

cradle to cradle
products innovation



CRADLE TO CRADLE CERTIFIED®
PRODUCT STANDARD (Full Scope)
Version 5.0

Certification Manual

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Foreword

The Cradle to Cradle Products Innovation Institute (C2CPPI) is an independent, nonprofit organization dedicated to maximizing the positive impacts of products and materials. As the standard setting and certification body for the Cradle to Cradle Certified® Product Standard, C2CPPI works closely with leading organizations worldwide to guide and validate their efforts to apply the principles of material health, product circularity, clean air and climate protection, water and soil stewardship, and social fairness to product design and manufacturing. The standard provides designers, manufacturers, and suppliers with a framework for continually improving what products are made of and how they are made. Cradle to Cradle Certified is a respected mark of products and materials made for the circular economy.

Version 5.0 was released on 10 February 2026.

The effective date of Version 5.0 is 16 March 2026. Products certified to prior versions of the standard are required to certify to Version 5.0 according to the transition policy on the C2CPPI website.

Further information about C2CPPI and the Cradle to Cradle Certified Product Standard is available at www.c2ccertified.org.

Inquiries regarding C2CPPI and the Cradle to Cradle Certified Product Standard may be directed to info@c2ccertified.org.

1 // Introduction

1.1 Certification Manual Overview

This document provides the information needed to implement Version 5.0 of the Cradle to Cradle Certified Product Standard.

This document includes the following:

- **Version 5.0 Standard Requirements** (grey font): The requirements are listed in the same order as they appear in the Version 5.0 standard, with the same section numbers.
- **Further Explanation** (purple boxes): These sections provide information regarding how to meet each requirement, including links to resources, applicable test methods, and background information.
- **Required Documentation** (green boxes): These sections list the information and documents that must be submitted with a certification application and at recertification to demonstrate compliance with the standard requirements.

Ongoing improvements to the Cradle to Cradle Certified Product Standard are developed by C2CPII staff, volunteer committees, and external subject matter experts under the direction of the C2CPII Standards Steering Committee, as detailed in the Process for Development of the Cradle to Cradle Certified Product Standard. This Certification Manual will be regularly updated to reflect improvements made to the standard, add interpretations and C2CPII recognized standards/programs where applicable, and provide additional clarifying information.

1.2 Cradle to Cradle Certified Product Standard Version 5.0

The vision of C2CPII is a world where safe materials and products are designed and manufactured in a prosperous, circular economy to maximize health and well-being for people and planet. C2CPII's mission is to lead, inspire, and enable all stakeholders across the global economy to create and use innovative products and materials that positively impact people and planet.

1.2.1 Standard Requirement Categories

The standard requirements are based on the Cradle to Cradle® design principles outlined in William McDonough and Michael Braungart's 2002 book, *Cradle to Cradle: Remaking the Way We Make Things*. These requirement categories and their intended outcomes are listed below.

Material Health – Chemicals and materials used in the product are selected to prioritize the protection of human and environmental health, generating a positive impact on the quality of materials available for future use and cycling.

Product Circularity – Products are intentionally designed for their next use and are actively cycled in their intended cycling pathway(s).

Clean Air & Climate Protection – Product manufacturing results in a positive impact on air quality, the renewable energy supply, and the balance of climate-changing greenhouse gases.

Water & Soil Stewardship – Water and soil are treated as precious and shared resources. Watersheds and soil ecosystems are protected, and clean water and healthy soils are available to people and all other organisms.

Social Fairness – Companies are committed to upholding human rights and applying fair and equitable business practices.

In addition to these five key categories, the standard includes categories that address other important environmental impact areas, including Animal Welfare and Packaging.

1.2.2 Certification Requirements and Levels

The Cradle to Cradle Certified Products Program is based on the concept of continuous improvement and, thus, there are four possible levels of achievement within each of the standard's five key requirement categories: Bronze, Silver, Gold, and Platinum. To reach a desired achievement level within each category, the product must meet all of the requirements for that level, in addition to the requirements at all lower levels.

Certification is awarded to a product when it meets the requirements for the desired achievement level in each of the five key categories (Sections 4-8), as well as the general requirements (Section 3), the packaging requirements (Section 9, if applicable), and the animal welfare requirements (Section 10, if applicable). The product's overall certification level is equal to the lowest level achieved in these categories (Bronze, Silver, Gold, or Platinum).

The product's certification level is stated on the Cradle to Cradle certificate, and the certification level, along with a scorecard indicating the level achieved in each of the categories, is stated in the Cradle to Cradle Certified Products Registry on the C2CPII website (www.c2ccertified.org).

Each product certification is valid for three years. The product must be recertified by its expiration date to maintain its status as a certified product. As part of the recertification process, the product assessment must be updated to ensure continued compliance with the standard requirements.

Note: Some requirements in the standard address activities that are also subject to regulation by local, state, or federal authorities. However, nothing contained in the Cradle to Cradle Certified Product Standard changes legal regulatory requirements or prescribes how compliance is to be achieved. Demonstration of compliance with certain key regulations is required in some sections of the standard, but this in no way changes the underlying regulatory requirements.

1.2.3 Restrictions to Bronze Level Certification

At the Bronze level, a product is starting out on the path to Cradle to Cradle certification. A company must conduct an inventory of the materials used to make the product, the energy and water used, and social fairness issues affecting product production. The company must also take initial steps toward the

development of circular products and responsible manufacturing practices. The Bronze level of certification is designed to recognize a company's intent to improve the way their product is made, establishing a commitment to ongoing assessment and optimization.

As such, a product may be certified at the Bronze level for a maximum of six years (i.e., two, three-year certification cycles) and must recertify at the Silver level or higher once the second, three-year Bronze certification has expired or it will be delisted from the program. Alternatively, in cases where technical, performance, or market barriers prevent the achievement of the Silver level in any standard category, the product may be recertified at the Bronze level if:

1. The applicant publicly discloses an explanation of the limitation(s) preventing achievement of the Silver level requirements,
2. On-going measurable improvement is achieved (see Section 3.2), and
3. The product meets the Silver achievement level in at least one other category by the end of the sixth year of Bronze level certification (i.e., the expiration date of the second three-year certification).

Further Explanation

Products certified to Version 3.1 begin the six-year period upon first certifying to Version 5.0. Products certified to Version 4.0 or 4.1 have a six-year period that includes time under Version and 4.0, 4.1, and 5.0 combined.

1.3 Certification Process

Key steps in the process for achieving Cradle to Cradle certification, certification program fees, and resources for implementation including the standard and supporting reference documents, certification manual, assessment methodologies, and program policies, are available on the C2CPH website (www.c2ccertified.org).

For all levels of certification, a final manufacturing facility site visit must be conducted as part of the certification process to verify that the standard requirements have been met. The manufacturing facility site visit requirements are provided in Appendix 1 of the Cradle to Cradle Certified Product Standard, Version 5.0 Certification Manual.

2 // Product Eligibility

2.1 Products Eligible for Certification

The Cradle to Cradle Certified® Products Program applies to products. For certification purposes, a “product” is defined as any physical item that can be routinely and individually purchased, leased, or rented from the certification applicant by other entities. This definition includes materials, sub-assemblies, and finished products. See the definition of a product in Section 12 for more information.

Please see the [Cradle to Cradle Certified Products Registry](#) on the C2CPH website for a complete listing of all currently certified products. To determine the eligibility for a product type that is not currently certified, please contact C2CPH before submitting a certification application or beginning a product assessment. C2CPH reserves the right to refuse to certify a product type for which the standard is not currently designed to certify or is determined to not align with C2C principles in its sole discretion.

For a list of product types that are not eligible for certification, see the Cradle to Cradle Certified Version 5.0 Certification Manual (Further Explanation box, section 2.1).

Further Explanation

The following product types are not eligible for Cradle to Cradle certification:

1. **Products that are contrary to the intent of the Cradle to Cradle principles, including:**
 - a. Weapons or other items intended to harm, kill, hurt, or incapacitate living beings (e.g., guns, tasers, mace, barbed wire, electric fencing),
 - b. Tobacco and other products intended or used for smoking or vaping (e.g., pipes),
 - c. Products used exclusively to produce or promote non-renewable fuel or electricity (nuclear reactor equipment, fracking fluid, oil rigs, etc.),
 - d. Products that consume nuclear or non-renewable fuel (e.g., gasoline car; does not apply to electricity purchased from the grid or to plugged products),
 - e. Products containing material from threatened, vulnerable, or endangered species (e.g., African mahogany (*Khaya* spp.), Brazilian rosewood (*Dalbergia nigra*), Rhodesian teak (*Baikiaea plurijuga*); see the Definitions section for the definition of threatened, vulnerable, and endangered),
 - f. Products containing:
 - i. Material and substances derived from vertebrates, and invertebrates where there is clear evidence of sentience (e.g., cephalopods), that are killed primarily or only for their hides, skins, feathers, or other fibers and parts (e.g., snake, crocodile, alligator, lizard, and galuchat/stingray skins.) Does not include silk from silkworms (i.e., silk is eligible),
 - ii. Down, feathers, or hair from any live plucked animal (e.g., ducks, geese) and substances

derived from these materials,

- iii. Fur, including when the fur is shorn or otherwise removed from the hide or skin (e.g., fox, mink, beaver, ermine, and rabbit including angora rabbit fur/wool).
- g. Products that are chemicals or raw materials that cannot be optimized (e.g., monomers that are carcinogens, mutagens, and/or reproductive toxicants (CMRs),
- h. Products for which the core functionality is intrinsically tied to toxic active ingredients, thus rendering the product non-optimizable (e.g., herbicides, insecticides, rodenticides, and antimicrobial products with x-assessed antimicrobial agents) or textiles/apparel with such products intentionally added,
- i. Disinfectants (including those used for human hygiene) containing active ingredients/substances that are not approved for use per leading regulations. This is defined as disinfectants containing substances that are not approved for use in the relevant product type per the European Union's Biocidal Products Regulation (e.g., antimicrobial cleaning products, soaps, or hand sanitizers/hand rubs with triclosan or triclocarban),
- j. Products that are designed/intended to be non-circular or promote non-circularity:
 - i. The following single-use plastic products:
 - 1. cotton buds/swab sticks,
 - 2. cutlery (forks, knives, spoons, chopsticks), plates, straws, beverage stirrers,
 - 3. balloon sticks,
 - 4. food and beverage containers (including beverage cups) made from expanded polystyrene,
 - 5. bags < 50 microns (e.g., grocery, waste, and courier bags) except for food bags with a thickness of < 15 microns intended for composting,
 - 6. agricultural mulch, and
 - 7. disposable plastic items for hotels.
 - ii. Oxo-degradable additives and plastics containing these additives,
 - iii. Plastic microbeads and products containing plastic microbeads and other microplastics (including but not limited to plastic particles < 5 mm, e.g., glitter), and
 - iv. Products marketed as/for throw-away (e.g., products with the terms "waste", "disposable" or "garbage" in the product name, or products intended for landfill or incineration).

