



SCS Certification Standard for Recycled Content

SCS-103



Version 8.0 – May 2024



SCS standards

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Version 8.0 Revision Update

The SCS-103 Certification Standard for Recycled Content was first introduced in 1989 and has been revised periodically in response to evolving interest, demand, and innovative recycling technologies.

In 2024, SCS Standards finalized its revision of Version 8.0 which expands options for achieving conformance and improves overall clarity of the standard. Key changes made in version 8.0 include:

- Structural changes to outlining,
- Updates to the terms and definitions,
- Addition of an option for achieving certification using a mass balance chain of custody model,
- Addition of a minimum threshold of 5% recycled content,
- Addition of an example bill of materials template,
- Revised claims and labelling section, with inclusion of example claims.

1. Introduction

- 1.1 The purpose of the Certification Standard for Recycled Content (hereinafter SCS-103) is to describe the requirements for a third-party certification of the recycled content of a product and/or material.
- 1.2 SCS-103 is primarily a chain of custody standard for entities to quantify the recycled content of their products and/or materials using either a physical segregation chain of custody model or a mass balance chain of custody model.

2. Scope and Limitation

2.1 Scope

- 2.1.1 The SCS-103 Standard applies to products and/or materials containing mechanically and/or chemically recycled content, including pre- and/or post-consumer recycled content of any type (e.g., plastic, metal alloy, fiber, etc.).
- 2.1.2 The following entities who take physical possession or legal ownership of the recycled products and/or materials are in scope:¹
 - Material Recyclers,
 - Processors,
 - Manufacturers, and/or
 - Traders and distributors for the purpose of private labels or re-branding.
- 2.1.3 Products that are categorized as electrical and electronic equipment can additionally and optionally be certified against the SCS Certification Standard for Recycled Content Annex A: Supplemental Criteria for Electrical and Electronic Equipment.²

2.2 Limitation

- 2.2.1 This Standard does not address safety, health, and performance concerns, if any, associated with its use.
- 2.2.2 This Standard does not address any environmental impact tradeoffs that may be associated with every life-cycle phase of the product(s). Therefore, there may be environmental impact tradeoffs associated with a certified product.

¹ This Standard is not applicable to material collectors and sorters. Brokers and transportation companies are in scope only if they take ownership of the recycled material.

² <https://www.scsstandards.org/standards/recycled-content-standard-annexA>

3. Conformance

3.1 Conformance to the Standard

3.1.1 To maintain chain of custody within a supply chain, all clients undergoing certification shall:

3.1.1.1 Meet the requirements for Management Systems & Documentation (Section 6);

3.1.1.2 Meet the requirements for either a physical segregation chain of custody model (Section 7) and/or a mass balance chain of custody model (Section 8) for all inputs and outputs within its operations; and

3.1.1.3 Meet the requirements for claims and labelling (Section 9).

3.1.2 The client shall undergo an audit against this Standard by an SCS Standards-approved certification body following the SCS-103 Certification Body Requirements.

3.1.3 To support conformance with SCS-103, the client can consult its certification body to leverage data collected from other recognized third-party certification standards.³ Recognized third-party certification standards include:

- Better Cotton Initiative (BCI)
- Forest Stewardship Council (FSC)
- International Sustainability & Carbon Certification (ISCC)
- REDcert2
- Roundtable on Sustainable Biomaterials (RSB) Advanced Products
- Textile Exchange Recycled Claim Standard

3.2 Complaints and Appeals

3.2.1 A client has the right to appeal a certification decision within 30 days of receiving the final report. Appeals shall be submitted to the certification body for evaluation and resolution.

3.2.2 Complaints shall be handled directly by the approved certification body. If a satisfactory resolution is not found, a complaint may be elevated to SCS Standards.

³ A client may propose a third-party certification program for SCS Standards' consideration by contacting standards@scsstandards.org and providing a rationale for the request.

4. References

4.1 Normative References

- SCS-103 Certification Body Requirements
- SCS Standards Certification and Approval Requirements

4.2 Additional References

- Beers et. al., February 2022. “NIST Special Publication 1500-206. An Assessment of Mass Balance Accounting Methods for Polymers Workshop Report.”
- Ellen Macarthur Foundation, “Enabling a Circular Economy for Chemicals with the Mass Balance Approach, A White Paper from Co.Project Mass Balance.”
- Federal Trade Commission (FTC), “16 CFR Part 260 - Guides for the Use of Environmental Marketing Claims.”
- ISO 14001:2015, “Environmental management systems – Requirements with guidance for use.”
- ISO 14020:2022, “Environmental statements and programmes for products — Principles and general requirements”
- ISO 14021:2016, “Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling).”
- ISO 14024:2018, “Environmental labels and declarations – Type I environmental labeling – Principles and procedures.”
- ISO 17065:2012, “Conformity assessment – Requirements for bodies certifying products, processes and services.”
- ISO 22095:2020, “Chain of custody — General terminology and models.”
- ISO 9001:2015, “Quality management systems – Requirements.”
- UNI EN 15343:2008, “Recycled Plastics – Plastics Recycling Traceability and Assessment of Conformity and Recycled Content.”
- U.S. Green Building Council Leadership in Environmental and Energy Design (LEED) Green Rating Guides.

5. Terms and Definitions

The verb “shall” is used in criteria to indicate a requirement of the standard. The verb “can” is used to express an ability to perform an action. The verb “may” is used to express permission to perform an action that is not a requirement but a voluntary disclosure. The verb “might” is used to express a condition that could potentially exist.

