
Interpreting pre-consumer recycled content claims



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Purpose and introduction

There is some debate - and even confusion - in the environmental and manufacturing communities about which materials can be claimed as pre-consumer recycled content versus post-consumer, byproduct synergy, or reuse.

Some of the sources of this confusion stem from the important and positive attempts to shift mindsets toward more circular thinking – away from thinking about materials as waste to thinking about these same materials as resources or even nutrients.

This shift in language has been underway for some years. Through the Sustainable Materials Management Program, the U.S. Environmental Protection Agency (EPA) has been promoting the concept of sustainable materials management (SMM) as a systemic approach to using and reusing materials more productively over the entire life cycle.¹ Alongside this effort are other initiatives like the Ellen MacArthur Foundation², one of the premier

think tanks and promoters of more Circular Economies, which are economies that decouple or break the link between “environmental bads” and “economic goods.” There are three core principles of a circular economy:

1. Designing out waste and pollution
2. Keeping products and materials in longest, highest value, productive use through reuse, refurbishment, remanufacturing, by-product synergy and recycling
3. Regenerating natural systems. Restorative design is reversing damage that has been caused to a particular site by either nature or humans, while regenerative design is creating even better conditions to support the life-enhancing qualities of ecosystems.

Because of these important recent developments and because industry, regulators and NGOs aim at protecting consumers from being deceived by greenwashing,

Mindsets are evolving

Waste [wäst]
noun

(1) damaged, defective, or superfluous materials produced by a manufacturing process; (2) an unwanted by-product of a manufacturing process

Synonyms: SCRAPs, RUBBISH, GARBAGES

Resource [résors]
noun

a stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively.

Synonyms: ASSETS, SUPPLIES, MATERIALS



it is important to clarify terms. Manufacturers, retailers and ultimately consumers stand to benefit from clarifying the kinds of materials and processes that contribute to how much content within any given product can legitimately be considered pre-consumer recycled versus recycled content derived from other sources. UL Solutions developed this e-book to provide clarity on interpreting existing guidelines to validate claims of pre-consumer recycled content and to serve as a reference for manufacturers.

To distinguish between accurate and inaccurate claims of recycling during the manufacturing process, UL Solutions follows guidance provided by the U.S. Federal Trade Commission (FTC) Green Guides (16 CFR Part 260)³, European Union regulations, EN Standards (EN 45557:2020) and the ISO 14021:2016 definitions when interpreting Environmental Claims Validations (ECVs) for recycled content. When evaluating a product to a standard, UL Solutions uses the definitions and guidance provided in the sustainable product consensus standards first and refers to this document when further clarification is needed. This document will provide clarity about how UL Solutions interprets those guidelines.

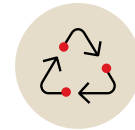
What is circular economy?

Circularity: Decoupling natural resource use and environmental impacts from economic growth.

Based on three principles:



Design out waste and pollution



Regenerate natural resources



Keep products and materials in use



Embracing the circular economy

Circularity and the circular economy are concepts that have evolved over time and cannot be wholly attributed to a single author or movement. The way UL Solutions views these concepts was informed by the likes of the Ellen MacArthur Foundation, by American John. T. Lyle; Walter Stahel, Michael Braungart and U.S. architect Bill McDonough; and Janine Benyu.

As noted in the introduction, a circular economy is one that has decoupled economic growth from the consumption of natural resources and their accompanying environmental impacts. With this aspiration in mind, we can consider how pre-consumer recycling fits.

The recycling process takes “discarded” materials and reuses them to create new products. Pre-consumer recycled content is material that has never reached the end-user, having been diverted from the waste stream during a manufacturing process. The key concept here is “discarded materials,” which is generally understood to mean it was destined for the waste stream. This is a somewhat complicated idea,

so it bears further examination of the guidance that exists in current standards and regulatory guidelines which define pre-consumer recycled content.

