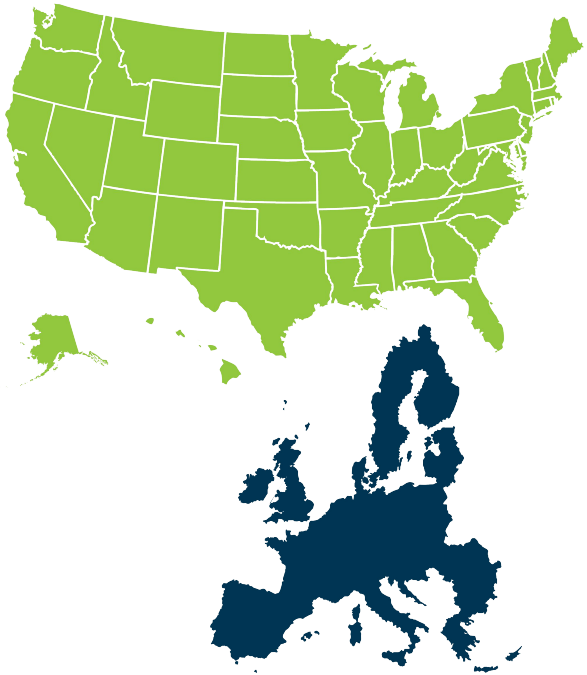
Types of Covered Formats	
	Plastic beverage containers
	Rigid plastic containers
	Plastic carryout bags
	Plastic trash bags
	Alcoholic beverage pouch
	Plastic dairy milk containers & wine containers
	Plastic containers for household cleaning & personal care products

Is my company considered a producer of this packaging?

Like the differing definitions of “container” and other terms among states, each state may include different types of companies in their definition of a packaging manufacturer or producer. For example, producers may include brand owners, licensees, and/or importers of the packaging type(s) covered under the law.

In some cases, such as in Connecticut and Washington State (RCW 70A.245), recycled content mandates establish a threshold for production volume that exempts companies that produce lower volumes of packaging within the state from being considered producers.

Which recycled plastic categories count toward requirements?



In the United States, the majority of state-level recycled content requirements specify that the recycled plastic must be post-consumer plastic.

On the other hand, the EU Single-Use Plastics Directive and the UK Plastic Packaging Tax do not distinguish between post-consumer and post-industrial recycled plastic for compliance or exemption from the tax.

Is third-party certification required?

Connecticut's PCR mandate does require third-party certification, by a certification scheme deemed acceptable by the Connecticut Commissioner of Energy and Environmental Protection.

Most other recycled content mandates currently do not require that recycled plastic receive third-party certification in order to count toward the established percentages, although in some cases it may be required at a state's discretion or laid out during rulemaking after a law has passed.

In Washington State, third-party certification is one option for demonstrating compliance.

Does the recycling process matter?

Most existing mandates do not specify a recycling process. Government agencies in Washington State, the UK, and elsewhere are laying out rules for how to track and account for recycled materials for cases when determining how much recycled material is physically present in a packaging item is not feasible.

Recycled Content Mandates for Plastic Packaging in the United States

Plastic beverage containers

California - PRC Division 12, Chapter 3, Section 14547

Connecticut - HB 6664

Maine - MRS Title 38, Chapter 16, Section 1615

New Jersey - N.J. Stat. Section 13:1E-99.138

Washington - RCW 70A.245

Rigid plastic containers

California - PRC Division 30, Part 3, Chapter 5.5*

New Jersey - N.J. Stat. Section 13:1E-99.137

Oregon - ORS 459A.655*

Wisconsin - Wis. Stat. Chapter 100, Section 100.297**

Other formats

California - PRC Division 12, Chapter 3, Section 14547	alcoholic beverage pouch
Washington - RCW 70A.245	plastic wine containers & dairy milk containers
Washington - RCW 70A.245	plastic containers for household cleaning & personal care products

Plastic carryout bags

California: PRC Division 30, Part 3, Chapter 5.3, Article 2

New Jersey - N.J. Stat. Section 13:1E-99.141

Washington - RCW 70A.530.020

Plastic trash bags

California - PRC Division 30, Part 3, Chapter 5.4†

New Jersey - N.J. Stat. Section 13:1E-99.142††

Washington - RCW 70A.245

* Recycled content is one of several compliance options
** Does not specify PCR
† PCR from a source in California counts 1.2x
†† PCR rates tiered by bag thickness

Click on stats in the grid to find out more!

