



Apple Recycled & Renewable Material Specification

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1. Scope and Introduction

Apple is working toward a future where our products are created from, and contribute to, circular supply chains. This includes prioritizing the use of responsibly sourced Recycled and Renewable materials.

This specification details how Apple defines Recycled and Renewable material, Apple's requirements on the use of such materials in products and product packaging, and how such use shall be reported to Apple. The Apple Responsible Fiber Specification (099-00532) details additional requirements specific to fiber-based materials for packaging components and printed materials.

Apple may update this document as necessary and require each of its direct and indirect suppliers (each a "Supplier") to resubmit documentation to confirm compliance with any such updates.

Capitalized terms used but not otherwise defined herein are defined in Appendix A. Translated versions of this specification may be used and referenced; points of conflict or ambiguity between translated versions default to the meaning and intent of this English version. For purposes of this specification, "Apple" collectively refers to Apple Inc. and its affiliates.

Effective Date: This specification takes effect on the date of each version publication.

2. Recycled and Renewable Material Guidance

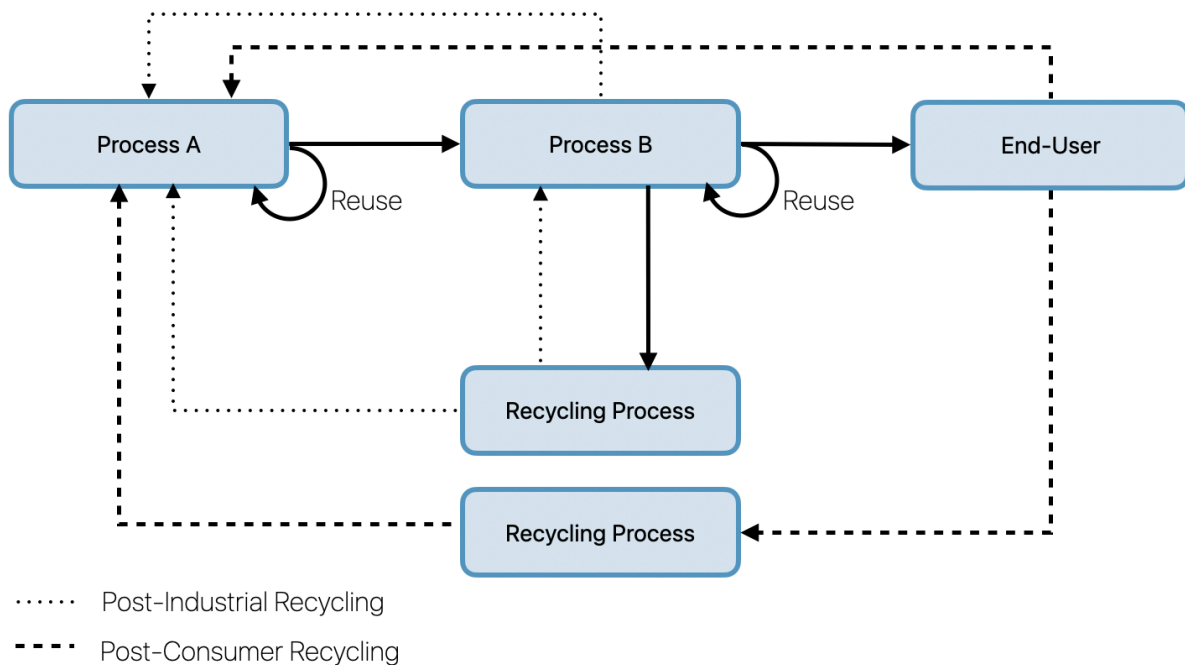
2.1. Certification of Recycled Material

Pursuant to ISO 14021, not all uses of scrap are considered recycling. The below diagram is provided as an illustrative guide to the distinctions between Post-Industrial Recycled, Post-Consumer Recycled, and reuse of material.

Reuse, as distinct from Recycling, is defined by processing boundaries. Scrap that is recovered and fed directly back into the same process from which it was generated is considered Reuse. The above diagram shows an example of Reuse in Process A and Process B. However, scrap that undergoes additional processing prior to being used in the original process from which it was recovered, or prior to going into another process, is considered post industrial Recycled material. This scenario is shown above in the Post-Industrial Recycling re-entering Process B, and going into Process A after going through the Recycling Process.