ISO 14021:2016, the international standard that provides guidance on self-declared environmental claims, notes that pre-consumer material is diverted from the waste stream during a manufacturing process; it excludes, however, the definition of pre-consumer material as recycled if that material may be reused through, for example, rework, regrind or scrap generated in a process and “capable of being reclaimed within the same process that generated it.” This guidance is somewhat murky, as what is “capable of being reclaimed” is not defined. Based on our current interpretation of the definitions in 14021, any material that is discarded is considered waste.

- Waste is defined in 14021 as “anything for which the generator or holder has no further use and which is discarded or is released to the environment.”
- Discarded being defined in the dictionary as “to get rid of especially as useless or unwanted.” Being discarded does

not mean the material is destined for a waste stream, just that it is no longer of use to the current owner.

The U.S. Federal Trade Commission Green Guides, which contain guidance provided to marketers of products in the United States about green claims, provides a similar definition. Section 260.13 states, “If the source of recycled content includes pre-consumer material, the advertiser should have substantiation that the pre-consumer material would otherwise have entered the waste stream.” Clearly if a material is no longer of use to the holder and it is not recycled, it would enter the waste stream. The recycling of that material diverts it from the waste stream.

The FTC issued its Green Guides to help marketers avoid deceptive environmental claims, explaining how “reasonable consumers” would likely interpret such claims, and describing the basic elements needed to substantiate and qualify such market facing statements. While ISO has similar interests, the ISO 14021 guidance notes that the reliability of self-declared environmental claims depends

on adequate verification to “avoid negative market effects such as trade barriers or unfair competition, which can arise from unreliable and deceptive environmental claims.”

UL Solutions appreciates and supports both purposes, and bridges the two definitions, stating in its environmental protocol UL 2809, the Standard for Environmental Claim Validation Procedure (ECVP) for Recycled Content, that pre-consumer recycled content is: “material that has never reached the end-user, having been diverted from the waste stream during a manufacturing process. Excluded is the reutilization of materials generated in a process and

Pre-consumer recycled content and by-product

Another key issue is the distinction between pre-consumer recycled content and a by-product. In an industrial setting, by-product is defined as an incidental or secondary product made in the manufacture or synthesis of something else. UL Solutions uses the U.S. Business Council for Sustainable Development definition of

capable of being reused as a substitute for a raw material without being modified in any way [emphasis added]”.

By adding raw material substitution and modification to the definition of what is excluded from consideration as pre-consumer recycled content, UL Solutions provides clarity about what might be considered “capable of being reclaimed” and avoids the conundrum proposed by FTC guidance of proving that material would otherwise have entered the waste stream. This is also consistent with the philosophy of circularity.

by-product synergy “as the matching of under-valued waste or by-product streams from one facility with potential users at another facility to create new revenues or savings with potential social and environmental benefits.” By-product is therefore further distinguished from pre-consumer recycled content in “who” reuses the material – the facility



producing it in the first place, or an entirely separate facility for integration into a separate process or product.

For more detailed guidance on using the term by-product, this UL Solutions e-book references an EU document, “Interpretative Communication on waste and by-products.”

There are three important questions in that communication that help to determine if the material is a by-product or waste:

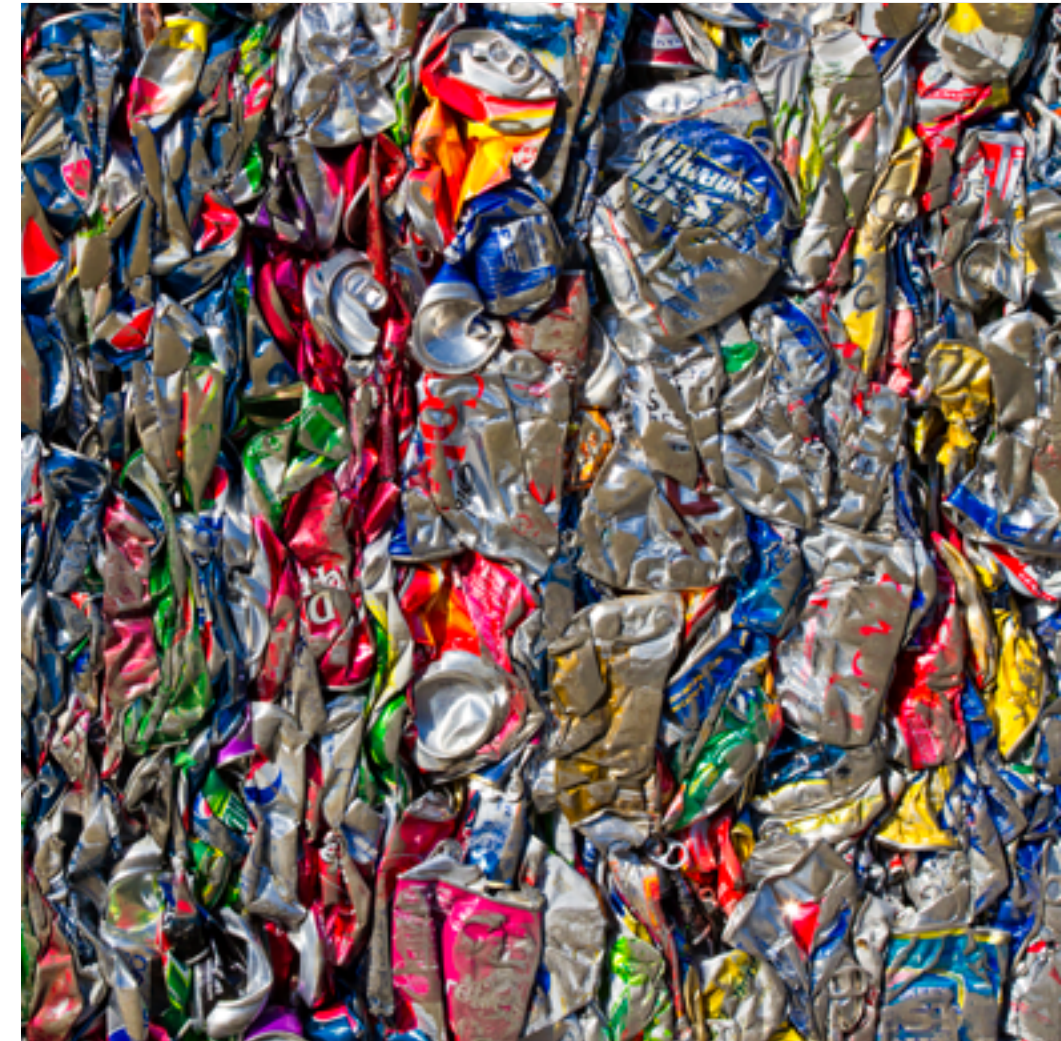
- Is use of the material certain?
- Is the material ready for use without further processing (other than normal processing as an integral part of the production process)?
- Is the material produced as an integral part of the production process?

If the answer to any of those questions is no, the communication suggests the material is a waste. If the answer to all three questions is yes, the communication suggests the material is a non-waste by-product.

There still might be some room for interpretation and this is where the ambiguity in designation between recycled or by-product can happen.

While the distinction may be important for making a marketing claim, UL ECVP 2809 can be used to certify either type of claim.