Affidavit. A written sworn statement of facts voluntarily made by a person authorized to do so by law.

Allocated Recycled Content. An amount of recycled content assigned to a particular product based on a mass balance allocation.

Audit. Third-party evaluation conducted by an approved certification body against this Standard. An audit includes the review of documents and records (e.g., procedures, BOM, conversion factor, etc.), interviews and observations.

Bill of Materials (BOM). A list of the raw materials, sub-components, components, parts, and quantities of each needed, to manufacture a final product.

Certification Body. An SCS Standards-approved third-party organization authorized to conduct independent audits to assess conformance with this Standard.

Certified Product. Final product and raw materials, subassemblies, components, and accessories for which a client has demonstrated full conformance to the requirements of this Standard.

Chain of Custody. The process by which inputs and outputs and associated information are transferred, monitored, and controlled as they move through each step in the relevant supply chain.⁴

Chemical Recycling. A process that converts polymeric waste by changing its chemical structure to produce substances that are used as raw materials for the manufacturing of new products. It does not include energy recovery or substances used as fuels or means of energy generation.

Claim. Oral, written, implied, or symbolic representation, statement, or advertising or other form of communication presented to the public or buyers of products that relates to a product’s environmental benefit.

Client. An entity undergoing certification that physically handles, transports, produces, or converts pre-consumer and/or post-consumer recycled material.

Component. A part, accessory, material, or ingredient used in the manufacture of a product.

Content. Proportion, by mass, of a type of material in or allocated to a product.

⁴ ISO 14021:2016

Conversion Factor. The mass fraction of inputs converted to outputs in a system boundary.

Data Review Period. The period for which data are submitted for an audit.

Energetic Value. The energy content of a material, equal to the lower heating value (LHV). Energetic value may be used to assign credits in the mass balance calculation if a Lower Heating Value (LHV) is used instead of mass.

Lower Heating Value (LHV). The amount of heat energy available to be released via combustion of a material, minus the energy required for vaporization of water. Also referred to as “net calorific value” or “net heat content”.

Manufacturer. Organization or individual responsible for the production of a product.

Manufacturing Site. The physical location where the production of a product occurs.

Mass Balance. A chain of custody model in which materials or products with a set of specified characteristics are mixed with materials or products without that set of characteristics. Mass balance can be implemented using a percentage method or a credit allocation method.⁵

Mass Balance Allocation. May also be referred to as system allocation, or mass balance system in other industries. Mass balance allocation is the credit allocation method in which inputs are converted to credits upon entering a system boundary and credits (and associated claims) are accounted as outputs leaving the system. Credits entering and leaving the system are reconciled on a mass basis or other accepted unit conversion.

Mechanical Recycling. Processing of waste material into secondary raw material or products using mechanical unit operations only and without significantly altering the chemical structure of the material.

Physical Segregation. A chain of custody model in which raw materials with different origins or characteristics are kept physically separate during all operations.

Post-Consumer Material. Material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product that can no longer be used for its intended purpose. This includes returns of materials from the distribution chain.⁶

Note: To be considered post-consumer, any material returned from the distribution chain must come from end-users.

⁵ Adapted from ISO 14021:2016

⁶ ISO 14021:2016

Pre-Consumer Material. Material diverted from the waste stream during the manufacturing process. Excluded is the 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.⁷

Private Label. A certification label issued by the certification body to an entity who purchases a certified product for the purpose of selling the product as a private label product, with only label and/or packaging modifications.

Product. An item with defined materials, function, and styles, which may be associated with a specific stock-keeping unit (SKU).

Product Category. A grouping of products that have similar key material bases and serve similar functions.

Records. Any information in written, visual, or electronic form that documents the activities undertaken by a client to demonstrate conformance with this Standard.

Recycled Content. Amount, by mass, of recycled material in or allocated to a product or packaging. Only pre-consumer and post-consumer materials are considered as recycled content or allocated recycled content.⁸

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 final product.⁹ Excluded from the definition of recycled material are investment bars, coins, and pre-consumer jewelry sourced from mined gold and transformed to an ingot or jewelry.

Scrap. Also known as secondary material. Rejected or discarded material generated by a manufacturing process. Examples of scrap include material from manufacturing equipment such as startup/shut down material, side/end trimmings, material generated from sanding, off-spec/non-conforming product, etc.

Stakeholders. Organization or individuals who are, or who might be, affected by any action taken by users of this Standard. Examples include customers, workers, partners, contractors, suppliers.

Standard. When capitalized, refers to this Standard (SCS-103 Recycled Content Standard).

Supplier. Organization that supplies a material, product, or service to the entity undergoing certification. Brokers are not considered suppliers unless they provide a physical chain of custody from actual suppliers.

⁷ ISO 14021:2016

⁸ ISO 14021:2016

⁹ ISO 14021:2016

System Boundary. The geographical and/or site(s)-specific area in which the mass balance system is applied.

Traceability. The ability to trace materials and/or products sequentially throughout a manufacturing process and/or value chain in a way that is verifiable through objective evidence.

Waste. Anything for which the generator or client has no further use, and which is discarded or is released to the environment.¹⁰

Waste Stream. The aggregate flow of waste material from homes, businesses, institutions, and industry that is recycled, burned, or landfilled.

Waste Stream Source. The specific origin of a waste material.