Recycled content must be calculated using only input mass values - Apple does not accept Recycled content calculations based on output mass or product mass values. Recycled content must be calculated using the following equation:

$$\text{Recycled Content (\%RC)} = \frac{\text{mass of recycled input}}{\text{mass of all input}}$$



Recycled content must be stated on the basis of an individual material:

- For single material goods this is the total recycled content percentage.
- For multi-material goods, recycled content % must be stated for the individual material(s) being claimed, and may also include the percentage it comprises of the whole good (e.g. 30% recycled content copper-zinc alloy, consisting of 100% recycled copper).

Please see desired claim language under Appendix C for guidance.

For purposes of this specification, Apple does not consider the following sources of material to be Recycled, regardless of certification:

- Use of Off-spec material, unless further processing is performed to enable its utilization
- Content derived from scrap or byproducts of mining, logging or other Primary material extraction processes (e.g. mining tailings), unless Apple in its sole discretion agrees in writing that such material should be accepted.

2.2. Certification of Renewable Material

Renewable materials are a subset of bio-materials. Bio-materials are those that can be regenerated in a human lifespan, like wood fibers or sugarcane. Bio-materials can help reduce the use of finite resources. But even though bio-materials have the ability to regrow, they may not always be managed responsibly. Apple's goal is to use Renewable materials, which are the subset of bio-materials managed in a way that enables continuous production without depleting the earth's resources. For the purposes of this specification, Renewable feedstocks are those approved by Apple and listed in Appendix B (or as otherwise approved by Apple). For most feedstocks, certification to a responsible management standard is required.

Apple evaluates potential Renewable feedstocks and their accompanying standards according to the following principles:

- Feedstocks should maintain or enhance biodiversity, should not be harvested from forests or land where high conservation values¹ are threatened, and should not contribute to deforestation;
- Feedstocks should not be harvested in violation of internationally recognized norms, standards and civil rights;
- Feedstocks should not threaten local food security;
- Feedstocks should maintain or enhance the quality and availability of surface and groundwater resources;
- The use of agrochemicals should be tracked, justified and in line with current best practices.

Apple may additionally consider other relevant criteria as determined by Apple. Apple may require additional information related to the life cycle impacts of any material used in connection with Apple products.

Apple considers all biological feedstocks originating from farming, forests, or operations up to and including the first processing site, to be Primary feedstocks, including those that could otherwise be considered an agricultural waste or residue. This means that feedstocks such as tall oil and bagasse have the same sourcing requirements as the associated wood pulp and sugar, respectively, and must be sourced from Renewable forests and sugarcane plantations as specified in Appendix B. Post-consumer waste (e.g. scrapped steel machinery, or used cooking oil) from such sites is still considered Recycled.

Material sourced from the waste of industrial operations downstream of the first processing site is considered post-industrial recycled feedstock and does not carry the additional requirements of the original feedstock. Certification as a post-industrial recycled material would still be required, as per Appendix B.

3. Supplier Responsibilities and Mass Balance Requirements

3.1. Supplier Requirements for all Materials

3.1.1. The requirements in this specification are additional to, and do not supersede or replace, any other Apple requirements, including but not limited to:

- Apple Supplier Code of Conduct and Supplier Responsibility Standards
- Apple Conflict Minerals Restrictions Specification (069-5202)
- Apple Regulated Substances Specification (069-0135)
- Apple Responsible Fiber Specification (099-00532)

3.1.2. Appendix E contains a list of materials which are required to use 100% certified Recycled content in certain applications. Provision of materials, components, or products containing any of the listed materials for the applications in Appendix E, at less than 100% certified Recycled content, is considered off-spec.

3.1.3. For any material provided in a product or product component to Apple, each Supplier must complete the following steps to claim the material consists of, or contains, Recycled and/or Renewable content:

¹ High conservation values include environmental and social values that are considered to be of outstanding significance or critical importance. These values include, but are not limited to, concentrations of endangered species, protection of a stream that is the sole source of water to a local community, or a site with special religious significance.