Note: Per the EU's Packaging and Packaging Waste Regulation (EU) 2025/40 (PPWR regulation), all single-use accommodation sector (e.g., hotels) packaging intended for individual bookings will be banned as of 2030. Per the regulation, 'single-use packaging' is defined as packaging which is not reusable. To assist in determining when accommodation sector personal care items must be considered single-use or disposable, the following size limitations (from the 27 February 2023 draft version of the PPWR regulation) may be

applied: less than 50 ml for liquid products and less than 100 g for non-liquid products. However, please keep in mind that the final regulation does not include a size cut-off. Rather, the determination should be made based on if there is an intent and plan for the packaging to be reused.

- k. Packaging for any product type that is contrary to the intent of the Cradle to Cradle principles and thus not eligible for certification.

2. Products that the program requirements were not written to address, including:

- a. Food, beverages, and other products intended for ingestion,
- b. Pharmaceuticals (see definition below), including products and substances for which claims of a pharmaceutical nature are made (e.g., creams for treating psoriasis or fungal infections),

Pharmaceutical – A compound manufactured for use as a medicinal drug. This includes any substance or combination of substances presented as having properties for treating or preventing disease; or any substance or combination of substances that may be used in or administered to human beings and/or animals either with a view to restoring, correcting, or modifying physiological functions by exerting a pharmacological, immunological, or metabolic action, or to making a medical diagnosis.

Note: Products that are controlled as over the counter drugs by the U.S. Food and Drug Administration (FDA) are not eligible. Exception: Cosmetics that are controlled only through the cosmetics directive in the EU (Regulation (EC) No 1223/2009) are eligible, even if the product is controlled as an over-the-counter drug per the U.S. FDA.

- c. Medical devices and products for which specialized biocompatibility testing is required that is not included in the Cradle to Cradle Certified Material Health Assessment Methodology (e.g., syringe, pacemaker),
- d. Products that are or contain live multicellular organisms (e.g., live animals, plants, and seeds. Includes all algae, some of which are multicellular.),
- e. Fuels and other products intended for combustion during use (e.g., candles, fireworks, explosives),
- f. Buildings,
- g. Soil amendments (e.g., fertilizer, compost), and
- h. Nanomaterials. **Note:** Eligibility to be revisited once the Material Health Assessment Methodology is updated to more explicitly address the human and environmental health issues associated with nanomaterials.
- i. For the Cradle to Cradle Certified Product Standard (Full Scope) and Cradle to Cradle Certified Circularity Standard, products to which the Section 5.4 (Material Compatibility for Technical and/or Biological Cycles) requirements do not apply, and for which less than 1% cycled and/or

renewable content is verified per Section 5.3 Increasing Demand. This means that if Section 5.4 does not apply, the product must contain $\geq 1\%$ cycled and/or renewable content that is fully verified per Section 5.3 to be eligible. The feasibility analysis pathway in Section 5.3 may not be used. This eligibility restriction is relevant to products such as chemical feedstocks.

Note: Products containing live spores are eligible for certification on a case-by-case basis only. Please refer to the Biological Materials Assessment Methodology for additional information.

3. Products that are not in compliance with applicable local, state, and federal laws and regulations.

2.2 Products Not Eligible for the Bronze Achievement Level in Material Health

Children's products, cosmetics, and personal care products are not eligible for certification at the Bronze achievement level in the Material Health category (i.e., they must meet the Silver achievement level requirements or higher in Material Health). The intent is to ensure they do not contain carcinogens, mutagens, or reproductive toxicants (CMRs); persistent, bioaccumulative, and toxic substances (PBTs); very persistent and very bioaccumulative substances (vPvBs); or substances that cause an equivalent level of concern.

Further Explanation

Personal care products include formulated products (e.g., shampoo, shaving cream, face powder, solid soap) and articles used for personal care that frequently contact the skin (e.g., makeup applicator, cotton swab, toilet paper). Note that paper towels are not considered a personal care item.

Formulated cosmetics and personal care products are further defined within the Cradle to Cradle Certified Restricted Substances List as follows: *Any substance or chemical mixture intended to be placed in contact with the external parts of the human body, or with the teeth and the mucous membranes of the oral cavity, with a view exclusively or mainly to clean them, perfume them, change their appearance, protect them, keep them in good condition, or correct body odors. This includes makeup and hair, face, body and hand care products, including hand soaps and sanitizers.*

Children's products are defined as products that are marketed to or for children. A child is defined per the International Labour Organization (ILO) as any person less than 18 years of age. Examples of children's products are toys, children's sized apparel, baby bottles and bibs. Note that given the definition of a child, apparel marketed to teens may not be certified at the Bronze level in the Material Health category. In general, any product that will be marketed to or for children and/or sold in the children's section of a store must be considered a children's product.

2.3 Products Not Eligible for the Bronze or Silver Achievement Level in Product Circularity

Eligible single-use plastic products and plastic packaging products (when certified as a separate product) are not eligible for certification at the Bronze or Silver achievement level in the Product Circularity category (i.e., they must meet the Gold or Platinum achievement level requirements in Product Circularity). The intent is to ensure alignment with the Cradle to Cradle principles for these typically non-circular product types. An exemption is made for plastic packaging that is part of a refill/reuse system (e.g., soap refill pouches), which may be certified at any achievement level in the Product Circularity category.

Further Explanation

The definition of a single-use plastic product is provided in Section 12.

In addition to the eligibility requirements above, several requirements specific to single-use plastic products and plastic packaging products may be found in the following Product Circularity sections of the standard:

- Section 5.3 Increasing Demand: Incorporating Cycled and/or Renewable Content (see sub-section titled Alternative to Meeting Required Percentages of Cycled and/or Renewable Content: Feasibility Analysis).
- Section 5.4 Material Compatibility for Technical and/or Biological Cycles (see Gold level Requirement #3).
- Section 5.7 Active Cycling.

3 // General Requirements

3.1 Certification Compliance Assurance

Intended Outcome(s)

A compliance assurance system is in place to ensure the Cradle to Cradle Certified requirements are met at all times.

Applicable Achievement Level(s)

Bronze

Requirement(s)

A documented certification compliance assurance system is in place.

The certification applicant/holder company must have a documented certification compliance assurance system in place that includes:

1. Designated staff responsible for maintaining the integrity of certified product(s) as defined by the standard.
2. A process for controlling for changes pertinent to the certification and notifying the certification body when relevant changes are planned or otherwise identified. Pertinent changes include, but are not limited to, changes to certified product names or group names, and the list of specific product variations included in or excluded from a certified group.
3. A method of staying informed about and/or controlling for material changes that may occur in the supply chain.
4. Management system best practices including:
 - a. A document control process,
 - b. Internal self-audits conducted at regular planned intervals (at least once each certification cycle), and
 - c. A corrective action process.

Further Explanation

Methods of Staying Informed (#3)

Methods of staying informed about and/or controlling for material changes that may occur in the supply chain include:

- Suppliers are required to communicate any proposed changes to the manufacturing process or to intentional product inputs that may alter the chemical composition of the product, or other aspects relevant to certification (e.g., recycled content), to the certification holder. When there are multiple supply chain tiers, suppliers must communicate this requirement to their

own suppliers.

- All suppliers that provided chemical composition data, or other product-relevant data (e.g., amount of recycled content), for the prior certification are contacted again prior to renewal (or more frequently) and asked to provide updated data or to confirm that no relevant changes were made by them or by the applicant's sub-suppliers.

Management System Best Practices (#4 a, b, and c)

The certification holder must have a documented management system that can ensure compliance with Cradle to Cradle Certified. ISO 9001 (Quality Management System – Requirements) contains a high-level overview of management system best practices, including those for document control, internal self-audits, and corrective action processes. ISO 9001 alone is not necessarily sufficient to demonstrate conformance with this set of requirements. However, the certification compliance assurance system may be integrated into existing documented management systems, such as those developed for ISO 9001 certification.

Document Control Process (#4a)

Data and documentation applicable to Cradle to Cradle Certified certification must be protected and controlled to ensure that the most recent and accurate information can be found and identified and that improper or accidental changes are not made. This typically includes a standard method of organizing file folders, file naming conventions that include dates, and control on who has access to and/or is able to edit and delete documents.

Data and documentation applicable to the Cradle to Cradle Certified certification includes all source/raw data and documentation used to demonstrate conformance with the standard, including all data reported in the C2CPH application forms and templates (e.g., the Version 5.0 Assessment Report Form, Bill of Materials Forms, Supplier Bill of Materials Forms, Restricted Substance declarations, Transparency Report Form, Clean Air & Climate Protection Form (including energy bills or similar source data), Water & Soil Stewardship Form (including meter readings or similar source data), documentation for any C2CPH-recognized standards applicable to the certification).

Internal Self-Audits (#4b)

Applicants must schedule an internal audit at least once every three years to review all data, documentation, and processes applicable to the Cradle to Cradle Certified certification application. It is recommended that this review be scheduled for ~1.5 years after initial certificate issuance and each recertification.

The primary purpose of the audit is to (1) identify any changes that may have occurred since the certificate was issued that would impact achievement of the Cradle to Cradle Certified requirements and/or scope, (2) ensure achievement of the Clean Air & Climate Protection targets over the course of the certification (which is necessary given that annual procurement of energy attribute certificates and carbon offsets is accepted), (3) ensure that social audits are repeated for any final manufacturing sites in

high-risk locations (if relevant), and (4) identify if there are any opportunities for improvement in how the applicable documentation is maintained and updated to ensure it remains accurate.

The results of each audit must be documented and reported to applicable internal management. If changes pertinent to the certification have occurred, the appropriate Conformity Assessment Body and/or the Cradle to Cradle Products Innovation Institute is required to be notified.

It is recommended to develop a checklist that covers applicable certification requirements and guides the internal audit. The checklist can also serve as documentation of what was included in the internal audit, the results (nonconformance, conformance, opportunities for improvement, etc.) and the audit conclusions. Audit conclusions could, for example, be that the internal audit has shown that the management system can maintain conformance to the Cradle to Cradle certification standard.

The checklist should include checks on the following documents and underlying data:

- Version 5.0 Assessment Report.
- Bill of Materials, including Supplier Bill of Materials Forms. Restricted Substance declarations and analytical test reports must be reviewed in cases where there are changes to the bills of materials.
- Transparency Report Form.
- Clean Air & Climate Protection Form, including energy bills or similar source data, and energy attribute certificates or carbon offset procurement status. Note: Renewable energy attribute certificates and carbon offsets, if employed to achieve the requirements, may be procured annually. Therefore, a mid-certification check is essential to ensuring the requirements are met).
- Water & Soil Stewardship form, including meter readings or similar source data.
- Social Fairness Form.
- Status of social audits for high-risk locations. **Note:** social audits must be conducted every 1.5 ± 0.5 years for high-risk locations.