¹⁰ ISO 14021:2016

6. Management System Documentation

6.1 Traceability Procedure

- 6.1.1 The client shall have a documented procedure(s) to demonstrate traceability for the materials and/or products within the scope of the audit.
- 6.1.2 The procedure(s) shall be specific to the chain of custody model applied (i.e., physical segregation and/or mass balance) and shall include one of the following:
- Diagram and/or a description of the manufacturing process showing how recycled materials are tracked and how the chain of custody is maintained, or
 - Description of material inputs, all internal material flows (e.g., reuse or recycling of scrap), and all material outputs, including but not limited to final products, intermediates, and waste.

6.2 Bill of Materials

- 6.2.1 The client shall provide a bill of materials (BOM) or other comparable document that contains at least the following detail to determine the overall percentage of recycled content (or allocated recycled content for mass balance) in the final product (See Table 1 for an example BOM):¹¹
- Component/material type,
 - Component/material supplier name (only required for recycled material(s)),
 - Classification (i.e., pre-consumer, post-consumer, or virgin),
 - Dry weight of the component/material in the final product and units (e.g., grams, kilograms, pounds), accounting for the total weight of the final product, and
 - Dry weight of recycled content in the component/material and units (e.g., grams, kilograms, pounds).

¹¹ The format of the BOM can vary; however, it must contain the necessary data to enable the certification body to perform calculations accurately.

Table 1. Example BOM for a Product with Multiple Components and Materials

Component/ Material Type	Component/Material Supplier Name (only required for recycled material)	Classification (pre-consumer, post-consumer, virgin)	Dry weight of Component/ Material in Final Product	Units (e.g., g, kg, lbs)	Dry weight of Recycled Content in the Component/ Material	Units (e.g., g, kg, lbs)
Housing (ABS)	Not required	Virgin	30.00	g	0.00	g
Mounting Brackets (Polycarbonate)	Supplier A Name	Pre-Consumer	20.00	g	12.00	g
Lid (Polycarbonate)	Not required	Virgin	15.00	g	0.00	g
Stand (Polycarbonate)	Supplier B Name	Pre-Consumer	15.00	g	15.00	g
Lens (Glass)	Not required	Virgin	3.00	g	0.00	g
The rest (varies)	Not required	Virgin	100.00	g	0.00	g

6.3 Supplier Verification & Validation

- 6.3.1 The client shall maintain and implement a procedure for supplier selection criteria.
- 6.3.2 The client shall maintain supplier information, material supplied, and source of material.
- 6.3.3 The client shall provide the certification body with signed supplier affidavit form(s) or valid sustainability declaration(s) (i.e., a certificate from a sustainability standard that verifies content claims) for at least 95% of total eligible recycled material or secondary material, by dry weight of material supplied or allocated (as applicable to the product category). Suppliers may be contacted by the certification body to confirm the characteristics of the material supplied and its qualifications as recycled material.¹²

6.4 Supplier Records

- 6.4.1 The client shall maintain records of both current and past suppliers for a minimum of 7 years for all recycled material purchased.
- 6.4.2 Records to be maintained include, at minimum:
 - Supplier records: invoices, bills of lading, delivery receipts, and supplier affidavits or sustainability declarations.
 - Certification records: audit reports, certificates, corrective action plans.

¹² An onsite or remote audit may be used as a supplemental means of qualifying sources of recycled material from a supplier.

7. Physical Segregation

A physical segregation chain of custody model ensures materials with different origins or characteristics are kept physically separate during all operations. Clients that implement a physical segregation model shall meet the requirements in this section.

7.1 Required Minimum Content

- 7.1.1 To be eligible for certification under this Standard, products shall contain at least 5% recycled content, calculated as follows:¹³

$$\% \text{ Recycled Content} = \frac{\text{Mass of Recycled Content}}{\text{Total Mass of Final Product}} \times 100\%$$

7.2 Segregation Procedure

- 7.2.1 The client shall maintain a documented procedure for segregating and clearly identifying recycled material from virgin material to ensure there is no co-mingling of materials when in the custody of the client.
- 7.2.2 The client shall maintain a documented procedure for segregating and clearly identifying conformant and non-conformant product to ensure there is no co-mingling of non-conformant product with conformant product in the production stages.
- 7.2.3 Under a controlled blending model, recycled and virgin material with different characteristics may be combined or blended in the manufacturing process stage to create a product with partial recycled content.

7.3 Scrap, Reuse, and Waste Rates

- 7.3.1 For the material used in each product under review, the client shall maintain records for the data review period of the dry weight of:
- Scrap generated and reused, and
 - Waste generated and sent to disposal, incineration, or additional recycling.
- 7.3.2 Types of scrap/waste that cannot be counted within the recycled content claim include:
- Materials that are separated out and used as fuel to replace virgin material, and
 - Pre-consumer recycled material if it is fed back into, and reused in, the same process that generated it without any further processing before reuse.

¹³ Thresholds in any of the supplementary annexes to this Standard shall supersede SCS-103.

7.4 Material Supply Data

- 7.4.1 The amount, on a dry weight basis, of purchased recycled material from each supplier shall be maintained for the data review period.

7.5 Production Totals

- 7.5.1 For each product under review, the client shall maintain production totals for the data review period including the total amount, by dry weight, of product coming off the manufacturing line, including any waste from trimming or finishing, defective products, and all non-saleable material.

7.6 Recycled Material Inventories

- 7.6.1 The client shall maintain inventory records of the amount and types of recycled materials used in the product for the data review period.