Rates & Dates

	California	Connecticut	Maine	New Jersey	Oregon	Washington	Wisconsin
	15% by 2022 25% by 2025 50% by 2030	25% by 2027 30% by 2032	25% by 2026 30% by 2031	15% by 2024 20% by 2027 25% by 2030 30% by 2033 35% by 2036 40% by 2039 45% by 2042 50% by 2045		15% by 2023 25% by 2026 50% by 2031	
	20% by 2016 40% by 2020			20% by 2024 40% by 2027		20% by June 2021 40% by July 2022	
	25% by 1991*			10% by 2024 20% by 2027 30% by 2030 40% by 2033 50% by 2036	25% by 1995*		10% by 1995**
	10% by 1998†			10% by 2024 20% by 2027††		10% by 2023 15% by 2025 20% by 2027	
	15% by 2024 25% by 2027 50% by 2032					15% by 2028 25% by 2031 50% by 2036 15% by 2025 25% by 2028 50% by 2031	

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† PCR from a source in California counts 1.2x
†† PCR rates tiered by bag thickness

Recycled Content Mandates for Plastic Packaging Outside the United States

The EU Single-Use Plastic Directive mandates that PET beverage bottles on the market in each EU member state contain on average at least 25% recycled plastic by 2025 and 30% recycled plastic by 2030.

The UK Plastic Packaging Tax applies to "plastic packaging manufactured in, or imported into the UK, that does not contain at least 30% recycled plastic."

Australia has included recycled content in plastic packaging within its 2025 National Packaging Targets under the National Plastics Plan. The 2025 target for plastic packaging is 20% recycled content overall, with sub-targets of 30% recycled content for PET, 20% for HDPE, 20% for PP, and 10% for flexible plastics.

As of this writing, Canada has proposed but not yet finalized rules on single-use plastics and plastic packaging, including post-consumer recycled content requirements.

Recycled Plastics in Food Contact Packaging

Using recycled plastic in food packaging requires a way to ensure that contaminants will not enter food products and negatively impact consumer safety. The U.S. FDA and government agencies in other countries provide guidance on acceptable practices, but food contact packaging remains a challenging application for recycled plastics. Supply of food grade recycled plastic is limited, and the supply constraint is further exacerbated by use of foo grade recycled plastics in non-food contact applications due to “food grade” being a general signifier of high quality plastic.

Regulation of Recycled Plastics for Food Contact in the United States

Plastics that come in contact with food and that may enter, interact with, or affect the characteristics of food are regulated as food additives by the U.S. FDA. Some components of plastic packaging are "generally recognized as safe" or have been demonstrated to be safe for their intended use as a food contact substance. Otherwise, the FDA's evaluation of safety of food contact plastics is based on component materials being of suitable purity and/or at a low level of expected dietary intake.

The U.S. FDA evaluates recycling processes on a case-by-case basis and provides "informal advice" in the form of no objection letters (NOLs or LNOs) for those processes that are expected to produce recycled plastic of suitable purity for food contact applications. *It's important to note that submitting a recycling process to the FDA for evaluation is voluntary, and receiving a no objection letter for a recycling process does not constitute FDA "approval."* A no objection letter simply means the FDA is satisfied with the level of data provided about a recycling process—including the material source, sorting and cleaning steps, contamination testing, and proposed conditions of use for the recycled plastic—and has not identified any glaring omissions or causes for concern. The U.S. FDA maintains a database of the companies and processes that have received no objection letters.

Regulation of Recycled Plastics for Food Contact Outside the United States

Historically in Europe, the European Food Safety Authority (EFSA) authorized processes or equipment that produced recycled plastics of acceptable quality for food contact applications. In 2022, new legislation was passed in the EU restricting recycled plastics for food contact uses to only plastics from authorized mechanical PET recycling processes, recycling of plastics collected in a "closed and controlled" fashion, and novel manufacturing technologies that have been sufficiently assessed. Meanwhile, the historical European regulatory requirements continue to apply in the UK.

Canadian regulations do not require pre-market approval of food packaging materials, but materials may be voluntarily submitted to the Health Products and Food Branch (HPFB) for assessment. HPFB issues opinion letters based on the material's identity, its proposed usage, migration tests, and toxicological data. Food sellers remain responsible for compliance with Canadian Food and Drug Regulations regardless of issuance of a no objection letter from HPFB.

Regulation of Recycled Plastics for Food Contact Outside the United States

Among other countries, some follow guidelines from the U.S. FDA or EFSA, some prohibit recycled plastic in food packaging, and others have no explicit regulations regarding recycled plastics in food packaging. Several countries have recently changed their regulations, including India, Thailand, and South Korea:

- The Food Safety and Standards Authority of India (FSSAI) historically did not allow recycled plastic in any food contact applications, but this changed in 2022 when FSSAI released guidelines for using recycled PET in food contact packaging. The guidelines refer to U.S. FDA and EFSA test methods and require that a recycling process be validated using local material.
- Use of recycled plastics in food contact applications was also banned in Thailand until 2022. Thailand's Ministry of Public Health now allows rPET from recycling processes demonstrated to reduce or eliminate contaminants.
- In 2022, South Korea established a process for recognizing recycled materials suitable for use in utensils, containers, and food packaging.