- I. Verify that the material and/or feedstock is certified to one of the standards listed in Appendix B.
- II. If the material is not certified, obtain independent third-party certification of the source material.
 - A Supplier may alternatively elect to certify its final product or component or other delivered material against one of the approved standards for the relevant material, as listed in Appendix B.
- III. If requested by Apple, provide attestations from all upstream Suppliers that the certified source material has been used in the product or component supplied to Apple.
 - If the final product supplied to Apple is certified, additional attestations are not necessary and the certificate alone may be provided to Apple.
 - The required attestation template is provided in Appendix B.
 - Certificates and signed attestations may be submitted by email.

3.1.4. Suppliers should note that the Apple Conflict Minerals Restrictions Specification (069-5202) includes additional requirements for providers of products containing recycled tin, tantalum, tungsten and gold, including but not limited to participation in an approved industry audit program.

3.1.5. Suppliers are responsible for following all specifications and requirements for Recycled and/or Renewable material, which may be found in one or more of the following:

- Engineering specifications, drawings, and/or product requirements documents
- Statements of Work
- Other documents or instructions as provided by Apple

Failure to meet requirements stated as such is considered off-spec.

3.1.6. The Supplier is responsible for maintaining the certified status of any Renewable or Recycled feedstocks used in the material provided to Apple, including provision of any active or updated certificates for any currently shipping, certified material.

3.1.7. The Supplier must alert Apple to any supply chain changes or changes in feedstock use which implicate the material provided to Apple, and are responsible for ensuring continued compliance in such instances with all material specifications listed under 3.1.

3.1.8. Apple no longer considers the product to meet the requirements of this specification if:

- Feedstock or material certification lapses and a valid certificate cannot be provided;
- Changes to the supply chain or feedstock render the material noncompliant with Apple requirements herein, including mass balance requirements enumerated in section 3.2.

In these instances, associated contractual material specification requirements come into effect.

3.2. Mass-balance Requirements

3.2.1. Apple accepts mass balance systems for both Recycled and Renewable feedstocks, subject to the requirements enumerated below. The credit accounting system must be audited as part of any material certification and the requirements listed under 3.1 apply.

3.2.2. Apple prioritizes the use of segregated and controlled blending chain of custody models over mass balance. If a Supplier intends to use mass-balance accounting, prior approval from Apple is necessary. Contact Apple for more information.

3.2.3. For purposes of this specification, the credits which are being accounted for must be tracked and allocated to output products up to a maximum quantity determined by the

scenario where the Recycled/Renewable feedstock was not constrained by availability. Within this framework, Apple requires:

- I. **Equivalent composition.** The input feedstock generating the credit must be of a chemical composition comparable to the conventional alternative, although not necessarily to the exact same specification, such that it could be used to physically make the output product at the claimed percentage.
- II. **No double counting.** If credit for an input is allocated to a specific output on a mass-balance basis, that input credit must not also be used for claims on any other output (including any average content calculated on a physical, non-mass-balance basis).
- III. **Representative period.** The time period for the mass-balance accounting should be representative of the production process, but in any case should not exceed one year.
- IV. **Yield loss.** The quantity of output content which can be claimed must be reduced by any relevant production yield losses. Credits may not be generated from process fuels.
- V. **Credit allocation.** Apple accepts free allocation of credits, subject to a fuel-use exemption. Credits must first be proportionally allocated between fuel- and non-fuel-outputs, and may then be freely allocated within each category. Outputs which can serve a dual purpose (fuel or non-fuel) shall be categorized by the purpose for which they are sold.
- VI. **Chemical traceability.** Credits must follow a physical flow of material, and cannot be allocated to outputs that are not chemically feasible from the input feedstocks using the current processing equipment and procedures. Site transfers (i.e. the allocation of credits derived from inputs of a given facility, line, or process to outputs of a separate facility, line, or process) are likewise not permitted unless there is physical transfer of a sufficient quantity of material to that location.

3.2.4. Apple reserves the right to request additional information to support any content claims which utilize mass-balance, and may require additional actions by the Supplier to ensure that such claims convey a net benefit to the environment. Apple may require additional information on the other feedstocks with which the Recycled and Renewable inputs are mixed, and such feedstocks must still meet Apple's other requirements (see Section 2 of this specification and Appendix D for material specific guidance).