7.7 Material Input/Output Reconciliation

- 7.7.1 The material input/output reconciliation shall be calculated using the data supplied in 7.3 to 7.6 and shall demonstrate that there are sufficient supplies of recycled material to produce the amount of product reported.
- 7.7.2 Where inputs are physically transformed during processing, a conversion factor shall be applied to account for the ratio between inputs and outputs.
- 7.7.3 The conversion factor shall be used to account for all system losses (e.g., process inefficiency, scrap/waste, waste used as fuel), and is calculated as follows:¹⁴

$$\text{Conversion Factor} = \frac{\text{Sum of mass of all recycled outputs}}{\text{Sum of mass of all recycled inputs}}$$

¹⁴ The calculation is completed by the certification body at each audit to confirm that operators have enough available recycled material to produce product with the authorized recycled content claim(s).

8. Mass Balance Allocation

Mass balance allocation is the credit allocation method used in this Standard to implement a mass balance chain of custody model. The mass balance model allows mixing of materials and products with recycled content with other materials (e.g., virgin content) within a defined system boundary. Clients that implement a mass balance chain of custody model shall meet the requirements in this section.

8.1 Required Minimum Content

- 8.1.1 To be eligible for certification under this Standard, the product shall contain at least 5% allocated recycled content in the final allocated product, calculated as follows.¹⁵

$$\% \text{ Allocated Recycled Content} = \frac{\text{Mass of Allocated Content}}{\text{Total Mass of Final Product}} \times 100\%$$

8.2 Mass Balance Procedure

- 8.2.1 The client shall maintain a documented mass balance procedure. The procedure shall contain:

8.2.1.1 The manufacturing site's geographical boundaries;

8.2.1.2 A defined system boundary (see section 8.3);

8.2.1.3 A material flow (material input and output) that shows a material flow connection between the origin of the input and the material receiving the allocated recycled content credit when leaving the system (i.e., output); and

8.2.1.4 A process for managing its mass balance accounting system.

- 8.2.2 The mass balance accounting system shall track all inputs and outputs within the system boundary, including the following:

8.2.2.1 For inputs:

- Date material was received,
- Incoming shipment records,
- Supplier identity,
- Composition and quantity of received material(s), and
- Quantity of credits added to the mass balance accounting system.

¹⁵ Thresholds in any of the supplementary annexes to this Standard shall supersede SCS-103.

8.2.2.2 For outputs:

- Conversion factor(s),
- Identity of the output material or product receiving the allocated recycled content,
- Quantity of allocated recycled content,
- Quantity of credits retired from the mass balance accounting system,
- Date the credit(s) were allocated, and
- Outgoing shipment records.¹⁶

8.3 Defining the System Boundary

8.3.1 The client shall clearly define the system boundary to monitor the recycled content input and output entering and leaving the mass balance system.

8.3.2 The system boundary may span one or more sites and processes. Examples of system boundaries include:

8.3.2.1 A single facility within one manufacturing site; or

8.3.2.2 Multiple facilities within one manufacturing site that are physically connected, such as by pipelines.

8.4 Inputs: Recycled Content Entering the System Boundary

8.4.1 When recycled materials or products enter the system boundary, the mass of input material shall be converted into credits that are recorded into a mass balance accounting system using a specified unit conversion.

8.4.2 Credits shall be in one of the following units of measure:

8.4.2.1 Mass: Credits may be in the form of mass of input material. For example, grams of input material are transformed into equal credits in grams.

8.4.2.2 Energetic value: For chemical recycling, credits may be assigned based on the energetic value of the input material, where energetic value is equal to the Lower Heating Value (LHV) of the material. The LHV is assigned based on published reference values or documented material testing.

8.4.3 The mass balance accounting system cannot use multiple units of credit, i.e., only one unit of credit is allowed in each system.

¹⁶ Shipping records shall include quantity shipped and must connect credits used to the certified material or product carrying a claim.

- 8.4.4 Credits can be held in stock for the next period or transferred virtually between any sites that are wholly or majority owned (i.e., >50% ownership) by the same company or part of a group of companies held by the same parent company.

8.5 Outputs: Allocated Recycled Content Leaving the System Boundary

- 8.5.1 Credits shall be retired from the mass balance accounting system and allocated to materials and/or products leaving the system boundary (i.e., outputs) that will carry the associated allocated recycled content claim(s). Older credits in the accounting system should be withdrawn before newer credits.
- 8.5.2 The allocation of recycled content to outputs shall take into account technical feasibility – a proven ability to produce the output from the recycled content input within the system boundary.
- 8.5.3 To determine the allocation of recycled content to the final product (i.e., mass of allocated recycled content), a conversion factor is applied to account for all processing system losses (e.g., losses from processing inefficiency, yield losses, scrap/waste, waste used as fuel) as follows:

$$\text{Mass of Allocated Recycled Content} = \text{Credit Units} \times \text{Conversion Factor}$$

- 8.5.4 The conversion factor is calculated as follows:

$$\text{Conversion Factor} = \frac{\text{Sum of mass of all outputs}}{\text{Sum of mass of all inputs}}$$

8.6 Reconciliation Period

- 8.6.1 Reconciliation of credits shall be performed by the client on at least a 3-month schedule. An extension, not to exceed 12 months, may be approved by the certification body if requested based on the site's production and distribution schedule.
- 8.6.2 Credit accounts may incur a temporary negative balance but shall have a zero or positive balance at the end of the reconciliation period.
- 8.6.3 Unused credits may be carried over to the next reconciliation period. Credits do not expire as long as the client's certification remains valid.