Corrective Action Process (#4.c)

When a nonconformance with the Cradle to Cradle Certified certification is identified (either during the self-audit or otherwise), corrective actions must be taken. The corrective action process or procedure is required to include development of corrective action plan(s) with an associated timeline for completion. The plan must include:

1. Action(s) to immediately correct the nonconformance to ensure compliance with the standard requirement(s), and
2. A root cause analysis and related corrective action to avoid a similar occurrence of the nonconformance in the future.

Staff responsible for carrying out the corrective action plan(s) must be assigned. Corrective action plans and actions taken must be documented. See the Version 5.0 Certification Manual for Social Fairness Section 8.2 Monitoring and Verification for elements of a credible corrective action plan. Again, the applicable assessment body and/or Cradle to Cradle Products Innovation Institute must be notified of

any nonconformances that affect or may affect achievement of Cradle to Cradle certification requirements.

Required Documentation

- List of responsible staff including position title(s), and job description(s) or list(s) of responsibilities. Note that providing the name(s) of the responsible staff is optional. This information may be noted in the Assessment Report form and/or in a separate document.
- Description of compliance assurance process (i.e., Requirement #2) and method (i.e., Requirement #3.a and/or b).
- Evidence of management system best practices including document control, self-audit, and corrective action procedures **Note:** The documented procedures must be submitted. An ISO 9001 certificate alone is not sufficient evidence.
- For recertification: Internal self-audit report(s), including a description of any applicable opportunities for improvement or nonconformances with the Cradle to Cradle Certified certification identified during the self-audit(s) and how they were resolved. Use of a self-audit checklist is highly encourage/recommended. **Note:** The internal audit report is not required for recertification when transitioning from Version 3.1 to Version 5.0.

3.2 Measurable Improvement

Intended Outcome(s)

What a product is made of and how it is made is measurably improved until the product achieves at least the Gold level requirements in all five Cradle to Cradle Certified key categories. While the Gold level reflects high achievement, reaching the Platinum level in all categories is the ultimate goal.

Applicable Achievement Level(s)

Bronze and Silver

Requirement(s)

Develop a strategy or plan towards achieving the next certification level. At recertification, demonstrate that at least one measurable improvement has been made in at least one of the five key program categories since the prior certification.

The measurable improvement required is in addition to any actions already required in individual program categories at recertification.

Further Explanation

Developing a Strategy or Plan Towards Achieving the Next Certification Level

At the Bronze and Silver levels, all applicants are required to *develop a strategy or plan towards achieving the next certification level*. Once Gold level is achieved in all categories (and overall), a strategy or plan is no longer required, although it is recommended to develop one with a focus on achieving Platinum level.

Planned actions will depend on the current and future desired achievement levels, product and facility characteristics, as well as the selected path(s) to achieving the requirements. It is recommended to include a path for achieving all requirements at the next higher achievement level in each category within the strategy or plan. It is recommended that strategies and plans include discrete planned actions, quantitative targets, and associated timelines. As noted in the standard, at least one measurable improvement must have been made at recertification. Achieving a measurable improvement should therefore be built into all strategies and plans to ensure recertification requirements are met. See examples of measurable improvements below.

For recommendations on developing a Clean Air & Climate Protection strategy specifically, please see the Further Explanation box that follows. Additional strategy recommendations may be added to this manual in future.

Measurable Improvement

Measurable improvement must be demonstrated when recertifying at the Bronze or Silver level. Once Gold level is achieved, this is no longer required. Examples of measurable improvements that receive credit (non-exhaustive) are as follows:

Material Health

- Increased percentage assessed for at least one product within the product group.
- Reduced percentage of GREY+X materials or grey+x substances for at least one product within a product group.
- Increased number of chemicals or materials assessed (applied to either materials or chemicals subject to review within the product or to all process formulations or chemicals).
- Reduction in the total impact due to hot spot reduction (either within an impact category if using option A, or across all stages, etc., if using option B, as described in the Further Explanation box of Section 4.5).

Product Circularity

- Increased percentage of cycled or rapidly renewable content.
- Increased cyclable content for one or more products in the product group.
- Improvement in the design of the product for easy disassembly.
- Additional Circular Design Opportunity plan developed for a product group.
- Additional cycling partner identified (for disassembly, recovery, or processing) (must apply to the entire product group).

- Increased cycling rates (may apply to only one product in a product group).

Clean Air & Climate Protection

- Increased procurement of renewable electricity relative to total electricity use (i.e., increased percentage).
- Increased absolute amount of energy produced from on-site renewables or increased percentage of on-site renewables.
- Reductions in energy intensity or carbon intensity (relative per unit) resulting from conservation and efficiency (C&E) improvements if these have not received credit otherwise.
- Absolute reductions in energy use or emissions resulting from C&E improvements.
- Increased percentage of embodied emissions offset or otherwise addressed.
- Increased purchase of carbon credits relative to total emissions (i.e., increased percentage).

Water & Soil Stewardship

- Effluent water quality improved which is demonstrated via test data (reduced concentration of hazardous chemicals, reduced BOD, etc.).
- Increased optimization (i.e., increased number of a, b, and c assessed chemical(s) of product-relevant chemistry entering the effluent).
- Increased number of conservation (quantity or quality) best available techniques/practices implemented.
- Increased water use efficiency.

Social Fairness

- Decreased gender and/or top executive-worker wage gap.
- Decreased gap between actual and living wage.
- Increased diversity of the workforce.

Other

- Moving to the next achievement level.
- Fulfilling one additional requirement at any higher level (even if the overall level does not increase).
- Applying for certification of additional product(s).

Notes:

The measurable improvement requirement was new to Version 4.0 and is also included in Version 4.1 and Version 5.0. For new Version 5.0 certificates (i.e., no prior certificate under any version), and for certifications transitioning from Version 3.1 directly to Version 5.0, demonstrating measurable improvement is not required.

More generally, **transitions from Version 4.0 or Version 4.1 to Version 5.0 are considered recertifications for the purposes of recertification requirements that exist under all three standard versions.** It will be noted in the relevant Further Explanation box when this is not the case for individual

standard requirements.

Measurable improvement is not required within the C2C Certified Material Health or C2C Certified Circularly standards. It also is not required when transitioning from one or both of these certifications to C2C Certified (Full Scope).

As noted in the standard, the measurable improvement achieved must go beyond any actions required in the individual program categories. For example, there is a recertification requirement in Section 5.3 Increasing Demand to demonstrate progress when the alternative to meeting the required percentages of cycled and/or renewable content (i.e., feasibility analysis and public disclosure of limitations) has been applied. If using this alternative, progress in Section 5.3 must be demonstrated in addition to the measurable improvement required in this section (Section 3.2).

Required Documentation

Bronze and Silver

- Documented strategy or plan. It must be clear in the documentation how the strategy or plan it is relevant for the applicant to achieve the next certification level.

Bronze and Silver recertification

- Description of the measurable improvement made and supporting quantitative data in at least one of the five program categories.

Further Explanation

Recommendations for Clean Air & Climate Protection Strategy

Clean Air & Climate Protection strategy should, at minimum, focus on using renewable electricity, adopting impactful renewable energy procurement methods, and addressing greenhouse gas emissions. Transitioning to clean renewable energy sources will positively impact air quality as well. This is because burning fuels is one of the primary contributors to poor air quality. Applicants are also encouraged to include plans for reducing emissions of hazardous air pollutants in the strategy.

Scope: The recommended scope for the strategy aligns with the scope for quantification requirements by product type (per Section 6.2) and with the expectation of eventual achievement at the next level, as noted in the table below.

Table – Recommended Strategy Scope: Silver through Platinum Level by Product Type

Strategy Scope	Construction Products and Building Materials (per the list specified in the standard)	Other Products
Strategy addresses all product-attributable electricity use and emissions occurring during the final manufacturing stage of the product, at a minimum. Note: Other scopes such as facility or company level must include the certified product(s).	Bronze	Bronze
Strategy addresses embodied emissions. Scope: Initial resource extraction or production through final manufacturing.	Silver	Gold
Strategy addresses embodied emissions. Scope: Initial resource extraction or production through end-of-use.	Platinum	Platinum

Setting Targets

Robust strategies will include a defined base year, quantitative targets, discrete actions and associated timelines, and target years aligned with climate science and international climate goals. Companies should set targets aligned with the [Paris Agreement](#) goals. Note that companies reporting per the EU Corporate Sustainability Reporting Directive (CSRD) will have to demonstrate that their transition plan is compatible with the targets of the Paris Agreement. However, Cradle to Cradle Certified Version 5.0 focuses on the certified product and the facilities where it is manufactured—not on corporate-level emissions, the latter of which is necessary for setting targets well-aligned with the Paris Agreement. More specifically, Cradle to Cradle Certified requires quantification of energy use and emissions at final manufacturing stage facilities (Section 6.2) and targets (per Section 6.3) may be met for product-allocated energy use and emissions at these facilities. Embodied emissions of the certified product must also be quantified and addressed (Section 6.2 and Section 6.5).

It is recommended to set near-, mid-, and long-term targets. Per EFRAG ESRS E1 Climate Change ([2024](#), page 16), the definitions of short-, medium-, and long-term are to be defined by the company in the context of the expected lifetime of its assets, strategic planning horizons, and capital allocation plans. Per the Science Based Target Initiative's Net-Zero standard ([V1.2, March 2024](#)), "near-term targets are 5-10 year GHG mitigation targets in line with 1.5°C pathways", and "long-term targets shall have a target year no later than 2050". Mid-term is not defined.

For reference, CDP (2024) scores annual absolute emissions reduction targets as follows: 1.23% (0.25

points), 2.5% (0.5 points), 4.2% (0.75 points). These scores may be helpful in understanding best practices for setting reduction targets. See references below for additional guidance on target setting.

When developing a Clean Air & Climate Protection strategy for Cradle to Cradle Certified, applicants should consider what it will take to achieve the next certification level. However, the targets set per the strategy do not necessarily need to align with those required per standard Section 6.4 Using Renewable Electricity and Addressing Emissions and Section 6.8 Addressing Embodied Greenhouse Gas Emissions.

References

- CDP [2024 Climate Change Scoring Methodology](https://www.cdp.net/en/2024/framework/methodology), cdp.net
- Science Based Targets Initiative, sciencebasedtargets.org
- World Wildlife Fund (WWF), [Corporate Climate Targets](https://www.wwf.eu/en/what-we-do/our-approach/corporate-climate-targets/), wwf.eu (February 2024)

4 // Material Health Requirements

Category Intent

Chemicals and materials used in the product are selected to prioritize the protection of human and environmental health, generating a positive impact on the quality of materials available for future use and cycling.

Requirements Summary

To achieve a desired level within the category, the requirements at all lower levels must also be met.