4. Conformity Verification

Apple reserves the right to conduct audits of supply chain actors back to the material origination point, to ensure compliance to the requirements listed in this specification. An audit may include, but is not limited to, the following areas:

- Communication and training of employees
- Supply chain management and traceability systems
- Part-level compliance documentation
- Production controls
- Traceability of supplier materials
- Material purchase and sales records
- Part audit by fiber tests (if applicable)
- On-site facility visit

The scope of an audit may also include compliance with the Apple Regulated Substances Specification (069-0135). Apple reserves the right to conduct a comprehensive audit of a Supplier's entire supply chain, including Supplier-selected materials.

5. Waiver Process

A Supplier seeking a waiver to any requirement in this specification must make their request to Apple in writing. Waivers may be sought for any requirement, such as providing Recycled and/or Renewable material without the required documentation, or using material derived from a feedstock not listed in Appendix B. Apple will review the request and provide a decision via email. Contact Apple for more information on this process at RR_Materials@group.apple.com.

6. References

Apple Regulated Substances Specification, Apple Inc. (069-0135)
Apple Supplier Code of Conduct and Supplier Responsibility Standards, Apple Inc.
Apple Conflict Minerals Restrictions Specification, Apple Inc. (069-5202)
Apple Responsible Fiber Specification, Apple Inc. (099-00532)
ISO 14021: Environmental Labels and Declarations – Self-declared Environmental Claims (Type II environmental labelling)

7. Contact Information

Please address questions, comments and requests to: RR_Materials@group.apple.com

8. Revision History

Revision	ECO	Creator/Approver	Date	Revision Description
A	19019735	A. Kodama	8/01/2019	Initial Release
B	0042949075	R. Maloney	4/5/2023	Updated requirements and Appendix B, added Appendix D
C	0066586007	R. Maloney	6/3/2025	Minor edits for clarity, updates to Appendices B and D
D	0078251132	R. Maloney	April 2026	Addition of clause 3.1.2 and Appendix E, minor edits for clarity

Appendix A – Definitions

Term	Definition
Bio-based, or Bio-material	Material for which the original Primary feedstock can be regenerated within a human lifespan
Closed-Loop	Use of Recycled or Renewable material, with an equivalent amount contributed back to the market where necessary
Finite	Material for which the original Primary feedstock exists as a fixed quantity on Earth on the timescale of a human lifespan. e.g. aluminum, petroleum
Mass Balance	Mass-balance (or systems-allocation) accounting is a method of tracking credits for the input of a specific feedstock into a manufacturing process and assigning it to a specific output product, despite physical mixing with conventional feedstock. The purpose is to enable better sourcing while utilizing more efficient large volume production processes.
Off-spec	Material which did not meet the original intended specification, but is used under a different specification without additional processing. note: does not qualify as "Recovered Material"
Post-consumer Material ISO/DIS 14021:2025	Material generated by households or by commercial, industrial and institutional facilities in their role as end- users of a product which can no longer be used for its intended purpose. note: this includes returns of material from the distribution chain.
Post-industrial Material	Material diverted from the waste stream during a manufacturing process. note: reutilization of materials such as rework, regrind or scrap generated in a process and capable of being recovered within the same process that generated it is excluded from this definition.
Pre-consumer Material ISO/DIS 14021:2025	Synonymous with Post-industrial
Primary	New material feedstocks—can be either Finite or Renewable e.g. copper from a mine, or corn-derived PET
Recoverable Waste	Waste which can still be collected and processed as a material input for a recycling or manufacturing process.
Recovered Material ISO/DIS 14021:2025	Material that would have otherwise been disposed of as waste or used for energy recovery, but has instead been collected for use as a material input note: recovered material could be pre-consumer material or post-consumer material
Recycled	Material feedstock which has been reprocessed from Recovered material e.g. copper sourced from old PCBs, or PET from extrusion cuttings
Renewable	Bio-based material which is managed in a way that enables continuous production without depleting the earth's resources.
Reuse	Scrap generated within a process, recovered and fed directly back into the process from which it was generated, with no additional processing.
Virgin	Synonymous with Primary

Term

Definition

Waste

ISO/DIS 14021:2025

Resource that is no longer considered to be an asset as it, at the time, provides insufficient value to the holder.

note 1: the holder can choose to retain, discard, or transfer the waste. See ISO/DIS 59004:2024 for additional notes

Appendix B - Approved Feedstocks and Required Claim Documentation

I. Approved Feedstocks and Standards

The table below lists the materials and independent third party standards currently approved as meeting Apple's definition of Recycled or Renewable material. Any Recycled or Renewable material a Supplier provides to Apple, in compliance with this specification, must be based on a feedstock listed below that is certified to the current version of one of the standards listed for that feedstock. To use a feedstock or a standard not listed below, prior written approval by Apple is required.