9. Claims and Labelling

9.1 General Conformance Requirements

9.1.1 All claims language and/or certification label (i.e., logo) usage, including private labels, shall:

9.1.1.1 Be reviewed and approved by the certification body prior to use,

9.1.1.2 Conform to the certification body's labeling and language requirements, and

9.1.1.3 Comply with U.S. Federal Trade Commission guidelines or other national guidelines if outside of the U.S.

9.1.2 Any claims made by the client in connection with this Standard shall only be in reference to its own certification.

9.2 Claims Options

9.2.1 All claims made in relation to this Standard, including on the certificate, in association with the certification label, and in marketing material, shall contain a reference to the description of claim option and the chain of custody model (See Table 2 for example claims language).¹⁷

Table 2. Example Claims Language by Claim Option and Chain of Custody Model

Description of Claim Options	Examples for each Chain of Custody Model	
	Physical Segregation	Mass Balance
<u>Minimum Recycled Content</u> : a claim based on the lower end of a percentage range (e.g., if a certified product's recycled content ranges from 20-60% due to production or supply variability).	"... <i>Minimum of 20% Pre-Consumer Recycled Polycarbonate Content...</i> "	"... <i>Minimum 20% Mass Balanced Pre-Consumer Recycled Polycarbonate Content...</i> "
<u>Total Recycled Content</u> : a claim based on the sum of all recycled materials in a certified product.	"... <i>Total 75% Post-Consumer Recycled Polycarbonate and Polyethylene Content...</i> "	"... <i>Total 75% Mass Balanced Post-Consumer Recycled Polycarbonate and Polyethylene Content...</i> "
<u>Average Recycled Content</u> : a claim based on the average recycled content in a certified product (e.g., if a product's recycled content is 38% at site A and 40% at site B). Note: A separate claim shall be made if the variance in recycled content between sites or production lines at a single site differs by more than 2%.	"... <i>Average 39% Post-Consumer Recycled Metal Content...</i> "	Not typically claimed

¹⁷ The example claims in Table 1 do not represent all variations of claims that are allowable for the Standard.

Description of Claim Options	Examples for each Chain of Custody Model	
	Physical Segregation	Mass Balance
<p><u>Weighted Average Recycled Content</u>: a claim based on the weighted average of recycled content in a certified product produced at multiple sites that are wholly or majority owned (i.e., >50% ownership) by the same company or part of a group of companies held by the same parent company.</p> <p>Note: A separate claim shall be made if 1) the sites are not within the same geographical region, and/or 2) the variance in recycled content between sites differs by more than 10%.</p>	<p><i>"...Weighted Average 60% Post-Consumer Recycled Metal Content..."</i></p>	<p>Not typically claimed</p>
<p><u>Made With</u>: a claim based on the minimum, total, or average recycled content of a particular material in a final product (i.e., the client wishes to make a material-level claim).</p>	<p><i>"...Made With 75% Pre-Consumer Recycled Glass Material..."</i></p>	<p><i>"...Made With 75% Mass Balanced Pre-Consumer Recycled Glass Material..."</i></p>



Certification Standard for Recycled Content Annex A: Supplemental Criteria for Electrical and Electronic Equipment

SCS-103 Annex A



Version 1.2 – May 2024



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Record of Revisions

This Standard is periodically updated. It is the responsibility of the document reader to ensure use of the most current version of the document.

Version History:

Version	Release date	Remark/changes
V1.0	May 2023	<ul style="list-style-type: none">Original Version
V1.1	June 2023	<ul style="list-style-type: none">Added to products in scope: Speaker (e.g., Audio system, Sound bars) and Scanner
V1.2	May 2024	<ul style="list-style-type: none">Added the following product sub-categories, types, and thresholds to the new Table 4: TWS earbuds, portable audio products/smart speakers, smart display, home security systems, and power supplies (e.g., chargers, powerbanks).Editorial and clarifying updates including:<ul style="list-style-type: none">Revised Section 1 for clarity;Removed terms and definitions in Section 2 that were not used in the annex (i.e., Chemical Recycling, Closed-loop, Feedstock, Mass-balance, Mechanical Recycling. Organic fiber textiles, Synthetic Fiber Textiles);Added a new Table 1 which summarizes the former sections 3.5.1 and 3.5.2 for Options 1, 2;Renumbered the former Tables 1 and 2 to Tables 3 and 4, respectively;Renumbered the former Table 3 to Table 4, updated the list order, and incorporated the “Examples of Commonly Used Recycled Materials” from the former table located in the former Appendix 1.

1. Overview of the Annex

1.1 Purpose

1.1.1 The purpose of the SCS Certification Standard for Recycled Content Annex A: Supplemental Criteria for Electrical and Electronic Equipment (hereinafter SCS-103 Annex A) is to provide criteria for Electric and Electronic Equipment (EEE) products to supplement the SCS-103 Certification Standard for Recycled Content.

1.1.2 The objectives of this Annex are to:

- Support manufacturers' efforts towards the highest levels of environmental sustainability performance;
- Promote innovation in material recycling processes to minimize waste to landfills,
- Stimulate increased use of recycled materials in products;
- Enable the continuous improvement of the functionality and performance of recycled materials; and
- Support transparency in product claims to increase consumer confidence and purchases of products with higher levels of recycled content.

1.2 Scope

1.2.1 SCS-103 Annex A applies to the EEE product sub-categories and product types listed in Table 4.

1.3 Intended Users

1.3.1 Intended users of the SCS-103 Annex A are EEE product manufacturers of all sizes, including but not limited to brands and Original Equipment Manufacturers (OEMs), located around the globe. Any manufacturer or brand may apply for certification against the SCS-103 Standard and SCS-103 Annex A: Supplemental Criteria for Electrical and Electronic Equipment.