Requirement	Bronze	Silver	Gold	Platinum
4.1: Product is 100% characterized by generic material and ≥ 75% assessed. For materials released directly into the biosphere, complete chemical composition is collected.	●	●	●	●
4.2.1: Product does not contain substances restricted by leading chemical regulations.	●	●	●	●
4.2.2: Product does not contain organohalogen or functionally related substances of concern, above relevant thresholds.	●	●	●	●
4.1: Product is ≥ 95% assessed. For materials released directly into the biosphere, complete chemical composition is collected.		●	●	●
4.2.2: Product does not contain materials with > 1% organohalogens by weight.		●	●	●
4.2.3: Product does not contain classified or listed CMRs or substances causing an equivalent level of concern above chemical subject to review limits, or exposure is unlikely or expected to be negligible. Additionally, product does not contain listed PBTs or vPvBs.		●	●	●
4.3: Product has low VOC emissions (required for products permanently installed in buildings).		●	●	●
4.4: Product complies with VOC content limits (required for liquid and aerosol construction products).		●	●	●

4.1: 100% of homogeneous materials subject to review are assessed (i.e., none have a grey rating due to insufficient data).			●	●
4.2.2: Product does not contain organohalogen substances above chemical subject to review limits.			●	●
4.2.3: Product does not contain chemicals associated with hazardous effects on human and/or environmental health above chemical subject to review limits, or exposure is unlikely or expected to be negligible.			●	●
4.3: Product has very low VOC emissions or is inherently non-emitting (required for products permanently installed in buildings).			●	●
4.4: Product complies with VOC content limits (required for liquid and aerosol consumer products).			●	●
4.1 and 4.2.3: All product-relevant process chemicals are assessed (i.e., none have a grey rating due to insufficient data) and no x-assessed chemicals are used.				●
4.2.3: > 25% of the product is assessed as A/a or B/b.				●
4.5: ≥ 25% of the product's input materials or chemicals have a C2C Certified Material Health certification at the Gold or Platinum level or ≥ 15% of the product's input materials or chemicals are Cradle to Cradle Certified (Full Scope) at the Gold or Platinum level or equivalent. OR Environmental health impact hotspot analysis based on life cycle assessment completed, emissions and resource use hotspots that impact human and environmental health are identified, and a strategy/plan is developed based on the results. Progress must be demonstrated at each recertification.				●

4.6: Publicly disclose information and/or data consistent with the product's level of achievement in Material Health. (Required for the C2C Certified Material Health standard only; Recommended for C2C Certified (Full Scope) standard; See the Transparency Requirements reference document for details).	○	○	○	○
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4.1 Inventory and Assessment of Chemicals and Materials

Intended Outcome(s)

An increasing percentage of the product's chemical composition is known and assessed for human and environmental health hazards and risks, enabling product optimization.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirement(s)

Bronze level:

- Inventory: Identify and characterize all homogeneous materials in the product by concentration and generic material type or category/name. For products released directly into the biosphere as part of their intended use (e.g., soaps, paints), fully define the chemical composition. For other product types, collect the chemical composition information necessary to assess at least 75% of the product.
- Assessment: Based on the inventory, assess at least 75% of the product.

Silver level:

- Inventory: For products released directly into the biosphere as part of their intended use (e.g., soaps, paints), fully define the chemical composition. For other product types, collect the chemical composition information necessary to assess at least 95% of the product.
- Assessment: Based on the inventory, assess at least 95% of the product.

Gold level: Fully define and assess all homogeneous materials subject to review within the product.

Platinum level: Fully define and assess all process chemistry that comes into contact with the product or its material constituents during the final manufacturing stage.

Characterizing Materials in the Product

The concentration of each material as a percentage of the total product weight must be determined.

Fully Defining the Chemical Composition of Materials

Toxicological assessment of a homogeneous material requires disclosure of its full chemical composition from the supplier(s)/formulator(s) controlling the chemical composition. A homogeneous material ("material") is defined as a material of uniform composition throughout that cannot be mechanically

disjointed, in principle, into different materials (see Section 12: Definitions for additional information). A homogeneous material is considered fully defined when the names, identifiers, and concentrations are known for all chemicals subject to review.

Homogeneous Materials Subject to Review

Homogeneous materials present at a concentration $\geq 0.01\%$ (≥ 100 ppm) in the applicant product are subject to review. In addition, any homogeneous material in the final product that comes into routine and direct human contact during the normal use of the product is subject to review at any concentration.

For products composed of a single homogeneous material (e.g., formulated goods), the product as a whole is subject to review.

Note: Homogeneous materials that are subject to review are required to meet the standard requirements in Section 4.1 Inventory and Assessment of Chemicals and Materials, and Section 4.2 Avoiding Restricted Substances and Optimizing Materials, unless exemptions apply. Homogeneous materials that are not subject to review are not required to meet these requirements.

Further Explanation

Inventory

Inventory requires (1) Characterizing (i.e., listing) all homogeneous materials in the product by concentration, (2) Identifying the materials that are “subject to review”, and (3) Identifying the chemicals subject to review within each material subject to review.

An increasing percentage of the product must be inventoried with increasing achievement level. An exception is for products released directly to the biosphere, which must be fully inventoried (i.e. chemical composition fully defined) at the Bronze level.

Products Released Directly to the Biosphere

Products that are released directly into the biosphere as part of their intended use includes all personal care and cleaning products, and all liquid, aerosol, or gaseous consumer products. It also includes solid materials and/or products released directly into the biosphere as part of their intended use (e.g., products intended for home composting or other biodegradation pathways). This list is not exhaustive, please contact C2CPH if in doubt. Paper is considered a product released directly to the biosphere when the only intended cycling pathway(s), as defined Section 5.1, belong to the biological cycle.

Products that abrade during their intended use but are not themselves intended for direct release into the biosphere (e.g., brake pads, tires, shoe soles) are not subject to this requirement.

Inventory: Characterizing Materials

For the Bronze level, it is required to *identify and characterize all homogeneous materials in the product by concentration and generic material type or category/name*.

The Cradle to Cradle Certified Bill of Materials Form provides a standardized format for providing a list of homogeneous materials present in the product or product group seeking certification. For the Bronze level, applicants are required to complete and sign a Bill of Materials form (or equivalent).

Generic Material Type

The generic material type is the descriptor of the material that would be included in commercial descriptions, technical manuals, or on bills of materials (e.g., aluminum, polyethylene, steel, wood, cotton, adhesive, paint). Wherever possible, the most specific descriptor known and/or the trade name of the material should also be reported (e.g., 6061 aluminum, DOWLEX™ polyethylene, 304 stainless steel, oak wood, GOTS-certified cotton, Prismatic “INK BLACK” powder coat, 3M Super 77 Spray Adhesive, etc.) as this will facilitate information collection for the higher-level Material Health requirements.

Inventory: Identifying Parts and Homogeneous Materials Subject to Review

As noted in the standard, *Homogeneous materials present at a concentration $\geq 0.01\%$ (≥ 100 ppm) in the applicant product are subject to review (with several exceptions). In addition, any homogeneous material in the final product that comes into routine and direct human contact during the normal use of the product is subject to review at any concentration.*

Homogeneous materials are defined as materials of uniform composition throughout that cannot be mechanically disjointed, in principle, into different materials. Examples of homogeneous materials are polypropylene, steel, shampoo, glass cleaner, nylon yarn, finish, and coating. Examples of non-homogeneous materials are powder-coated steel, a printed bottle label, plywood, laminate, and chair casters. Please refer to the [Methodology for Defining Homogeneous Materials](#) for information on how to define homogenous materials.

The weight of like materials must be summed when determining if a material is subject to review. For example, if a product contains five parts made from the same trade name, grade and color of nylon and each part is present at 0.009%, these parts are subject to review because in total the material is present at 0.045%.

As used above, *routine and direct human contact* refers to contact between the material and human skin (*direct*) that occurs once a month or more frequently (*routine*). Examples of product materials that come into direct human contact during use are a handle on a cabinet, a switch on a radio, or a shampoo bottle.

Product Installation Hardware, Installation Tools, and Spare Parts

- **Installation hardware** that attaches to the product is considered part of the final product (e.g. screws, adhesive, bolts, mounting plates). These parts contribute to the total product weight and are subject to review if present at ≥ 100 ppm within the final mounted or assembled product.
- **Installation tools** that are not part of the final product, such as screwdrivers and hex keys, are not subject to review. They do not contribute to final product weight and are not required to

be inventoried or assessed.

- **Spare parts**, such as buttons, thread, and screws, are not part of the total product weight but are subject to review if the part they are intended to replace is subject to review (i.e. ≥ 100 ppm). Since these parts are likely the same as the parts installed in the product, additional inventory and assessment is unlikely to be necessary. However, if the parts are not the same, inventory and assessment according to the applicable achievement level is required (unless exempt as described in the Chemicals Subject to Review section below).

Chemicals Subject to Review

For each homogeneous material subject to review, the chemicals subject to review are those present in the material at a concentration $\geq 0.01\%$ (≥ 100 ppm), with the following exceptions:

1. If a limit below 100 ppm is indicated for a specific substance by the applicable Bronze level chemical restrictions aligned with leading chemical regulations in the Cradle to Cradle Certified® Restricted Substances List reference document, the lower limit applies.
2. If a specific concentration limit (SCL) for any toxicity endpoint of a substance is below 100 ppm as indicated by the Table of Harmonized Entries in Annex VI to the Classification, Labelling, and Packaging of Substances and Mixtures regulation, the lower limit applies.
3. Product may contain a maximum of 1% exempt components by weight. The exemption is allowed for minor, commodity type components including sewing thread and solid, preformed fasteners and bearings. Homogeneous materials and substances in these component types may be exempt from review if the following conditions are met:
 - a. Metallic components comply with the Restriction of Hazardous Substance (RoHS) directive.
 - b. Non-metallic components comply with the applicable Section 4.2.1 Bronze level restrictions in the Cradle to Cradle Certified® Restricted Substances List reference document.
4. In any case where the relevant specialized assessment methodology (e.g., Recycled Content Materials Assessment Methodology, Geological Materials Assessment Methodology, Externally Managed Component Assessment Methodology) allows or requires a different method of defining materials, including different methods and/or limits for determining what chemicals are subject to review, the methods indicated by the relevant methodology document(s) take precedence.

Further Explanation

Inventory: Identifying Chemicals Subject to Review

For each homogeneous material subject to review, the chemicals subject to review are those present in the material at a concentration $\geq 0.01\%$ (≥ 100 ppm), with several exceptions as noted in the standard.

This means that after all materials subject to review are identified (as described earlier) all chemicals subject to review within each of these materials must also be identified. Full chemical composition information must have been collected for all materials in all products by the Gold level. (Products released directly to the biosphere must be fully defined at the Bronze level.)