This table may be updated by Apple at any time to reflect additional and/or different feedstocks or standards; this may require additional information from Suppliers to verify that they satisfy any updated requirements.

Approved Feedstocks

Material	Approved Standard or Certification Scheme
Recycled content*	ISO 14021 (subsection on "Recycled Content") EN 45557 Forest Stewardship Council (FSC) Chain of Custody Certification FSC-STD-40-004; Sourcing Reclaimed Material FSC-STD-40-007 Programme for the Endorsement of Forest Certification (PEFC ST 2002: 2020) SCS Global Services - Recycled Content Standard UL - Environmental Claims Validation Procedure for Recycled Content 2809 Global Recycled Standard (GRS) Recycled Claim Standard (RCS) International Sustainability & Carbon Certification PLUS (ISCC PLUS); (ISCC EU)**
Wood fibers	Forest Stewardship Council (FSC) Principles and Criteria for Forest Stewardship FSC-STD-01-001 Programme for the Endorsement of Forest Certification (PEFC) Sustainable Forest Management Requirements (PEFC ST 1003)
Bamboo	Forest Stewardship Council (FSC) Principles and Criteria for Forest Stewardship FSC-STD-01-001 Programme for the Endorsement of Forest Certification (PEFC) Sustainable Forest Management Requirements (PEFC ST 1003)
Sugarcane (incl. Bagasse)	Bonsucro Production Standard International Sustainability & Carbon Certification PLUS (ISCC PLUS) International Sustainability & Carbon Certification EU (ISCC EU) Roundtable on Sustainable Biomaterials Standard for Advanced Products (RSB-STD-02-001)** VIVE Sustainable Supply Programme: VIVE 3.0 Farm Module Guidance Issue 1.0
Natural rubber	Forest Stewardship Council (FSC) Principles and Criteria for Forest Stewardship FSC-STD-01-001
Castor	International Sustainability & Carbon Certification PLUS (ISCC PLUS) Roundtable on Sustainable Biomaterials Standard for Advanced Products (RSB-STD-02-001) SuCCESS Code: Sustainable Castor Farming Standard**
Corn	International Sustainability & Carbon Certification PLUS (ISCC PLUS) International Sustainability & Carbon Certification EU (ISCC EU) Roundtable on Sustainable Biomaterials Standard for Advanced Products (RSB-STD-02-001)

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Approved Feedstocks

Material	Approved Standard or Certification Scheme
Rapeseed	International Sustainability & Carbon Certification PLUS (ISCC PLUS) International Sustainability & Carbon Certification EU (ISCC EU)
Sunflower	International Sustainability & Carbon Certification PLUS (ISCC PLUS) International Sustainability & Carbon Certification EU (ISCC EU)
Tall oil	Forest Stewardship Council (FSC) FSC-STD-01-001; FSC-STD-40-004 Programme for the Endorsement of Forest Certification (PEFC ST 1003; PEFC ST 2002:2020) International Sustainability & Carbon Certification PLUS (ISCC PLUS)

*Applies to both PIR and PCR, of any material type including but not limited to plastics, metals, or biological feedstocks. PCR includes Used Cooking Oil (UCO), Municipal Solid Waste (MSW), and landfill gas.