1.4 Voluntary Standard

1.4.1 SCS-103 Annex A is voluntary. It is not intended to replace the legal or regulatory requirements of any country or geographic area in which EEE products are produced, sold, or purchased.

1.5 Background and Limitations

1.5.1 The material-level and product-level minimum thresholds for recycled content in this annex were determined in collaboration with the respective Standard Technical Committee and updates are made according to the "SCS-103 Recycled Content - Procedure for Annex Update Requests".

- 1.5.2 The thresholds in SCS-103 Annex A (i.e., Tables 2, 3, and 4 in this annex) are limited by data collected from publicly available and proprietary data made available to SCS Standards and will regularly be updated, at least every two years.
- 1.5.3 Annex update requests can be submitted to SCS Standards¹ to add additional product sub-categories, and/or product types that are not already covered in Table 4 of this annex.

1.6 Conformance

- 1.6.1 In order to be considered conformant to this supplementary annex, the product shall meet the requirements of the SCS-103 Certification Standard for Recycled Content and section 3 of this SCS-103 Annex.
- 1.6.2 The client shall undergo an audit against this Standard by an SCS Standards-approved certification body following the SCS-103 Certification Body Requirements.

1.7 Language

- 1.7.1 The verb “shall” is used in criteria to indicate a requirement of the standard. The term “should” is used to indicate a recommendation. The verb “can” is used to express an ability to perform an action. The verb “may” is used to express permission to perform an action that is not a requirement but a voluntary disclosure. The verb “might” is used to express a condition that could potentially exist.

¹ Please submit requests to standards@scsstandards.org

2. Terms and Definitions

Bill of Materials. A final product's disclosed material composition per scope of the recycled content assessment by weight, identifying materials as virgin or recycled (pre/post/mix) and component materials per Table 2 or Table 3.

Client. Organization that seeks certification assessment to the SCS Recycled Content Standard and Annex A. A client may be new or already certified to the SCS-103 standard and Annex.

Component. A finished element used in the manufacture of a product, any basic discrete device or physical entity within an electronic system or assembly. Examples include a circuit board, switch, power supply, power supply cord, and pump.

Consumer Electronic Products. Electrical and electronic equipment that is designed for everyday consumer, residential use, such as TVs, tablets, game consoles, laptops, smartphones. They may also be used in commercial and industrial settings.

Electrical and Electronic Equipment (EEE). Equipment that is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields. EEE also includes electrical and electronic accessories, both wired and non-wired and battery and non-battery operated.

Hub. A network device that connects various network nodes, e.g., in an Ethernet, in a star configuration. In the Open Systems Interconnections (OSI) reference model, hubs are classified as level 1 devices that operate at the physical layer.²

Post-Consumer Material. Material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product that can no longer be used for its intended purpose. This includes returns of materials from the distribution chain. [ISO 14021]

Note: To be considered post-consumer, any material returned from the distribution chain must come from end-users.

Pre-Consumer Material. Material diverted from the waste stream during the manufacturing process. Excluded is the 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. [ISO 14021]

Product Category. A sector-specific grouping of products that have similar function in the market (e.g., Electrical and Electronic Equipment (EEE)).

² IONOS Digital Guide, "Hubs: What Are They and How Do They Work?," *IONOS*, March 25, 2022, <https://www.ionos.com/digitalguide/server/know-how/what-is-a-hub/>.

Product Sub-Category. A sub-grouping of products within a product category that share common components and materials, and functionality (e.g., mobile devices is a product sub-category within the electrical and electronic equipment (EEE) product category).

Product Type. A specific set of devices under a product sub-category (e.g., smartphones, tablets, e-readers, or smart displays are product types within the mobile devices product sub-category).

Rare Earth Elements (REE). A set of seventeen chemical elements in the periodic table, specifically fifteen lanthanides plus scandium and yttrium. Common recycled REEs used for electronics include but are not limited to: Neodymium, Dysprosium, Praseodymium, and Terbium.

Recycled Content. Amount, by mass, of recycled material in a product or packaging. Only pre-consumer and post-consumer materials are considered as recycled content.

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 final product. [ISO 14021]

Restricted Substance List (RSL). A list of chemical substances that are restricted or banned in a final product.

Small Network Equipment (SNE). Network equipment used in homes and businesses, which includes modems, firewalls, routers, and access points.

Standard Technical Committee (STC). Industry experts appointed by the Standards Development Committee to support the ongoing maintenance of the standard, including but not limited to technical interpretations requests.

Total Product Weight. The total weight of a complete and functional product, inclusive of all required input components and materials. The total product weight may include optional accessories. Any material or component exclusions made in the total product weight shall be disclosed.

True Wireless Stereo (TWS). TWS uses Bluetooth signals instead of wires or cables to transfer sound. TWS earbuds refers to the Bluetooth earbuds (which may or may not be connected by a cord or wire) and the accompanying charging case/stand (if applicable).

3. Requirements for Recycled Content Certification

3.1 Legal Compliance

- 3.1.1 The client shall confirm, via an affidavit, that it complies with all applicable international, national, and local laws and regulations.
- 3.1.2 The client shall confirm, via an affidavit, that it complies with all applicable Restricted Substance Lists (RSLs), including but not limited to European Union Registration, Authorization, and Restriction of Chemicals (REACH), Restriction of Hazardous Substances (RoHS), Chinese Ministry of Industry and Information Technology (MIIT), and the U.S. Toxic Substances Control Act (TSCA).
- 3.1.3 The client shall provide documented evidence that it has implemented a process to ensure compliance with both applicable legal requirements and the RSLs for their scope of products.