Full chemical composition information must be obtained directly from the material manufacturer or formulator controlling the chemical composition of the material or be provided in a format that can be unambiguously attributed to the specific material manufacturer or formulator. Except in certain circumstances as described below, composition based on safety data sheets (SDS) is not sufficient. Applicants may work with a Cradle to Cradle Certified assessor to collect this information directly from each material supplier and sub-suppliers as needed.

In order for a full chemical composition disclosure to be considered complete, all substances present in a material above the relevant subject to review threshold must be reported.

Note: This applies to all substances present that are subject to review, not just intentionally added substances. Thus, it is recommended that a **list of all intentionally used substances and all substances known to be present** in each homogeneous material in the finished product (excluding exempt components as defined per Section 4.1) is requested as follows:

1. Request a list of:
 - a. All substances and/or mixtures that are intentionally used (including process chemicals) in the production of the material.
 - b. All substances known to be present (including contaminants, residuals, by-products, impurities) in the finished material.
2. For each substance and mixture, ask the supplier to provide:
 - a. The substance name or specific manufacturer trade name and grade in the case of purchased chemicals or chemical mixtures,
 - b. The percentage ranges at which the substance or mixture is present in the finished material or material input,
 - c. The function the substance or mixture serves within the material or material input, and
 - d. The CASRN or INCI for each substance (if one exists).
3. The (sub-)supplier must report any chemical reactions that are an intentional part of their production process (e.g., the polymerization reaction during polymer manufacture). For any reaction, the reaction product(s) need to be listed with the percentage ranges at which they are present in the finished material or material input and a chemical identifier (if one exists).
4. The (sub-)supplier must list any known contaminants and impurities with the percentage ranges at which they are present in the finished material or material input and a chemical identifier (if one exists). For each contaminant or impurity, the source must also be described.

5. Along with the list of substances, the (sub-)supplier must provide a statement guaranteeing that all substances used intentionally in the production of the material by the supplier or sub-suppliers have been listed along with any known reaction products of those substances, impurities, and contaminants.
6. The percentages of the substances listed in the above steps must sum to 100%; otherwise, further explanation needs to be provided as to why the substances do not sum to 100% and whether there may be other unknown substances present.

If a material supplier uses only pure substances (with CASRN or INCI), the process is complete (i.e., no suppliers of the material manufacturer or formulator need to be contacted, and full chemical composition has been obtained). If the list includes any mixtures or substances identified by trade name only, repeat steps 1-6 in this section for each (sub-)supplier of a mixture or substance used in making the material that is identified by trade name only. **Note:** Formulators are not expected to be able to provide full chemical composition unless they purchase only pure substances from chemical suppliers.

As part of the Material Health assessment process, a Cradle to Cradle Certified Material Health Conformity Assessment Body will evaluate the chemical inventory for accuracy and reliability, including a review for well-known contaminants, impurities, and residuals (e.g., antimony in PET, 1,4-dioxane in surfactants). If the assessor finds that a reported composition is incomplete or inaccurate, additional supplier outreach may be necessary.

After the completion of these steps, the formulation information for the material or material input is considered complete. Among the listed substances, the ones that are subject to review are identified and assessed by a Material Health assessor.

Note: Colorants and dyes must be assumed to be present above subject to review limits in materials unless otherwise demonstrated.

Note: It is recommended that restricted substances declarations and full chemical composition information are requested from suppliers at the same time. See Section 4.2 Avoiding Restricted Substances and Optimizing Materials for additional information on these restrictions.

Defining Metal Alloys

Mill certificates (i.e., mill test reports) will be accepted as full chemical composition. Composition information from databases such as [Matweb](#), [eFunda](#), and [Copper Developmental Association Inc.](#) may also be used to define composition. It is acknowledged that these data sources may not provide data to 100 ppm for all constituents of the alloy. It is common to see ~0.05% "other" ingredients listed. Other undefined constituents combined that are present at $\leq 0.05\%$ may be assigned a c-assessment. This applies for virgin as well for alloys which contain recycled content. If the recycled metal is of unknown alloy grade, the alloy must undergo analytical testing for heavy metals following thresholds defined in the Cradle to Cradle Certified Recycled Content Analyte List.

Exempt Components (Exception #3)

A product may contain a maximum of 1% exempt components by weight. It is not required to gather full chemical composition data for exempt components. Exempt components are currently limited to sewing thread, fasteners, and bearings. Examples of fasteners included in this exemption are nails, screws, dowels, grommets, metallic anchors, and rivets. The inclusion of additional commodity type components for exemption may be considered in the future. RoHS compliance for metallic components means that certain toxic metals need to be below the thresholds defined in Directive 2011/65/EU of the European Parliament. Specifically, lead (Pb), mercury (Hg), and hexavalent chromium (Cr(VI)) need to be below 0.1% and cadmium (Cd) needs to be below 0.01%. This rule may be applied at any achievement level for both virgin and recycled material components.

Specialized Methodologies (Exception #4)

As noted in the standard, inventory methods and subject to review limits may differ for certain material types as specified in the relevant specialized assessment methodology (e.g., Recycled Content Materials Assessment Methodology, Geological Materials Assessment Methodology, Externally Managed Component Assessment Methodology). The Material Health Assessment Methodology and specialized assessment methodologies may be found on the [Resources page of the C2CPII website](#).

Fully Defining Process Chemistry

Process chemistry is considered fully defined when the chemical names and chemical identifiers are known for all process chemicals subject to review.

Process chemicals subject to review are those that are used as an intentional part of any of the processes included in the final manufacturing stage, including:

1. Pure chemical substances.
2. Chemical substances present in mixtures at a concentration $\geq 0.1\%$ (1000 ppm) prior to any dilution at the manufacturing site(s). The exceptions listed above for materials apply (per #1-4 in the sub-section titled Fully Defining the Chemical Composition of Materials, with the default limit as 1000 ppm instead of 100 ppm). Additionally, for textile processing, the limits indicated by the Zero Discharge of Hazardous Chemical (ZDHC) Manufacturing Restricted Substances List (MRSL) take precedence if lower.

Further Explanation

Platinum Level: Fully Defining Process Chemistry

The steps for obtaining full chemical composition for process chemistry are the same as those described in the prior Further Explanation box for materials within the product.

Note: Intentional inputs used during the final manufacturing stage that do not end up in the final product (e.g., because they have reacted into something else) meet the definition of a process chemical. Requirements applicable to process chemicals are also present in the Water & Soil Stewardship

category, Section 7.4 Assessing and Optimizing Product Relevant Chemicals in Effluent and Sludge. See Definitions (Section 12) for the definition of process chemical.

Assessing Chemicals and Materials

Homogeneous materials and chemicals subject to review, including process chemistry subject to review at the Platinum level, must be assessed according to the Cradle to Cradle Certified Material Health Assessment Methodology and supporting documents. Based on these methods, chemicals subject to review are assigned a, b, c, x, or grey chemical risk ratings and homogeneous materials subject to review are assigned A, B, C, X, or GREY ratings. **Note:** Homogeneous materials in the product that are not subject to review and chemicals not subject to review are not required to be assessed.

A chemical substance is considered to be assessed when it has been assigned an a, b, c, or x (abc-x) chemical risk rating.

A homogeneous material is considered to be assessed when it has been assigned an A, B, C, or X (ABC-X) assessment rating or is otherwise considered to be assessed based on the specific, relevant methodology (e.g., recycled content assessment methodology, externally managed component methodology).

A material or component that is separately Cradle to Cradle Certified (Full Scope or Material Health standard) and used in another product seeking certification may count as assessed at the same Material Health level and percentage assessed at which it is currently certified. Materials assessed as A, B, or C may only contain chemicals subject to review that have been assigned a, b, or c chemical risk ratings. Materials assessed as X will contain at least one chemical subject to review that has been assigned an x risk rating and may also contain chemicals with grey ratings indicating insufficient data for assessment.

Further Explanation

Assessing Chemicals and Materials

As noted in the standard, $\geq 75\%$, $\geq 95\%$, and 100% of the product must be assessed for human and environmental health hazards and risks for the Bronze, Silver, and Gold levels respectively. *Assessments must be conducted according to the Cradle to Cradle Certified Material Health Assessment Methodology and supporting documents.* Assessment ratings (A/a, B/b, C/c, X/x or GREY/grey) are assigned by a Cradle to Cradle Certified Material Health Conformity Assessment Body.

The majority of materials are assessed according to the Material Health Assessment Methodology (which includes the full list of hazards that must be considered) in combination with the (qualitative) Exposure Assessment Methodology.

Specialized Assessment Methods: Certain materials (e.g., geological, biological, and recycled content materials and Externally Managed Components (EMCs)) must be assessed according to specialized assessment methodologies. These methodologies may require additional evidence to consider a material to be assessed, such as analytical testing.

For a homogeneous material to receive an X rating, one or more substances subject to review within the material must receive an x rating. For a material to receive an A, B, or C rating, each of the substances subject to review within the material must receive an a, b, or c rating specific to the final manufacturing conditions, professional use and/or installation conditions (if applicable), use in a final product, and intended and likely unintended end-of-use processes. The worst-case rating across these use cycle stages must be applied to the material overall. For example, if highly hazardous substances are present during installation or application only, and exposure occurs (e.g., as may be the case for a certified liquid paint that is dry during final use), the installation phase may determine the overall material rating. For intermediate products, the hazards associated with the product as sold to professional customers often determine the overall material rating.

Note that the default requirement per the Exposure Assessment Methodology is to include all of the following unintended end-of-use processes within the scope of the assessment: Landfilling, incineration, uncontrolled burning, release to the environment. Common intended end-of-use processes are: Recycling, composting (for products intended for the biological cycle and for which compost testing has been conducted), and release to the environment (e.g., via wastewater treatment plants).

See the [Material Health Assessment Methodology](#) and supporting documents (available on the resources page of C2PCII's website) for additional information.

Determining Percentage Assessed

The percentage of the product that is assessed must be determined as follows:

1. For each homogeneous material in a product the applicant must either:
 - a. Count the entire homogeneous material as assessed, by weight, if the material has received an A, B, C, or X (ABC-X) assessment rating, or
 - b. Count the homogeneous material as partially assessed based on assessed chemicals subject to review in the material. In this case, the percentage assessed for the material is equal to the percentage by weight of all abc-x-assessed chemicals within the homogeneous material, or
 - c. Count the homogeneous material as partially assessed based on assessed input materials in the homogeneous material. The term "input materials" refers to individual homogeneous materials that are combined to form a single homogeneous material present in the product being evaluated. In this case, the percentage assessed for the homogeneous material is equal to the percentage by weight of all ABC-X/abc-x-assessed input materials within the homogeneous material.
2. For products consisting of a single homogeneous material, the percentage assessed must be calculated as per 1b or 1c above (1a is not allowed).
3. Because fully defined chemical composition is required at the Bronze level for products that are released directly into the biosphere as part of their intended use, the percentage assessed for these products must be calculated as per 1b above (1a and 1c are not allowed).