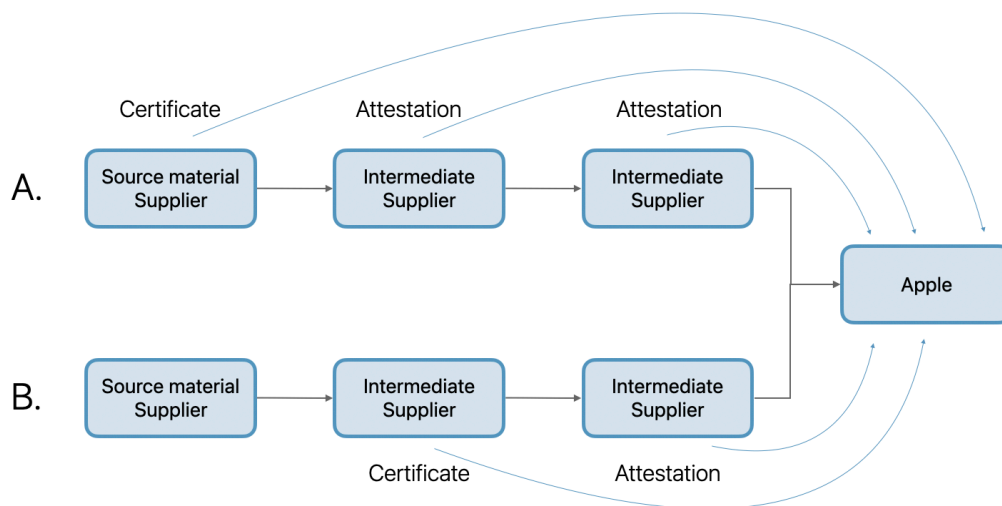
**ISCC PLUS, RSB-AP, and SuCCESS Code standards do not ensure compliance with Apple's mass balance requirement of equivalent composition. See Section 3.2 of this specification for additional information.

II. Claim Documentation

In all instances, Apple requires documentary evidence to substantiate a Recycled or Renewable content claim. In most cases, submission of a certificate for the source material issued against an approved standard is required. Apple only accepts certificates issued by certification bodies accredited to audit within the relevant scope.

Submission of attestations of material use may be required to verify the use of the certified Recycled material through the supply chain until the material reaches Apple. The diagram below shows two example supply chains and the documents that must be submitted to Apple in order to make a Recycled or Renewable material claim.

Supply chain A provides Apple with three documents to verify the claim of Recycled or Renewable material: a certificate verifying the Recycled or Renewable content of the source material, and two attestations verifying the use of that material from each intermediate Supplier to Apple. Supply chain B provides Apple with two documents to verify the claim: in this case an intermediate Supplier has elected to certify the Recycled or Renewable content of the product or component they supply. This certificate must be provided to Apple, along with the attestation of use of the certified product or component from the next Supplier in the chain.



Where a given standard or scheme requires additional and/or different documentation, it is called out in the table below. Apple reserves the right to require additional information on material country of origin, or more specific information about the Recycled and/or Renewable content of the material supplied, as needed to substantiate a claim.

Claim Documentation by Standard

Approved Standard or Certification Scheme	Required Claim Documentation
ISO 14021	Source material/feedstock recycled content certificate and supplier attestation(s)
Forest Stewardship Council (FSC) FSC-STD-40-004; FSC-STD-40-007	FSC Chain of Custody certificate(s) and supplier attestation(s). Suppliers must use FSC Chain of Custody certificates in place of attestations when available.
Forest Stewardship Council (FSC) FSC-STD-01-001	FSC Forest Management certificate(s) and supply chain traceability documents (certificates of another standard system or attestations) covering the rest of the supply chain.
Programme for the Endorsement of Forest Certification (PEFC)	PEFC Forest Management certificate(s) and supply chain traceability documents (certificates of another standard system or attestations) covering the rest of the supply chain.
SCS Global Services - Recycled Content Standard	Source material certificate and supplier attestation(s)
UL - Environmental Claims Validation Procedure for Recycled Content 2809	Source material certificate and supplier attestation(s)
Global Recycled Standard (GRS) Recycled Claim Standard (RCS)	Source material Scope Certificate. In addition, a Transaction Certificate is required when more than one node in the supply chain is GRS or RCS certified. Suppliers may use supplier attestations past the last certified entity in the chain.
International Sustainability & Carbon Certification Plus (ISCC PLUS) ISCC EU	ISCC certificate(s) for the first and last certified nodes of the supply chain. Supplier attestations may be used by supply chain entities downstream of the last ISCC certified entity. A Sustainability Declaration is required from the last certified entity. Apple reserves the right to request a third party verification of country of origin for the feedstock.
Bonsucro Production Standard	Bonsucro Production certificate and supplier attestation(s). Suppliers must provide Bonsucro chain of custody certificates in place of attestations when available.
VIVE 3.0	VIVE Farm Module certificate and VIVE Facility or Chain of Custody Module certificates. Suppliers may use attestations only when VIVE certificates are not available.
Roundtable on Sustainable Biomaterials Standard for Advanced Products	RSB production certificate and supplier attestation(s). Suppliers must provide RSB chain of custody certificates in place of attestations when available.
SuUCCESS Code: Sustainable Castor Farming Standard	SuUCCESS Code Production Certificate and supplier attestation(s). Suppliers must provide SuUCCESS Code chain of custody certificates in place of attestations when available.