3.2 Supplier Verification and Validation

- 3.2.1 If recycled material suppliers are not the client's direct suppliers (such as second- or third-tier suppliers), the recycled material shall be certified to SCS-103 or a recognized scheme, to confirm that the material has been qualified using ISO 14021 recycled material definitions.

3.3 Material Due Diligence and Know Your Counterparty

- 3.3.1 The client shall provide evidence of an implemented due diligence and Know Your Counterparty procedure for materials in scope for recycled content claims for gold, silver, platinum, palladium, tin, tungsten, tantalum, and cobalt.

3.4 Bill of Materials

- 3.4.1 The client shall provide a bill of materials (BOM) or other comparable document that contains at least the following detail to determine the overall percentage of recycled content (or allocated recycled content for mass balance) in the final product:
 - Component/material type;
 - Component/material supplier name (only required for recycled material(s));
 - Classification (i.e., pre-consumer, post-consumer, or virgin);
 - Dry weight of the component/material in the final product and units (e.g., grams, kilograms, pounds), accounting for the total weight of the final product; and
 - Dry weight of recycled content in the component/material and units (e.g., grams, kilograms, pounds).

3.5 Minimum Recycled Content Criteria

3.5.1 To achieve certification, EEE products shall meet one of two options for conformance summarized in Table 1.

Table 1. SCS-103A Criteria Options for Minimum Recycled Content

Type of Threshold	Options for Conformance		
	Option 1	Option 2	Exemptions
Material-Level Threshold:	The product shall meet the material-level thresholds listed in Tables 2 and/or 3.	The product shall meet the material-level thresholds listed in Tables 2 and/or 3.	See section 3.5.2.
Threshold for Number of Recycled Materials in the Product:	The product shall contain at least two (2) recycled materials.	The product shall contain at least three (3) recycled materials.	Products that only have one (1) recycled material input can still be certified if the material input is greater than or equal to 50% by weight of the product.
Product-Level Threshold:	The product shall meet the product-level thresholds listed in Table 4.	The product-level thresholds listed in Table 4 are not required.	See section 3.5.2.

3.5.2 Evaluation of Exemptions

3.5.2.1 To qualify for any exemption(s) to the material-level and product-level thresholds in Table 1, the client shall submit a request with supporting evidence and a rationale to the certification body for evaluation.

3.5.2.2 Exemptions shall be based on limitations to using recycled content such as for functionality, performance, and/or regulatory criteria. Examples of allowable exemptions may include:

- The material cannot be traced (e.g., copper in printed circuit boards); or
- Virgin material is required for regulatory reasons, such as for food contact materials.

3.5.2.3 Products or materials that use virgin material when there is an alternative recycled material available for use may also qualify for an exemption. The client shall submit a request and provide a rationale for selecting virgin material, including a timeline to reassess recycled material options.

3.6 Recycled Material Inputs

3.6.1 Tables 2 and 3 contain the required thresholds that recycled materials in products shall meet. These material-level thresholds for recycled content are based on industry research and represent average market usage of either pre- or post-consumer recycled material inputs in metals and plastics, respectively.

3.6.1.1 The percent recycled content in the material is calculated as follows:

$$\% \text{ Recycled Content in a Material} = \frac{\text{Total Mass of Recycled Content used in the Material}}{\text{Total Mass of the Material in the Product}} \times 100\%$$

Table 2. Material-level Thresholds for Recycled Material in Metals

Material Input	Minimum % Recycled Content (Pre-/Post-Consumer)
Aluminum	30
Cobalt	15
Copper	50
Gold*	70
Magnesium	70
Platinum*	50
Rare Earths	15
Steel	20
Tin*	20
Titanium	50
Tungsten*	70

*Metal must meet Section 3.3 criteria.

Table 3. Material-level Thresholds for Recycled Material in Plastics

Material Input	Minimum % Recycled Content (Pre-/Post-Consumer)
Polyethylene (PE)	30
Polyethylene Terephthalate (PET)	30
Polycarbonate (PC)	30
Carbon Fiber	30
Polypropylene (PP)	30
ABS; PC/ABS	30
Other (includes, but not limited to PA6, PA66, HIPS, SAN, POM, PBT, PETG)	25

3.6.2 Table 4 contains the required thresholds for percent recycled content in products. These product-level thresholds for recycled content in specific product sub-categories are based on data collected from representative products in the market.

3.6.2.1 The percent recycled content in the product is calculated as follows:

$$\% \text{ Recycled Content in the Product} = \frac{\text{Mass of Recycled Content Across all Materials}}{\text{Total Mass of Final Product}} \times 100\%$$

Table 4. Product-level Thresholds for Recycled Content by Sub-Category and Product Type