4. For products composed of two or more homogeneous materials, the percentage assessed is calculated as the weighted average of the percentages assessed for each homogeneous material subject to review in the product.

Determining Percentage A/a and B/b-assessed (Platinum level)

The percentage of the product that is assessed A/a or B/b as required for the Platinum level (see Section 4.2.3) is determined as follows:

1. For each homogeneous material subject to review in a product, the applicant must either:
 - a. Count the entire material as assessed A or B, by weight, if the material has received an A or B assessment rating, or
 - b. Count the material as partially assessed based on the percentage by weight of all a- or b-assessed chemicals within the product.
2. For products consisting of a single homogeneous material, the percentage that is assessed a and b must be calculated as per 1b above (1a is not allowed).
3. For products composed of two or more homogeneous materials subject to review, the percentage that is assessed A/a and B/b is calculated as the weighted average of the percentages assessed for each homogeneous material subject to review in the product.

Further Explanation

Determining Percentage Assessed

For product groups, the overall percentage assessed is equal to the product configuration with the lowest percentage assessed among all those covered by the certification. For modular products, the overall percentage assessed is equal to the individual module with the lowest percentage assessed among those covered by the certification.

Exempt components (defined in standard Section 4.1 under the sub-heading “Chemicals Subject to Review”) do not count as assessed or count towards the total product weight to be assessed. Note that exempt components are the only materials within a product that are not ‘subject to review’.

At the Silver level, Section 4.2.3 restrictions on harmonized (CLP Annex VI) carcinogens, mutagens, and reproductive toxicants (CMRs) and REACH Substances of Very High Concern (SVHCs) apply to all homogeneous materials, including unassessed homogeneous materials. Therefore, any unassessed materials require a Restricted Substances declaration (including Section 4.2.3 restricted substances). This includes:

- If using Pathway #1a: any GREY material and the GREY portion of any X-assessed homogeneous material counting as assessed.
- If using Pathway #1b or #1c: any undefined chemicals or materials that are not counted as assessed.

See Section 4.2.3 for additional information.

At the Platinum level, the method for calculating the percentage of A/a and B/b-assessed materials and/or chemicals is the same as the method above for calculating the percentage assessed for the product, with one exception: only the percentage of A/a and B/b-assessed materials and/or chemicals, rather than the percentage of all assessed materials and/or chemicals, is determined. Likewise, for product groups, the overall percentage of A/a and B/b-assessed materials and/or chemicals is equal to the percentage for the product with the lowest percentage A/a and B/b-assessed materials and/or chemicals among all products covered by the certification. For modular products, the overall percentage of A/a and B/b-assessed materials and/or chemicals is equal to the percentage for the individual module with the lowest percentage A/a and B/b-assessed materials and/or chemicals among all those covered by the certification.

Example: Determining the Percentage Assessed for a Homogeneous Material (PET)

Chemical name	CAS	% by weight	Chemical risk rating
Polyethylene terephthalate	25038-59-9	97.97	b
Antimony trioxide	1309-64-4	0.03	x
Titanium dioxide	13463-67-7	1.00	c
Additive mixture	unknown	1.00	grey (i.e., insufficient data for assessment)
Percentage assessed (calculated via Pathway #1b.)		99%	

Pathway #1a (homogeneous material method): As noted above in the sub-section titled Assessing Chemicals and Materials: *Materials assessed as X will contain at least one chemical subject to review that has been assigned an x risk rating, and may also contain chemicals with grey ratings indicating insufficient data for assessment.* Based on this, in combination with Pathway #1a, the PET material would be X-assessed and 100% assessed. The material would be eligible for the Bronze level, but not the Silver level, due to the presence of an x-assessed Cat. 2 CMR (antimony trioxide).

Note: This is provided as an example only for how to calculate the percentage assessed for a homogeneous material within a finished product containing multiple homogeneous materials. Pathway #1a is not applicable to single homogeneous material products per the following requirement: *For products consisting of a single homogeneous material, the percentage assessed must be calculated as per 1b above (1a is not allowed).*

Pathway #1b (chemical method): This material would be eligible for the Bronze level using Pathway #1b if only the PET material was being assessed for certification. The Bronze level requires the material to be > 75% assessed, and this material is 99% assessed by weight. Although this material exceeds the Silver

level requirement of > 95% assessed, it contains an x-assessed Cat. 2 CMR (antimony trioxide) which is not allowed at the Silver level (see Section 4.2.3).

Example: Determining Percentage Assessed for a Multi-Material Product

As noted in the standard, use of method #1a only, use of method #1b only, use of method #1c only, or a combination of methods #1a, #1b, and #1c may be used to calculate percentage assessed for multi-material products. For all options, *the percentage assessed is calculated as the weighted average of the percentages assessed for each homogeneous material subject to review (i.e., excluding exempt components, if any) in the product.*

Scenario: An example product contains three homogeneous materials, as follows:

- Material #1 makes up 55% of the product by weight. Full chemical composition has been obtained and the material is C-assessed.
- Material #2 makes up 41% of the product by weight. The supplier disclosed 90% of the formulation by weight but refuses to provide composition information on the remaining 10%. All disclosed substances are c-assessed and the remaining 10% is grey. This results in an overall 'grey' rating for the material.
- Material #3 makes up 4% of the product by weight. The supplier has not disclosed any formulation information and so the material is 'grey'.

If employing Pathway #1a to determine percentage assessed, the product is **55% assessed** (i.e., only material #1 may count as assessed because materials #2 and #3 are grey).

If employing Pathway #1b or #1c, materials are counted as partially assessed based on assessed chemicals (#1b) or input materials (#1c) subject to review. Therefore, the assessed percentage by weight of any partially assessed materials (in this example, Material #2) is added to determine the percentage assessed of the product. The percentage of the product assessed using Pathway #1b for material #2 is determined as follows:

- Material #1: 100% assessed x 55% of the product by weight = 55%
- Material #2: 90% assessed x 41% of the product by weight = 36.9%
- Material #3: 0% assessed x 4% of product by weight = 0%
- Percentage assessed for the product = **91.9% assessed** (i.e., 55% + 36.9% + 0%)

Note: Pathway #1c is similar to Pathway #1b, except that percentage assessed is calculated by summing the percentage by weight of all ABC-X/abc-x assessed input materials as opposed to abc-x chemicals.

Biological materials often include many individual chemical substances and may not be well defined at the chemical level. When determining percentage assessed for these material types, individual species of biological material may be counted as one chemical or one material (as applicable to the percentage calculation method employed). If multiple suppliers provide material from the same species, material sourced from all suppliers must be assessed per the Biological Materials Methodology to count the material as assessed. A similar approach may be used for recycled content materials that are not fully defined but that have met the requirements for the applicable achievement level per the Recycled

Counting Certified Products and Products with Cradle to Cradle Certified Material Health Certificates as Assessed

A material or component that is separately Cradle to Cradle Certified (Full Scope or Material Health standard) and used in another product seeking certification may count as assessed at the same Material Health level and percentage assessed at which it is currently certified.

A certified product for which percentage assessed was calculated using the chemical method (Pathway #1b) may count toward the percentage assessed when used as an input to another certified product seeking certification. For example, if an input material was previously found to be 90% assessed via the chemical method, this % would be multiplied by its weight in the new product seeking certification and the result added to the % sum of assessed materials in this new product. This is allowed as long as the product will be certified at the same or lower level as the input material (i.e., a Bronze certified material may be used as an input to a Bronze certified product and count as assessed. A Silver certified material may be used as an input to a Bronze or Silver certified product and count as assessed). A Gold certified product may be used as an input to a Bronze, Silver, or Gold certified product, count as assessed, and assumed to be C-assessed (unless more specific information is available regarding the percentage of the product that is A/a, B/b, or C/c-assessed, in which case there is potential to also use the certified input at Platinum level).

Certified products for which the percentage assessed was calculated using the homogeneous material method (Pathway #1a) may also count as assessed and are subject to the same conditions. However, they count as assessed at the minimum percentage required for their achievement level in Material Health (i.e., a Bronze level multi-material product will count as 75% assessed when used as an input to another multi-material product, etc.). Alternatively, if the actual percentage is known, that percentage may be used instead.

Products Certified to Previous Standard Versions

Products certified to Version 4.0 or 4.1 of the standard (Full Scope or Material Health) may be counted as assessed in Version 5.0 according to the guidelines described above. Products certified at Gold or Platinum Material Health in Version 3.1 of the standard may be counted as assessed (according to the guidelines describe above) if they meet the following additional requirements:

- Comply with Version 4.0 or Version 4.1 Section 4.1, or Version 5.0 Section 4.2.1.
- Does not contain organophosphate ester flame retardants (OPFRs), per Version 4.0 or Version 4.1 Section 4.2 or Version 5.0 Section 4.2.2.
- Comply with the Version 5.0 subject to review limit of 100 ppm for residual monomers. Additionally, any residual monomers subject to review are compatible with the required chemical restrictions for the desired Material Health achievement level of the product to which the certified product is an input.

Required Documentation

Bronze, Silver, and Gold levels

Inventory

A Bill of Materials Form or equivalent listing all materials and their concentration in the product or product group seeking certification. The Cradle to Cradle Certified Bill of Materials Form is available to Cradle to Cradle Certified Conformity Assessment Bodies.

For each material to be assessed:

- Full composition information that can be unambiguously attributed to the relevant manufacturer(s), formulator(s), or other supplier(s) and cross referenced with the Bill of Materials. Note that alternatively formatted Bills of Materials (e.g., those formatted by suppliers) must follow the checklist of requirements from the Cradle to Cradle Certified Bill of Materials Form.
 - If full composition information cannot be obtained, safety data sheets (SDSs) may be collected for general composition information. However, an SDS alone is typically insufficient to determine full chemical composition.
 - Exception: An SDS for a pure substance (reported as 100%) that is used at < 2% in the homogeneous material subject to review may be sufficient to determine full chemical composition, as any impurities would be below 100 ppm. For this exception to be valid, the SDS must be written according to EU requirements and guidelines (which would require the SDS to report the presence of substances with limits below 1000 ppm due to specific concentration limits (SCLs) or regulatory restrictions).
 - If neither full composition information nor an SDS can be obtained, data collection must be sufficient to otherwise identify the need for additional material testing (e.g., for biological, recycled content, and geological material testing).
- Recommended: Fully completed Restricted Substances Declaration(s) (including Sections 4.2.1, 4.2.2, and 4.2.3). This is recommended in addition to full chemical composition, even if some declarations are not needed for the achievement level (e.g., Silver level restrictions for a Bronze level certification). Obtaining these declarations for all materials provides additional assurance that substances with low regulatory limits or SCLs (which may be at risk of being overlooked in the data collection and disclosure process) are identified. See Section 4.2 for additional information on Restricted Substances declarations.