III. Supplier Recycled and Renewable Material Use Attestation Templates

In cases where the final product provided by the Supplier to Apple is not itself certified, Apple requires signed declarations of the use of specified certified source material by all upstream Suppliers, from the certified entity up to and including the final entity supplying Apple.

The following templates shall be used by each Supplier to attest to the use of Recycled and/or Renewable material in the products provided to Apple, unless Apple has given the Supplier a customized version specific to the Supplier's situation. Two templates are provided: the first is a Supplier level attestation and the second is a facility level declaration. In most cases the Supplier should use the Supplier level attestation, to list individual products supplied to Apple. In certain cases, the Supplier is eligible to use a facility level attestation, which attests that all production for Apple at a given facility uses only the specified material. Prior written approval by Apple is required before the facility level attestation may be used.

Apple Recycled and Renewable Material Attestation

Apple’s Recycled and Renewable Material Specification (099-15583) sets requirements for use of Recycled and Renewable materials in its products. The undersigned is providing this attestation to indicate whether products supplied to Apple comply with Apple’s Recycled & Renewable Material Specification. The undersigned declares the following (please check one):

- All of the following final products, components or other delivered materials for use in Apple products meet the requirements of Apple’s Recycled & Renewable Material Specification, and use only the material indicated in the table below.

Delivered product, component or material name or part number	Upstream/sourced product, component, or material name or part number
Signatory company name and address	Supplying company name and address

Or

- Some (or all) of the final products, components or delivered materials for use in Apple products do not (or will not) meet the requirements of Apple’s Recycled and Renewable Material Specification as of the date of this attestation, or did not (or will not) use the sources and/or materials listed above.

Please provide more information on the extent to which production did not (or will not) meet Apple’s requirements (such as lot numbers, dates of production, volume, etc).

The undersigned hereby certifies and attests that the information above (and attached, if applicable) is true and correct as of the date listed below.	
Supplier Name	
Supplier Address	
Representative Name	
Representative Title	
Representative Signature	
Date	

Appendix C - Desired Claim Language

When certifying a material, the claim on the certificate should be unambiguous, and where applicable should highlight the specific component of interest.

In general, it is recommended to certify a specific product number or grade in order to easily distinguish between certified and non-certified products when specifying material (e.g., "ABC360-R100," where "R100" represents the 100% recycled variant of ABC360).

Below are some examples of preferred language and common situations—if there are questions as to a specific situation and the claim desired, please reach out to Apple in advance.

Preferred wording	Problematic wording	Explanation
40% of the solder paste is recycled content* *100% of the tin in the solder paste is recycled content	40% of the solder paste is recycled content	The alloy is 40% tin, and that tin is 100% recycled content, so the material-level detail should be called out either in the main claim or as a footnote to highlight the specific material of interest.
100% certified fiber content	Min. 99% certified fiber content	"Min. 99%" is commonly used only because a full "100%" can't be fully supported by current documentation. Supplier should provide completed information to close the gap and reach 100%.
100% recycled content, of which a minimum of 80% is post-consumer	Minimum 80% post-consumer recycled content	It's important to capture the total recycled content, from all sources. If relevant, the breakout of post-consumer can be included in the main claim or as a footnote.
Min. 60% certified renewable content	Min. 30% certified renewable content <i>When Apple's requirement is higher, e.g. 60%</i>	Occasionally a Supplier may want to certify to a lower content in order to keep flexibility to change future material sourcing. This is does not meet the requirements of this specification. Supplier must certify to at minimum the content required by Apple or request a waiver.
ABC360-H contains 90% recycled content -OR- All ABC360- group products contain minimum 90% recycled content	ABC360 contains minimum 90% recycled content <i>When Apple's requirement is for ABC360-H</i>	The product listed on the certification needs to match the one that Apple specifies, either explicitly or by inclusion in a group or family of material products.
Contains a minimum of 30% recycled content	Contains a maximum of 30% recycled content <i>When Apple's requirement is "30% recycled content"</i>	Unless otherwise specified, the content required by Apple is a <i>minimum</i> content requirement. Certification to a maximum content is not accepted.