Product Sub-Category	Product Type	Examples of Commonly Used Virgin or Recycled Materials	Minimum Total % Recycled Content in the Product
Audio/Visual and Speakers	PC Display/Monitor	Steel, Plastics, Copper, Zinc	15%
	Portable Audio Products/Smart Speakers	Steel, Plastics, Copper, Zinc	30%
	Smart Display	Steel, Plastics, Copper, Zinc	30%
	Speaker (e.g., Audio system, Sound bars)	Steel, Plastics, Copper, Zinc	15%
	TWS Earbuds	Steel, Plastics, Copper, Zinc	30%
Electronic Accessories (Non-Wired/Non-Battery)	Case	Textile, Plastic, Metals	35%
	Casebook Cover	Textile, Plastic, Metals	35%
	Sleeve	Textile, Plastic, Metals	35%
	Stand	Plastic, Metals	50%
Fixed Computing	All-in-One Computing	Steel, Copper, Plastics, Aluminum, Zinc	15%
	Desktop PC	Steel, Copper, Plastics, Aluminum, Zinc	15%
Gaming	Gaming Console	Plastics	10%
	Gaming Controller	Plastics	10%
	Gaming Device	Plastics	10%
Home Security Systems	Camera (e.g., indoor/outdoor camera, video doorbell); Accessories (e.g., base station, keypad, motion detector, range extender)	Plastics, Metals	10%
Infrastructure Computing	Server	Steel, Aluminum (optional: Plastics)	20%
	Storage	Steel, Aluminum (optional: Plastics)	20%
Mobile Computing	Mobile Laptop/Laptop Notebook	Steel, Plastics, Aluminum, Magnesium, Carbon Fiber	15%

Product Sub-Category	Product Type	Examples of Commonly Used Virgin or Recycled Materials	Minimum Total % Recycled Content in the Product
Mobile Devices	E-reader	Gold, Rare Earth, Tungsten, Tin, Aluminum, Plastics	30%
	Smartphone	Gold, Rare Earth, Tungsten, Tin, Aluminum, Plastics	30%
	Tablets	Gold, Rare Earth, Tungsten, Tin, Aluminum, Plastics	30%
	Wearables	Gold, Rare Earth, Tungsten, Tin, Aluminum, Plastics	30%
PC/Laptop Accessories	Headset	Plastics	30%
	Keyboard	Plastics	50%
	Mouse	Plastics	50%
	Power Supplies (e.g., chargers, power banks)	Plastics	15%
	Webcam	Plastics	15%
Printers and Scanners	Printer (Inkjet/Laser)	Plastics, Metals	25%
	Scanner	Plastics, Metals	25%
Small Household Products/Appliances	Coffee Machines	Plastics, Aluminum, Steel, Copper	15%
	Dehumidifiers	Plastics, Aluminum, Steel, Copper	10%
	Heater	Plastics, Aluminum, Steel, Copper	25%
	Portable A/C	Plastics, Aluminum, Steel, Copper	5%
Small Network Equipment (SNE)	Dongle	Plastics, Metals	50%
	Hub	Plastics, Metals	50%
	Smart Plug	Plastics, Metals	15%
	Smart Switch/Breaker	Plastics, Metals	15%
	Streaming Device (e.g., firestick, roku)	Plastics, Metals	50%
	Wi-Fi Router	Plastics, Metals	15%

4. Elective: Material, Product and Process Innovation

- 4.1 A client can provide additional data and supplemental documentation to support the objectives of this Annex.
- 4.2 A client may request to make an additional claim regarding innovative materials, products or processes with the certification body.
- 4.3 If approved, the additional claim shall be included on the client's certificate. The certification body shall report approved additional claims to SCS Standards to inform the standard revision process.

Appendix 1: Examples

Product Type Example	Results			
Mouse	Material Input	Wt. (g)	Total-RC Wt. (g) in the material	% RC in the material
	Polycarbonate	20	11.0	55%
	Aluminum	5	2.0	40%
	Polyethylene	3	1.65	55%
	Total:	28	14.65	
	Total % RC in the product:	52%		
	<p>The total recycled content threshold for the product meets Option 1 because the total product recycled content is more than the minimum specified in Table 4, it contains more than two recycled material inputs, and the recycled material inputs are at or above the criteria specified in Table 2 and Table 3.</p>			
Coffee Maker	Material Input	Wt. (g)	RC Wt. (g) in the Material	% RC in the Material
	Aluminum	20	6.0	30%
	PBT	35	8.75	25%
	PET (food grade exception)	45	0	0%
	Other Unknown Mixed Material	2	0	0%
	Total:	102	14.75	
	Total % RC in the product:	14.4%		
<p>The total recycled content threshold for the product does not meet Option 1 because the total product recycled content is less than the minimum specified in Table 4.</p> <p>The product meets Option 2 because 45% of the product weight is made with food grade plastic. The product also meets the requirements of Option 2 because:</p> <ul style="list-style-type: none"> ✓ Each recycled material is at or above the thresholds listed in Tables 2 and 3, and ✓ the product is exempt from the 3-material requirement for Option 2 because 1.9% of the material is from mixed, unknown materials that could not be further reviewed. 				

Product Type Example	Results			
Keyboard	Material Input	Wt. (g)	RC Wt. (g) in the Material	% RC in the Material
	Aluminum	50	20	40%
	ABS	30	15	50%
	PC/ABS	10	3	30%
	Other	10	0	0%
	Total:	100	38	
	Total % RC in the product:	38%		
<p>The total recycled content threshold for the product does not meet Option 1 because the total product recycled content is less than the minimum specified in Table 4.</p> <p>The product meets Option 2 because three recycled material inputs were used and are at or above the thresholds listed in Tables 2 and 3.</p>				
Wi-Fi Router	Material Input	Wt. (g)	RC Wt. (g) in the Material	% RC in the Material
	Aluminum	50	0	0%
	ABS	30	30	100%
	PC/ABS	10	0	0%
	Other	10	0	0%
	Total:	100	30	
	Total % RC in the product:	30%		
<p>This product does not meet Options 1 or Option 2 because only one recycled material input is used in the product and that material is less than 50% of the product. Therefore, the product cannot be certified under SCS-103 Annex A.</p> <p>Notwithstanding, the product could qualify for certification under SCS-103 Recycled Content Standard.</p>				