EPR & Eco-Modulation

Companies can expect to see more emphasis on using recycled materials as extended producer responsibility (EPR) laws become more common. EPR programs may directly set recycled material requirements, or they may incentivize the use of recycled plastic via eco-modulated producer fee structures.

Examples of recycled material provisions in EPR legislation include:

- PCR content will play a part in EPR fee structures in both Oregon and Colorado.
- In California, certified PCR counts toward a portion of source reduction requirements.
- Draft rules for Maine's EPR law include targets that ramp up over time for material reduction, reuse/refill, and use of recycled material.

Procurement

The U.S. EPA promotes the use of materials recovered from the waste stream through the Comprehensive Procurement Guidelines Program. At this time plastic packaging is not an included category, although items such as trash bags are included in the program. Other governments and/or government agencies may also have procurement policies specifying recycled content in packaging items.

Additionally, recycled material certifications are one component of the U.S. EPA's "Recommendations of Specifications, Standards, and Ecolabels for Federal Purchasing," part of the Environmentally Preferable Purchasing program. Like the Comprehensive Procurement Guidelines, the EPA's ecolabel recommendations currently apply to non-packaging items but may apply to packaging in the future.

Appendix

- Key Terms & Concepts
- Literature & Links
- Acknowledgements

Key Terms & Concepts

Post-consumer
Post-industrial

Mechanical recycling
Chemical recycling

Chain of custody
Mass balance
Book & claim

Literature & Links Index

- Reasons to Use Recycled Materials
- Life Cycle Impacts of Recycled Plastics
- Chemical Recycling
- Chain of Custody
- Standards and Certifications
- Mass Balance
- Recycled Plastic Commodities
- Material Health & Food Contact Recycled Plastics
- Recycled Content Mandates (United States)
- Recycled Content Mandates (Global)

Literature & Links

Reasons to Use Recycled Materials

- U.S. Plastics Pact PCR Toolkit: Why Use PCR?

Life Cycle Impacts of Recycled Plastics

- APR “Life cycle impacts for post-consumer recycled resins: PET, HDPE, and PP”

Literature & Links

Chemical Recycling

- SPC "Introduction to Chemical Recycling"
- SPC Position Statement on Chemical Recycling

Literature & Links

Chain of Custody

- ISEAL Alliance "Chain of Custody Models and Definitions"

Standards and Certifications

- Eunomia for the Standards Council of Canada and Environment and Climate Change Canada "A Comparative Assessment of Standards and Certification Schemes for Verifying Recycled Content in Plastic Products"
- RMS "Comparison of Recycled Material Standards"
- WWF "WWF Principles to Actively Endorse and Recognize Effective and Credible Standards and Certification Schemes"
- U.S. Plastics Pact PCR Certification Principles

Literature & Links

Mass Balance

- RMS video explainer: "Utilizing Mass Balance in Advancing the Use of Recycled Materials"
- Ellen MacArthur Foundation "Enabling a Circular Economy for Chemicals with the Mass Balance Approach"

Recycled Plastic Commodities

- Plastics Recycling Update "The circular potential of plastic credits"
- WWF "Plastic Crediting and Plastic Neutrality"

Literature & Links

Material Health & Food Contact Recycled Plastics

- U.S. FDA "Guidance for Industry – Use of Recycled Plastic in Food Packaging: Chemistry Considerations"
- Stina for Environment and Climate Change Canada "Assessing the State of Food Grade Recycled Resin in Canada & the United States"
- Starlinger press release: "India's first 100% rPET beverage bottle"
- Sustainable Plastics "Pepsi, Nestlé debut first 100% rPET bottles in Thailand"

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Recycled Content Mandates (United States)

- RRS for The Ocean Conservancy "Recommendations for Recycled Content"
- Retail Industry Leaders Association Mandatory Recycled Content Laws for Packaging Fact Sheet
- APR blog: "Recycled plastic content requirements are here and more are coming soon"
- ICIS Plastic PCR Content Targets Animation

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Recycled Content Mandates (Global)

- British Plastics Federation "Recycled content used in plastic packaging applications"
- Australian Packaging Covenant Organisation Recycled Content Guide
- Retail Council of Canada "Around the world, governments are implementing recycled content requirements for plastics – are retailers ready?"
- Ellen MacArthur Foundation "The Global Commitment 2023 Progress Report"

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