Interpreting Pre-Consumer Recycled Content Claims

Philosophy and Guidance on Environmental Claims for Pre-Consumer Recycled Materials

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Purpose and Introduction

There is a great deal of debate within the environmental and manufacturing communities about which materials can be claimed as pre-consumer recycled content.[1] UL EnvironmentSM encourages an end to this debate. 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. UL Environment has developed this document to provide clarity on interpreting existing guidelines to validate claims of pre-consumer recycled content and to serve as a reference for manufacturers. It is our position that it is time to move beyond defining the terms and to focusing on the vision and goals that drive us to consider recycled content in products a valuable practice.

The primary motivation behind most recycling programs is to keep material from becoming waste, and subsequently entering landfills or being incinerated. Manufacturers that are doing just this should be encouraged to market their products as pre-consumer recycled content. When interpreting the definition for pre-consumer recycled content, UL Environment is guided by a holistic philosophy of industrial ecology which seeks to encourage the minimization of all waste. This view moves past the debate about definitions toward creating a more sustainable world.

The purpose of this document is to share an industrial ecology-focused position on interpreting pre-consumer recycled content claims. Moving forward, UL Environment will use this ideology when making decisions on recycled content claims. This document will provide clarity about how UL Environment interprets those guidelines and will be available for the broader environmental and manufacturing communities to use as well.

To distinguish between accurate and inaccurate claims of recycling during the manufacturing process, UL Environment follows, and will continue to follow, guidance provided by the U.S. Federal Trade Commission (FTC) Green Guides (16 CFR Part 260), European Union regulations, and the ISO 14021:2001 definitions when interpreting Environmental Claims Validations (ECVs) for recycled content. When evaluating a product to a standard, UL Environment uses the definitions and guidance provided in the sustainable product consensus standards first, and refers to this document when further clarification is needed. Additional future standards developed by UL Environment or other standard development organizations should contain more industry-specific clarification for assessing recycled content.

Embracing the Industrial Ecology Philosophy

UL Environment encourages a holistic approach to sustainability when interpreting pre-consumer recycled content claims. Industrial ecology, a framework to examine sustainability in industrial systems, embodies the viewpoint that a manufacturing system should be a closed-loop system in which waste from one process is the raw material for another. The goal of industrial ecology is to reuse waste materials, resulting in zero waste going to landfills or being incinerated.

With this goal in mind, the recycling process takes discarded materials from end users and reuses them to create new products. Therefore, pre-consumer recycling is any movement of material from a finished or partially finished product backwards into the production chain. When a material destined for landfill is instead used as a raw material in a new product, this new product has recycled content. It should be clear that in order for a product to have recycled content, the recycled material has to appear in the final product. This nuance may seem trivial, but materials such as solvents can be recycled within a process but not appear in the final product. It is considered good manufacturing practice to reuse solvents to minimize waste and increase process efficiency, but recycled content claims will be made only if a process material appears in the final product.

Another key issue is the distinction between waste and a by-product. Although the difference may be subtle, it is important to understand the difference and be able to determine if a material is waste or a by-product. The industrial ecology philosophy does not consider a by-product of a manufacturing process to be waste. Therefore, by definition, a by-product cannot be included as pre-consumer recycled content. According to the European Commission, a material should be considered waste if a use cannot be identified for the material, it does not meet technical specifications, and/or there is no market for the material. In addition, the European Court of Justice may consider a material waste if a manufacturer seeks to minimize the amount of material produced. The European Parliament and the Council of the European Union Directive 2006/12/EC Annex I also lists a number of waste categories, which are followed by European manufacturers and are helpful when classifying waste materials. UL Environment considers this guidance in distinguishing whether a product is waste or a by-product as well as the definitions in this document.

An industrial ecology philosophy leads to a rather generous definition of recycling. Some may say the definition is too generous and will discourage the environmentally responsible behavior of waste minimization. UL Environment seeks to incentivize recycling by encouraging recycling and reuse of all waste materials, even if it's a good manufacturing practice versus a new idea for material reuse. Manufacturers do have a financial incentive to avoid creating waste but companies that reuse waste materials in their finished products should be able to take credit for their

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efforts. If there is no publicly available standard recycled content percentage for a product or material, it is not fair to exclude certain practices because they are considered common. However, the manufacturer must always be honest and make sure their claims are not deceptive to the user. Sustainability and the promise of industrial ecology are well served when materials, for whatever reason, are diverted from landfill or incineration.