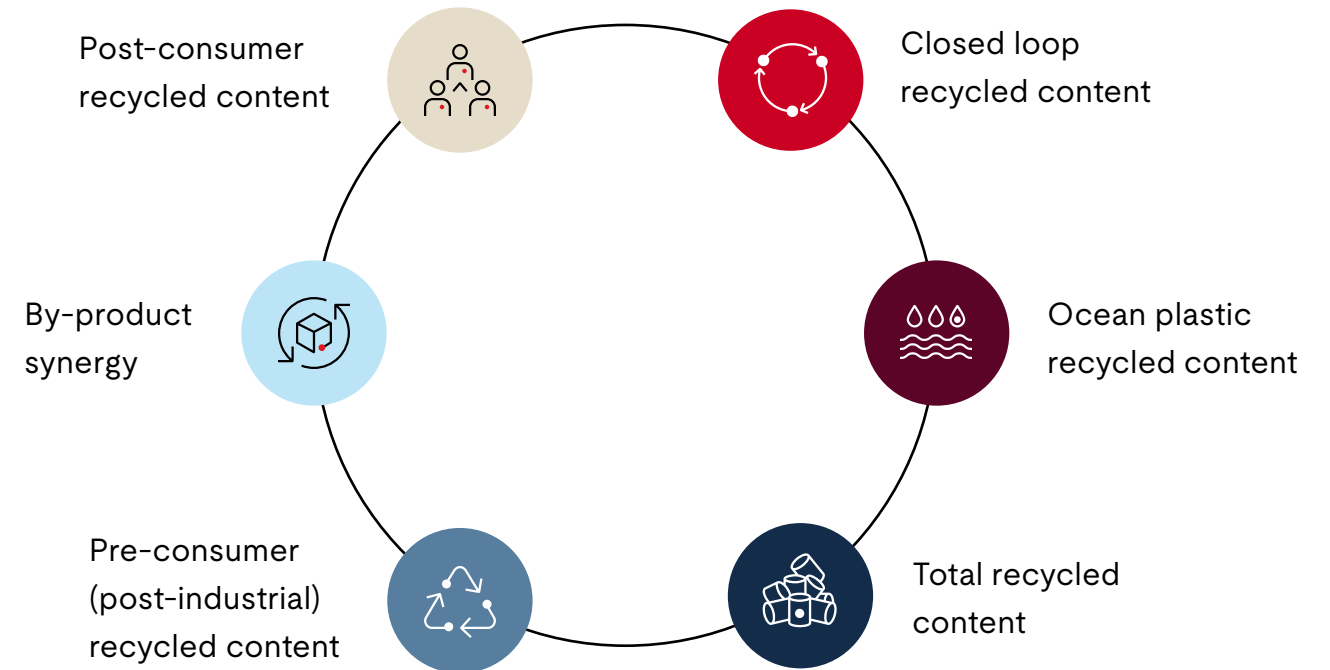
By evaluating products to UL 2809, Environmental Claim Validation Procedure (ECVP) for Recycled Content, UL Solutions can validate the amount of recycled content in products including post-consumer, pre-consumer (post-industrial) recycled content, closed loop or total recycled content, ocean plastic, ocean-bound plastic or by-product synergy.



Definitions of key recycled content terms

While many of the sustainable product consensus standards base their recycled content definitions on ISO 14021:2016, each standard has its own unique variations on key terms. In some instances, broad interpretation of existing terms may exclude any waste from being called “recycled content,” or result in inconsistent applications of the definitions that result in a bias towards non-vertically integrated manufacturers. UL Solutions has developed definitions for the most relevant terms associated with pre-consumer recycled content. These key terms are based on publicly available definitions from various sources as well as our experience and insight.

- Closed loop system
A system in which materials are reclaimed, returned to and reused at the same material technical application equivalence or performance specifications as when the material was first used.
- By-product synergy (co-product)
An incidental or secondary product made in the manufacture or synthesis of something else. Material that has reached its intended end-user which is no longer being used for its intended purpose.



- **Post-consumer recycled content**
Material that has reached its intended end-user which is no longer being used for its intended purpose.
- **Pre-consumer (post-industrial) recycled content**
Material diverted from the waste stream during a manufacturing process that has never reached the end-user, having been diverted from the waste stream during a manufacturing process. Excluded is the reutilization of materials generated in a process and capable of being reused as a substitute for a raw material without being modified in any way.
- **Recovered (reclaimed) material**
Material that would have otherwise been disposed of as waste or used for energy recovery but has instead been collected and recovered (reclaimed) as a material input, in lieu of new virgin material, for a recycling or manufacturing process.
- **Recycled content**
The proportion of pre-consumer or post-consumer recycled material, by mass, in a product or packaging.
- **Recycled material**
Material that has been reprocessed from recovered (reclaimed) material by means of a manufacturing process and made into a final product or into a component for incorporation into a product.
- **Refurbished**
A component or part that is removed from a discarded product and has undergone substantial repair, rebuilding or remanufacture before use in a new product or a product that has been removed from service and has been refurbished and returned to the field.
- **Reused**
A component or part which is removed from a discarded product and used in a new product with minimal cleaning or cosmetic improvements or a product which is designed to be used multiple times.