Assessment

For each material and chemical that is counted as assessed:

- The final ABC-X or abc-x rating, along with any relevant notes, assessment rationale, and supporting information, as provided by a Cradle to Cradle Certified Material Health Conformity Assessment Body (CAB).
- Rationale with supporting evidence for excluding any common unintended end-of-use

processes from the assessment (also as provided by the CAB).

- For Cradle to Cradle Certified inputs (if any):
 - Chain of custody documentation as listed in the Required Documentation box in Section 5.3 Increasing Demand.
 - Cradle to Cradle Certified certificate(s). The certification must be active (i.e., not expired) and certified to Version 3.1, 4.0, 4.1, or 5.0 in Material Health. The achievement level must be the same as or higher than the desired achievement level for the product. This information may be listed in the Bill of Materials Form (i.e., certificate numbers, standard version, achievement levels, and expiration dates).
 - For Version 3.1 Certified inputs: any separate declarations or documentation necessary to verify that the input meets the requirements of the desired achievement level for the product (see Further Explanation box above, sub-heading “Counting Certified Products and Products with Cradle to Cradle Certified Material Health Certificates as Assessed”).
- Analytical test reports, if required (e.g., for recycled content, biological, and geological materials).

Note: Tests are valid if they are conducted within three years from the date of application and have not been used in a prior certification or recertification cycle. Exceptions may be granted when transitioning between certification versions.

Calculations showing how the percentage assessed for the product or product group was derived. Calculation fields for determining percentage assessed are included in the Bill of Materials Form. A separate Bill of Materials Form must be completed for product(s) with a unique composition within a product group if using the form for this purpose. For complex product groups, percentage assessed calculations may be provided in other formats.

Silver level: Restricted Substances Declaration(s) (including Section 4.2.3 restricted substances) for all materials lacking full composition information (see Further Explanation box above, sub-heading “Determining Percentage Assessed” and Section 4.2.3 for additional information). **Note:** A Restricted Substances Declaration template is available to Cradle to Cradle Certified Conformity Assessment Bodies.

Platinum Level

- Percentage assessed calculation as described above, for the percentage of A/a and B/b-assessed materials and/or chemicals for the product or product group.
- A description of what substances are used during the processes constituting the final manufacturing stage of the product and how process chemicals subject to review were determined.
- A separate C2CPII Bill of Materials form or equivalent for process chemistry.

4.2 Avoiding Restricted Substances and Optimizing Materials

Intended Outcome(s)

The product is made from chemicals and materials that have been intentionally selected based on their preferred safety attributes. Problematic substances are progressively avoided through restrictions aligned with leading regulations, restrictions on chemical and functional use classes of concern, and restrictions based on hazard endpoints and risk. At higher levels of achievement, materials and chemicals in the product and process chemistry are compatible with or preferable for human and environmental health.

Further Explanation

Section 4.2 contains all restricted substances requirements for certified products. The [Cradle to Cradle Certified® Restricted Substances List](#) reference document further specifies chemical substances and classes subject to restriction, including substance lists searchable by Chemical Abstract Service (CAS) Registry Number and restriction-specific threshold limits. The information below applies to all sub-sections of Section 4.2.

Restricted Substances List Updates and Transition Period

The Restricted Substances List reference document is updated at least once annually to reflect updates to source regulations and lists, as well as decisions by C2CPII to add or remove restrictions. A transition period will be implemented alongside each document update to facilitate the transition of certified products to the updated version. The transition period will be communicated to current certification holders and assessors and published on the C2CPII website and in the Restricted Substances List reference document.

Cradle to Cradle Certified Restricted Substances Declaration

A Restricted Substances Declaration template and checklist for suppliers providing their own declaration is available to Cradle to Cradle Certified Conformity Assessment Bodies. This template covers restrictions in all sub-sections of Section 4.2 and can be tailored to specific restriction lists (e.g., only Bronze level restrictions). It is recommended that declarations and full chemical composition information are requested from suppliers at the same time.

Determining Compliance – Recycled Content, Biological, and Geological Materials

Recycled content materials must undergo analytical testing to address the potential for contamination from the recycling stream.* This testing must be completed even if a sufficient declaration or regulatory compliance statement (further described in the Further Explanation box for Section 4.2.1 below) is provided. See the Cradle to Cradle Certified Recycled Content Materials Assessment Methodology for more details.

Additionally, biological materials and geological materials may require analytical testing to confirm that they do not contain restricted substances (e.g., toxic metals and pesticides). See the Cradle to Cradle

Certified Biological Materials Assessment Methodology and Geological Materials Assessment Methodology for more details.

*Analytical testing may not be required for product packaging with recycled content. See Section 9 for details.

Determining Compliance for Low-Concentration Input Materials

If an input material is present at less than 100 ppm in a single homogeneous material, a Material Health assessor may sign the Restricted Substances Declaration based on evaluation of the input material safety data sheet (SDS) for composition information. Full composition disclosure is not required.

C2CPH-Recognized Standards

C2CPH-recognized standards are accepted as a means of achieving some of the requirements in Section 4.2. See the most recent version of [C2CPH-Recognized Certification Programs and Standards](#), available on C2CPH's website, for the list of recognized standards that restrict the use of well-known toxic substances. Refer to Appendix 2 in this Certification Manual for requirements and the application process for recognition.

4.2.1 Restrictions Aligned with Leading Regulations

Applicable Achievement Level(s)

Bronze

Requirement(s)

Bronze level: The product and its homogeneous materials do not contain substances restricted by leading chemical regulations. Threshold limits and exemptions listed by source regulations apply.

The restrictions are defined in the Cradle to Cradle Certified® Restricted Substances List reference document. At the time of publishing the Version 5.0 standard, source regulations for the Bronze level include:

- Regulation (EC) 1907/2006 (REACH Annexes XIV and XVII)
- Regulation (EU) 2019/1021 (Persistent Organic Pollutants)
- Directive 2011/65/EU (Restriction on the use of certain hazardous substances in electrical and electronic equipment)
- Directive 2009/48/EC (Safety of toys)
- Regulation (EC) No 1223/2009 (Cosmetics products)

This reference document is updated annually. See the Cradle to Cradle Certified® Restricted Substances List reference document for more information, including current restrictions.

See Section 4.1 for information on how to define homogeneous materials subject to review in a product seeking certification.

For all product types, the product may alternatively be certified to a C2CPII-recognized standard that restricts the use of well-known toxic substances.

Further Explanation

Pathways to Demonstrate Compliance with the Section 4.2.1 Restrictions

Compliance with Section 4.2.1 must be demonstrated via one of the following pathways:

1. C2C Certified Restricted Substances Declaration (default pathway):

- Suppliers may declare compliance using the Cradle to Cradle Certified Restricted Substances Declaration. In this declaration, suppliers disclose information on any chemicals or substances listed in the applicable Section 4.2.1 spreadsheet tabs in the [Cradle to Cradle Certified® Restricted Substances List \(RSL\)](#) reference document.
 - Suppliers may alternatively submit a declaration in their own format provided that it contains the required information and language described in the Restricted Substances Declaration.
- Declarations must be signed or informed by an entity with sufficient knowledge of the material's chemical composition (i.e., down to the applicable regulatory restriction limits) to substantiate the declaration. Note that formulators and part suppliers typically do not have sufficient knowledge. For complex formulations and multi-material products, it is typically necessary to obtain declarations from multiple tiers of the supply chain to ensure Section 4.2.1 compliance. However, applicants with sufficient knowledge (e.g., chemical manufacturers) may sign a single declaration.

2. Regulatory Compliance Statement

- Applicants or suppliers may submit a regulatory compliance statement that cites compliance with any source regulations or directives applicable to the product or material under consideration as described in the Version 5.0 RSL reference document. Please see the C2C Certified Restricted Substances Declaration for guidance on required information for regulatory compliance statements.

Note that product-level regulatory compliance statements submitted by applicants may be used to cover Section 4.2.1 compliance for all homogeneous materials within the product as well as product packaging (see Section 9).

3. Material Health Assessor Verification:

- Materials for which full chemical composition information has been obtained (as described in Section 4.1) may be verified to comply with the Section 4.2.1 restrictions through composition review by a Cradle to Cradle Certified Material Health Conformity Assessment Body. The Bill of Materials must contain sufficient compositional information to verify compliance with any applicable restrictions in Section 4.2.1 (including those with limits above and below 100 ppm).

The assessor will indicate in the Bill of Materials Form that full chemical composition was used to confirm Section 4.2.1 compliance and attest to this in the Assessment Form (attestation tab).

- For recycled content and biological materials: A Bill of Materials or attestation reporting that the material does not contain any intentionally added inputs (e.g., additives, finishes, coatings, pesticides) or known contaminants to the raw material may be accepted as part of this pathway. Analytical testing may still apply for these material types. See the relevant specialized assessment methodology for additional information (e.g., Recycled Content Assessment Methodology).

Determining Compliance – Alloys

As noted in Section 4.1, mill certificates (i.e. test reports) will be accepted for full chemical composition and may be used to demonstrate Section 4.2.1 compliance.

If demonstrating compliance via supplier declaration, alloys that are non-coated (meaning no paint, corrosion inhibitors, lubricants, etc.) are not required to declare compliance with Regulation (EU) 2019/1021 (POPs) restrictions. This is because a 100% metal material will not contain organic substances. Note that all coatings are considered separate homogeneous materials from the underlying metal or other material.

See Section 4.1, Further Explanation for more information on defining metal alloys.

Determining Compliance – Analytical Testing

If all other compliance pathways cannot be used, Section 4.2.1 compliance may be demonstrated through analytical testing alone. Testing must be completed by an ISO17025-certified laboratory and cover all applicable regulations cited in Section 4.2.1. Testing requirements are defined in the Recycled Content Materials Analyte List, available on [C2CPII's website](#) (see Resources page). The Recycled Content Materials Analyte List may be used for virgin materials as well in this case.

Required Documentation

For **all** homogeneous materials in the product, one of the following is required:

- Restricted Substances Declaration(s) regarding any substances on the Cradle to Cradle Certified Restricted Substances List (RSL) reference document, Section 4.2.1 lists (as applicable to the product type) that are present in the material. The declarations must be signed or informed by an entity with sufficient knowledge of the material's chemical composition to substantiate the declaration.

OR,

- A regulatory compliance statement from the supplier or applicant (see the Cradle to Cradle Certified Regulatory Compliance Declaration for guidance on required information for these

statements).

OR,

- Bill of Materials Form containing sufficient compositional information to verify compliance with any applicable restrictions in Section 4.2.1 **and** Assessment Form attestation by the Cradle to Cradle Certified Material Health Conformity Assessment Body that Section 4.2.1 compliance was verified using full chemical composition.

OR,

- Analytical testing demonstrating compliance with Section 4.2.1 restrictions. The report must be from an ISO 17025 accredited laboratory.
 - For any materials undergoing analytical testing (typically biological and recycled content materials), the analytical testing report must be provided.
 - Analytical tests must have been conducted within three years from the date of application and have not been used in a prior certification or recertification cycle.