The FTC Green Guides were developed for the purpose of claims verification to ensure consumers are not deceived. By clearly stating the source of recycled content, compliance with the Green Guides can be satisfied. The definition from ISO 14021:2001 will also be met with specific clarification around the exclusions provided in that definition. UL Environment has chosen to provide more extensive, but complementary, definitions of pre-consumer recycling.

Definitions of Key Recycled Content Terms

While many of the sustainable product consensus standards base their recycled content definitions on ISO 14021:2001, 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 may result in inconsistent applications of the definitions that create a bias toward non-vertically integrated manufacturers. UL Environment 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 UL Environment's experience and insight.

By-Product (Co-Product)

A production material that is not waste and possesses characteristics that make it ready for further use in the marketplace without any further processing

Post-Consumer Material

Material that has reached its intended end user which is no longer being used for its intended purpose.

Pre-Consumer (Post-Industrial) Material

Material diverted from the waste stream during a manufacturing process that has never reached the end user. 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.

Manufacturing Process

Sequence of interdependent and linked procedures or actions designed to convert inputs (material, parts, etc.) into outputs (waste, by-product, etc.) until an intermediate or final product is produced.

Unit Process

A single procedure or action designed to convert inputs (material, parts, etc.) into outputs (waste, by-product, etc.) resulting in an intermediate or final product.

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.

Waste

Material from a generator or holder that does not possess characteristics or meet technical specifications for use in the marketplace without further processing, and that the generator/holder intends or is required to discard or release to the environment.

Waste Stream

The total flow of solid waste from homes, businesses, institutions, and manufacturing plants that is recycled, burned, or disposed of in landfills or segments thereof.

View on Rework, Regrind and Scrap

A particular source of confusion is that the ISO 14021:2001 definition of post-industrial recycled content includes the following statement: "Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it."

This exclusion has caused inconsistent application among users of the standard.

The UL Environment definitions were crafted to complement and be compatible with existing definitions, such as those in ISO 14021:2001 and the FTC Green Guides, and to help ensure accurate and consistent application when used in practice. UL Environment has defined regrind, rework and scrap as

Regrind

Recovered material that has been used at least once in a manufacturing process and has gone through a size reduction process to be made into smaller pieces for reuse into the same product from which it was generated.

Rework

Materials or products that did not meet specifications upon exiting a process and require one or more tasks to be completed to correct the errors before entering the next processing step or finished goods inventory.

Scrap

Rejected or discarded material generated by a manufacturing process that is useful only after it is reprocessed. UL Environment has chosen to clarify the definition of pre-consumer recycled content because many current definitions are easily misunderstood and lead to inconsistent or biased application. The broad interpretations of these terms in some instances may exclude any waste from being called recycled content. These terms have also been applied in an inconsistent manner with various references to exclusions if occurrences are within manufacturing boundaries. This has resulted in inconsistent application in which there is bias toward non-vertically integrated manufacturers, even though the net end result is still the same. The guiding principles and examples in this document illustrate how UL Environment recommends regrind, rework, and scrap be considered.

Guiding Principles for Validating Pre-Consumer Recycled Content Claims

In summary, based upon the industrial ecology philosophy and UL Environment's definitions related to pre-consumer recycled content, the following guiding principles can be used for validation of pre-consumer recycled content claims:

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 waste.[2]
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.[3]
5. A waste or recovered material used in its original condition by the same manufacturer to produce 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 (e.g., steel), only claims for recycled content above a publicly available standard level made by a professional association 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.[4]
10. Material generated by manufacturers in their role as end users of the product which 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

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"Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling)." ISO 14021. 2001. <www.iso.org>
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[1] Also known as "post-industrial" recycled content.ts.
[2] UL Environment will look for process description,information, industry standard manufacturing practices and applicable regulations
[3] UL Environment 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.
[4] UL Environment 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.

Appendix: Examples of Pre-Consumer Recycled Content

UL Environment developed the following industry-specific examples to illustrate the application of the guiding principles in theoretical situations. Each example considers whether the material involved is pre-consumer recycled content or not, followed by an explanation of UL Environment's decision.

Plastics

1. A manufacturer produces plastic food containers. Scrap is collected from the molding equipment and sent to a secondary manufacturer. The secondary manufacturer is paid a fee to regrind and reprocess the scrap into a feedstock material. The original manufacturer then uses this as a raw material to produce the same plastic food container. Yes, this is considered pre-consumer recycled content because the scrap is from an intermediate product and will be used as a raw material by the original manufacturer in the same product from which it originated. The original manufacturer is diverting waste by collecting, reprocessing and using the scrap as a raw material.