Guiding principles for validating pre-consumer recycled content claims

The following guiding principles can be used for validation of pre-consumer recycled content claims:

Guiding principles	To know
1. Pre-consumer recycled content claims shall have verifiable evidence as defined in this document. The manufacturer shall provide satisfactory substantiation that the material considered pre-consumer recycled content can be classified as a waste.	UL Solutions will look for process description information, industry standard manufacturing practices and applicable regulations.
2. The recycled material shall appear in the final product. Recycled materials such as solvents used to manufacture a product shall not be considered pre-consumer recycled content, because they are not contained in the final product or a component of the final product.	
3. By-products (co-products) of a manufacturing process that are sold or have an alternative primary use shall not be considered pre-consumer recycled material.	
4. A waste or recovered material that has been reprocessed by means of a manufacturing process, either by the same or an independent manufacturer, and made into the same or a different product or into a component for incorporation into the same or a different product shall be considered pre-consumer recycled content.	UL Solutions will require manufacturers to report on the amount of waste claimed as pre-consumer content and their historical average waste to volume ratio (waste yield). The intent is to ensure a manufacturer and their suppliers are not producing excess waste to increase the amount of pre-consumer recycled content available for reuse. Reprocessing means that an input (material, part, etc.) passes through a unit and/or manufacturing process prior to reuse. A size reduction process (aka grinding) alone does not count as reprocessing.

Guiding principle	To know
5. A waste or recovered material used in its original condition and/or undergoes a size reduction either by the same or an independent manufacturer to produce a different product or into a component for incorporation into a different product shall be considered pre-consumer recycled content.	
6. A recovered material that is directly fed back into and reused in a closed loop manufacturing process without any further processing before reuse would not be considered pre-consumer recycled content.	
7. A waste or recovered material provided, sold or donated by a manufacturer to an independent manufacturer and either reprocessed or used in its original condition to manufacture a product shall be considered pre-consumer recycled content	
8. If it is industry standard to utilize a certain percentage of recycled content in a product's raw materials i.e., steel, only claims for recycled content above a publicly available standard level made by a professional association, U.S. EPA or other credible institution will be considered. A claim at or below an industry standard's recycled content percentage shall not be validated, because it would be considered deceptive to the consumer.	
9. Aged, excess, obsolete or otherwise unwanted finished goods inventory may be considered pre-consumer recycled content if a manufacturer finds a new purpose for the material or sells that material to be used by another manufacturer and the material undergoes reprocessing.	UL Solutions will require the manufacturer to demonstrate a policy on how aged, excess, obsolete or otherwise unwanted inventory is classified and when it is no longer considered inventory of prime value from a financial accounting perspective.
10. Closed loop recycled content claims must demonstrate chain of custody and segregation of the recycled content materials at each step of the supply chain, from point of recovery to inclusion in the final product.	
11. Material generated by manufacturers in their role as end-users of the product that can no longer be used for its intended purpose would not be considered pre-consumer recycled content but may be considered post-consumer recycled content.	

References

1. EPA Sustainable Materials Management
2. Ellen MacArthur Foundation
3. U.S. Federal Trade Commission (FTC). 2012. “16 CFR Part 260 – Guides for the Use of Environmental Marketing Claims.” Washington, DC 2012
4. UL 2809-1, Environmental Claim Validation Procedure (ECVP) for Defined Source Content (Ed. 2)
5. UL 2809-2, Environmental Claim Validation Procedure (ECVP) for Recycled Content (Ed. 2)
6. UL 2809-3, Environmental Claim Validation Procedure (ECVP) for Ocean Plastics and Ocean Bound Plastics (Ed. 2)
7. UL2809-4, Environmental Claim Validation Procedure (ECVP) for By-Product Synergy (Ed. 2)
8. ISO 14021. 2016. “Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling)”

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