Appendix D – Material Specific Guidance

Aluminum

Claims of Recycled aluminum content in an alloy must take into account all sources of aluminum present, including any contributed by grain refiners, master alloys, or other additions to the charge.

The recovery of scrap from processes prior to homogenization is typically considered to be re-use, not recycling. This includes scrap from the casting process (dross, degassed, CFF Box, PTF, Flash, Casting Heal, and out-of-spec chemistry), as well as any scrap pieces cut out prior to any homogenization or further processing step (e.g. casting slab bottom, if cut prior to homogenization). An exception to this is if the scrap is being used in the creation of a different alloy than the one from which it was created, e.g. 6k dross being used in a 7k melt will usually be considered recycling under current third party standards.

Plastic and Glass

Plastic and glass often rely on mass balance chain of custody, particularly for renewable content claims. Apple allows mass balance claims, as long as the additional guardrails described in section 3.2 are met. The examples below demonstrate common scenarios where the equivalent composition and chemical traceability requirements are not met.

Equivalent composition

A glass supplier offers a glass formulation, claiming 100% recycled content, based on mass balance allocation. The glass is made from 3 different PIR inputs, which have differing formulations. In order to achieve the correct output spec, the supplier must add primary input in varying percentages. This does not meet the equivalent composition requirement, as the final output cannot be made with 100% recycled inputs all the time, without adding primary material to meet the spec.

Chemical traceability

A resin producer wants to make a renewable content claim using mass balance allocation. They have two facilities, one in France and one in Germany, each producing the same resin grade. The facility in Germany inputs renewable material in varying amounts throughout the year. The facility in France does not use any renewable inputs. In this scenario Apple would not accept a mass balance claim for the resin unless additional documentation (usually in the form of a certificate) is provided to show that the material delivered for Apple came solely from the German facility. Without any renewable content, the resin produced at the French facility does not meet the chemical traceability requirement needed for Apple to make a claim.

Reclaimed material from refining operations

Pursuant to clause 2.1, waste recovered from a refining operation that undergoes additional processing to produce a usable material is generally considered post-industrial recycled, regardless of whether this additional processing is performed by the original refiner or another entity. For example, a smelter may generate slag as a waste. If the slag undergoes additional processing to extract usable material, this material is considered post-industrial recycled. The PIR content is defined by the use of industrial waste that undergoes additional processing, not the ownership or company boundaries of the material. For guidance or questions on specific materials and processing scenarios, confirm with a certification body.

Appendix E – Application Specific Guidance

Suppliers are required to use only 100% certified recycled material in all material applications listed below.

Material	Product	Application	Application Details
Cobalt	Lithium-ion batteries	Battery cathodes and cells designed by Apple	Batteries embedded in products that have battery cells & chemistry designed by Apple
Rare Earth elements Neodymium (Nd) Dysprosium (Dy) Gadolinium (Gd) Cerium (Ce) Praseodymium (Pr) Terbium (Tb) Holmium (Ho)	NdFeB magnets	All magnets used in Apple products including, but not limited to: Audio, Camera, Haptics, Fan, Soft Goods, and Enclosure	Sintered or bonded permanent magnet composed of rare earth elements
Tin	Solder paste, solder bar, solder wire, solder ball	Tin solder used on all Apple designed rigid and flexible printed circuit boards (PCBs)	Tin solder used for surface mount technologies on bare substrates (excluding components)
Gold	Potassium gold cyanide (dicyanoaurate)	Gold surface finish plating on all Apple designed rigid and flexible printed circuit boards (PCBs)	Rigid and flexible PCBs designed and manufactured with engagement from Apple