2. A manufacturer produces 50-gallon plastic drums and collects scrap from the manufacturing equipment during the process. The scrap is reground and mixed with additives to create a new plastic. This reprocessing occurs both on-site by the original manufacturer and off-site by a different manufacturer. The original manufacturer then uses the new plastic to create milk jugs. Yes, this is considered pre-consumer recycled content because the scrap is reprocessed using additives both from the original manufacturer and an independent manufacturer to create a new plastic, which is then used to create a different product.

3. Manufacturer A produces a pen and collects scrap from the manufacturing equipment. The scrap is then shipped to manufacturer B who regrinds the scrap. Manufacturer C then purchases the reground scrap and uses it to manufacturer a pen. Yes, this is considered pre-consumer recycled content because the scrap is sold to an independent manufacturer to be reprocessed and used as a raw material in the manufacturing of a different pen product.

4. A manufacturer collects plastic pellets that have spilled onto the manufacturing floor. The pellets are then washed and fed directly back into the same manufacturing process without any reprocessing for use as a raw material to produce plastic ID badges. No, this is not considered pre-consumer recycled content because the plastic pellets did not undergo a reprocessing step prior to being fed back into the manufacturing process as a raw material to produce the same product.

5. A manufacturer produces a specialty resin for a customer and after the manufacturing is completed, the order is canceled. The manufacturer finds another buyer for the material and they are able to ship the returned material out to the new customer immediately. They do not modify the resin in any way for the new customer. No, this is not considered pre-consumer content because the material did not need to be reprocessed to be sold. Also, it was not considered aged, excess, or obsolete inventory according to the manufacturer's financial policy and was still considered prime value inventory.

6. A manufacturer cleans a reactor using water on a weekly basis. The flush water exiting the manufacturing process is a mixture of water and plastic. A portion of the plastic is recovered during a wastewater pre-treatment step on-site, and is then reprocessed with additives to create a new product. Yes, this is considered pre-consumer recycled content because the recovered plastic has been diverted from the waste stream and reprocessed prior to being used as a raw material to produce a different product.

Minerals, Concrete and Asphalt

1. A manufacturer mines gypsum, which is used as a raw material to produce wallboard. During the gypsum mining operation, fine particulates (gypsum fines)

are produced, and the material is unsuitable to be used in the wallboard manufacturing process. Instead of sending the gypsum fines to a landfill or to be used as filler in a quarry, the manufacturer creates a new plaster product using the gypsum fines. Yes, this is considered pre-consumer recycled content. The gypsum fines have been diverted from the waste stream and used in their original condition by the same manufacturer as a raw material to manufacture a different product.

2. A manufacturer purchases fly ash from a coal power plant, which is used as an aggregate raw material to make concrete blocks. Yes, this is considered pre-consumer recycled content because the concrete manufacturer is purchasing a waste product from another manufacturer and using the material in its original condition as a raw material to manufacture a different product.

3. A casting manufacturer produces spent foundry sand from their metal casting process. The sand could not be reused in the casting manufacturing process and would be disposed of in a landfill. Instead of disposing of the sand, it was sold to a construction material supplier who used the sand as aggregate in their asphalt products. Yes, this is considered pre-consumer recycled content because the construction material supplier is purchasing the spent foundry sand waste from an independent manufacturer and using the material in its original condition as a raw material to manufacture a different product.

4. A concrete manufacturer collects spilled aggregate from their manufacturing process. The aggregate is fed back directly into the manufacturing process without being reprocessed, to produce the same concrete product. No, this is not considered pre-consumer recycled content because the aggregate did not undergo a reprocessing step prior to being fed back into the manufacturing process as a raw material to produce the same product.

Metals

1. A steel manufacturer uses a basic oxygen furnace (BOF) to produce automotive fenders that contain 20% recycled content. According to Steel Recycling Institute, the published industry standard for BOF products is that they contain 25-35% recycled content. While the recycled content in the material for this claim may be accurate, an environmental claim for 20% recycled content would be considered deceptive and would not be validated because the product contains less recycled content than the published industry standard.

2. An auto manufacturer may scrap metal components such as door panels, underbody parts or an entire car if the product is off-spec. The metal scraps are collected and shipped to a local recycling group. The recycler then reprocesses the metal and uses it to produce different metal products. Yes, this is considered pre-consumer recycled content because the recycler is purchasing the metal scraps from another manufacturer and reprocessing the materials to be used as a raw material to produce a different product.

3. An electronics manufacturer has collected scrap copper from their manufacturing process and has not found an alternate use for the material. The manufacturer donates the material to a local university to be used in art sculptures by their students. Yes, this is pre-consumer recycled content because it was a waste material donated by the manufacturer to be used in its original condition as a raw material in a new product.

Assembled Products

1. The quality department of a children's high chair manufacturer realizes the warning label on one of their high chairs was incorrect and did not provide the consumer with important safety information the government requires. The manufacturer has a group of assembly workers open the high chair boxes, re-label the high chair with new labels and re-seal the boxes. The high chairs are then shipped to their customers. No, this is not considered pre-consumer recycled content. Rework for minor imperfections of the product was

completed and the reworked high chairs are considered a finished good to be shipped to consumers.

2. A larger retailer returns a large quantity of unused final product to a shoe manufacturer. The manufacturer is able to reprocess and use components of the shoes as a raw material in their manufacturing process to produce the same shoe product. Yes, this is considered pre-consumer recycled content because the product was returned from the distribution chain before it reached its intended end user and the materials will be reprocessed prior to being used a raw material in the manufacturing process to produce the same product.

3. A manufacturer collects used soda bottles from a recycler, melts the plastic, and then uses it as a raw material to produce carpet fibers. No, this is not considered pre-consumer recycled content. It is considered post- consumer recycled content because the end user will no longer use the soda bottles for their intended purpose and the manufacturer reprocesses the waste to be used as a raw material to produce a different product.

4. A manufacturer produces carpet fibers from an extrusion process. During the manufacturing process, an off-spec carpet fiber is extruded. The off-spec fiber is collected, melted down, repelletized and reused in the original manufacturing process as a raw material to produce the same carpet product. Yes, this is considered pre-consumer recycled content because the carpet fiber is a final product that will be reprocessed and used as a raw material by the original manufacturer to produce the same product.

5. An automobile manufacturer ships their upholstery scraps to an independent manufacturer who uses the scraps as a raw material in their bean bag manufacturing process. Yes, this is considered pre-consumer recycled content because the bean bag manufacturer is purchasing the upholstery scraps from an independent manufacturer and using the material in its original condition as a raw material to manufacture a different product.

Chemicals, Paints and Glass

1. A manufacturer uses isopropyl (rubbing) alcohol as an industrial solvent to dissolve oils and resins in their manufacturing process. The manufacturer recovers the alcohol and purifies it using a distillation column. The purified alcohol is then blended with virgin alcohol to be used as a solvent in the manufacturing process, but does not end up in the final product. No, this is not considered pre-consumer recycled content because the final product does not contain the solvent. The manufacturer is following a good manufacturing practice by recovering and reusing the solvent in the manufacturing process, but the final product does not contain the solvent.

1. A biodiesel manufacturer produces glycerin, alcohol and methyl ester as by-products. The manufacturer sells the glycerin by-product to a manufacturer who uses the by-product along with virgin glycerin to produce epoxy resins in their manufacturing process. No, this is not considered pre-consumer recycled content because the glycerin is a by-product of the biodiesel manufacturing process.

2. A manufacturer produces biodiesel from used cooking oil collected from restaurants. No, this is not considered pre-consumer recycled content. It is post-consumer recycled content because the end-user (i.e., restaurants) will no longer use the cooking oil for their intended purpose. The manufacturer uses the waste in its original condition as a raw material to produce a different product.

3. A paint manufacturer uses an acetone solvent as a raw material in their product. The manufacturer is able to recover spent acetone using solvent recovery equipment and recycles the purified acetone directly back into the manufacturing process to produce the same paint product. Yes, this is considered pre-consumer recycled content because the recovered acetone solvent is from a final product and will be used as a raw material by the

original manufacturer in the same product from which it originated. The original manufacturer is diverting waste by recovering, purifying and reusing the solvent as a raw material.

4. A manufacturer produces glass for automobiles. During the manufacturing process, cullet is collected. Cullet isrecycled container glass produced as a result of breakage and rejection of an off-spec product. The cullet is mixed with other raw materials and melted in a glassmaking furnace. The glass mixture containing the cullet is then used to produce glass jars. Yes, this is considered pre-consumer recycled content because the original manufacturer is reprocessing the cullet and using it as a raw material to manufacture a different glass product.
5. A manufacturer collects cullet during their glass manufacturing process. The cullet is then sold to a manufacturer to be used as an aggregate in bituminous highway materials. Yes, this is considered pre- consumer recycled content because the manufacturer is purchasing the spent foundry sand waste from a manufacturer and using the material in its original condition as a raw material to manufacture a different product.