Note: Biological and recycled content materials typically require both a Restricted Substances Declaration or regulatory compliance statement (which covers intentionally added substances) **and** analytical testing (which covers unintentionally added substances).

For exempt metallic components (as defined per Section 4.1 Inventory and Assessment of Chemicals and Materials), evidence of Restriction of Hazardous Substances (RoHS) compliance is required.

For products certified to a C2CPH-recognized standard or program, evidence of certification (i.e., a valid certificate) may be used to demonstrate Section 4.2.1 compliance.

All documentation must be submitted in English.

4.2.2 Restrictions on Chemical and Functional Use Classes

Applicable Achievement Level(s)

Bronze, Silver, Gold

Requirement(s)

Bronze level: Homogeneous materials subject to review are not and do not contain organohalogen substances of concern (i.e., per- and polyfluoroalkyl substances (PFASs), halogenated flame retardants (HFRs), and halogenated polymers), or functionally related substances of concern (i.e., organophosphate ester flame retardants (OPFRs)) above relevant thresholds. Certain exemptions apply.

Silver level: Homogeneous materials subject to review do not contain organohalogen substances above 1% by weight. Certain exemptions apply.

Gold level: Homogeneous materials subject to review do not contain organohalogen substances above chemical subject to review limits (i.e., 100 ppm (0.01%) or lower if specific concentration limits are defined).

For the Bronze level, the applicable restrictions for chemical and functional use classes are:

1. PFASs: Per- or polyfluoroalkyl substances are defined as fluorinated organic chemicals containing at least one fully fluorinated carbon atom. PFAS-based materials, including fluoropolymers and PFAS coatings, are not permitted for use (except in exempt materials/parts as noted below). If present as an impurity or minor additive in an otherwise non-fluorinated organic material, carbon-bonded fluorine within PFASs in the material must be < 1,000 ppm of the homogeneous material by weight.
2. HFRs: Halogenated flame retardants are defined as any chlorinated, brominated, or fluorinated substance added to a material for the purpose of increasing heat/fire resistance or decreasing flammability. This restriction applies to the set of HFRs listed in the Cradle to Cradle Certified® Restricted Substances List reference document for this section, regardless of the intended purpose/function in the material, and any halogenated substances intentionally added to the product for the purpose of increasing heat/fire resistance or decreasing flammability. In addition to the applicable Bronze level Section 4.2.1 restrictions on specific HFRs, carbon-bonded fluorine, chlorine, and bromine within any flame retardant in the material (intentionally added or present as an impurity) must be < 1,000 ppm of the homogeneous material by weight (except in exempt materials/parts as noted below).
3. OPFRs: Organophosphate ester flame retardants are defined as any organic esters of phosphoric acid, containing either alkyl chains or aryl groups, that are added to a material for the purpose of increasing heat/fire resistance or decreasing flammability. This restriction applies to the set of OPFRs listed in the Cradle to Cradle Certified® Restricted Substances List reference document for this section, regardless of the intended purpose/function in the material, and any organophosphate ester substances intentionally added to the product for the purpose of increasing heat/fire resistance or decreasing flammability unless the Material Health Assessment results in a, b, or c- assessment when exposure is assumed. Note that the restrictions in this section are in addition to any OPFRs otherwise restricted in Section 4.2.1 (e.g., TCEP). In addition to the applicable restriction(s) on specific OPFRs in Section 4.2.1, OPFR content (intentionally added or present as an impurity) must be < 1,000 ppm of the homogeneous material by weight (except in exempt materials/parts as noted below).
4. Halogenated polymers: Any polymer containing a sum total of 10% or more of carbon-bonded fluorine, chlorine, and/or bromine by weight is considered a halogenated polymer and is thus not permitted for use (except in exempt materials/parts as noted below).

For the Silver level, the percentage of organohalogen substances within a homogeneous material that is subject to review in the product is equal to the percentage by weight of all carbon-bonded halogen atoms (Cl, Br, F, and I) within the material. For the Gold level, organohalogen substances are defined as any substances containing a carbon-bonded halogen atom (Cl, Br, F, and I).

Alternatively, the product may be certified to one or more C2CPH-recognized standards that restrict the use of organohalogen substances of special concern, and/or functionally related, non-halogenated substances of equivalent concern (i.e., per- and polyfluoroalkyl substances (PFASs), halogenated flame retardants (HFRs), organophosphate ester flame retardants (OPFRs), and halogenated polymers).

Further Explanation

Identifying PFASs (Bronze Level Restriction #1)

Per- or polyfluoroalkyl substances (PFASs) are defined as *fluorinated organic chemicals containing at least one fully fluorinated carbon atom*. This includes molecules with one or more $-C_nF_{2n}-$ moiety (with $n \geq 1$) and molecules with one or more $-C_nF_{(2n+1)}$ moiety (with $n \geq 1$).¹ A moiety is a distinct part of a molecule that may be repeated within a single molecule and may also be found in other molecules. Thousands of PFASs are used in a wide range of applications, including non-stick, stain-resistant, and scratch-resistant coatings. They are of concern due to their persistence and known human and environmental health hazards.²

In addition to the structural definition above, the [Cradle to Cradle Certified® Restricted Substances List](#) reference document contains a comprehensive list of Chemical Abstract Service Registry Numbers (CAS#s) for known PFASs. Any substance that meets the structural definition of a PFAS cited above or is listed on the Restricted Substances List as a PFAS is subject to this restriction.

Note: Coatings and finishes must be inventoried and assessed as separate homogeneous materials from the underlying substrate. This means that materials with a PFAS-based finish or coating (e.g., a textile with a PFAS finish) may not be considered one homogeneous material. The result is that PFAS coatings (which contain > 1000 ppm PFAS) do not comply with the Bronze-level PFAS restriction, and thus are not allowable at any achievement level unless exemptions apply (see sub-section “Exemptions” below).

¹ [Kwiatkowski et al., Scientific Basis for Managing PFAS as a Chemical Class. Environ. Sci. Technol. Lett. 2020, 7, 8, 532–543.](#)

² [Glüge et al., An overview of the uses of per- and polyfluoroalkyl substances \(PFAS\). Environ. Sci.: Processes Impacts 2020, 22, 2345–2373.](#)

Identifying Halogenated Flame Retardants (Bronze Level Restriction #2)

As noted in the standard: *Halogenated flame retardants are defined as any chlorinated or brominated substance added to a material for the purpose of increasing heat/fire resistance or decreasing flammability*. Toxicity concerns associated with halogenated flame retardants (HFRs) may be found [here](#).

See the [Cradle to Cradle Certified® Restricted Substances List](#) reference document for a non-comprehensive list of HFRs subject to this restriction. Any substances present on this list are subject to restriction, regardless of function in the material. Additionally, any substance that meets the structural definition of an HFR cited above is subject to this restriction.

Identifying Organophosphate Ester Flame Retardants (Bronze Level Restriction #3)

As noted in the standard: *Organophosphate ester flame retardants are defined as any organic esters of phosphoric acid, containing either alkyl chains or aryl groups, that are added to a material for the purpose of increasing heat/fire resistance or decreasing flammability*. Other organophosphorus-based flame retardants (e.g., phosphonates, phosphinates, and phosphorus oxide) are not subject to this restriction. Toxicity concerns associated with organophosphate ester flame retardants may be found [here](#).

See the [Cradle to Cradle Certified® Restricted Substances List](#) reference document for a non-comprehensive list of OPFRs subject to this restriction. Any substances present on this list are subject to restriction, regardless of their function in the material.

For organophosphate ester substances that are not listed in the Restricted Substances List, follow the decision tree below to determine whether the substance is subject to this restriction.

- Is the substance added to a material for the purpose of increasing heat/fire resistance or decreasing flammability?
 - If **no**, the substance is not subject to this restriction.
 - If **yes**, does the Material Health Assessment result in an a, b, or c-assessment when exposure is assumed?
 - If **yes**, the substance is not subject to this restriction.
 - If **no**, the substance is subject to this restriction.

Identifying Halogenated Polymers (Bronze Level Restriction #4)

As noted in the standard: *Any polymer containing a sum total of 10% or more of carbon-bonded fluorine, chlorine, and/or bromine by weight is considered a halogenated polymer and is thus not permitted for use (except in exempt materials/parts as noted below).* An example of a halogenated polymer is polyvinyl chloride (PVC). Halogenated polymers are restricted in the standard due to concerns relating to the production and release of reaction products that are more toxic than reaction products that are released by non-halogenated materials under equivalent conditions, during unintended low-temperature combustion.

Verifying Compliance – Bronze and Silver Levels

At the Bronze and Silver levels, compliance may be verified via one of three pathways:

- Restricted Substances Declaration using the C2C Certified Restricted Substances Declaration, available to Cradle to Cradle Certified Conformity Assessment Bodies.
- Full chemical composition review by a Material Health Conformity Assessment Body.
 - The Material Health assessor must confirm that the material composition complies with the restrictions. See “Calculating Carbon-Bonded Halogen Calculation”.
- Elemental analysis for carbon-bonded halogens or phosphorus.
 - *Bronze Level:*
 - Cumulative elemental concentration of Cl, F, and Br < 1,000 ppm of the material by weight (meets Requirements #1, #2, and #4).
 - Elemental concentration of P < 1,000 ppm of the material by weight (meets Requirement #3).
 - *Silver Level (in addition to Bronze level requirements):*
 - Cumulative elemental concentration of Cl, F, Br, **and** I < 1% of the material by weight

Note: If elemental concentrations exceed the Bronze or Silver limits (as applicable), the material may potentially still be in compliance if it can be demonstrated through further

analytical testing or formulation information obtained by the material manufacturer or formulator that halogens are present in inorganic form and that the weight fraction of carbon-bonded halogen atoms are below the restriction limits.

Note: The limits for organohalogen content are intentionally defined as the weight fraction of carbon-bonded halogen atoms (Cl, Br, F, and I) within the material, rather than the weight fraction of organohalogen molecules to allow for the use of elemental analysis (such as X-ray fluorescence (XRF) analysis) to establish compliance for a given material.

Calculating Carbon-Bonded Halogen Weight

The example calculations below demonstrate how to calculate carbon-bonded halogen weight in a halogenated polymer and homogeneous material.

Example, Chemical Level: Polychloroprene, derived from the monomer chloroprene (CAS# 126-99-8), contains one carbon-bonded chlorine atom (MW: 35.45 g/mol) in every chloroprene monomer unit. The molecular weight of chloroprene is 88.53 g/mol based on its constituent atoms (C₄H₅Cl). The percentage of carbon-bonded chlorine within this polymer is therefore approximately 40.0% (i.e., 35.45/88.53). This is greater than the allowable < 10%, which means that this substance is not eligible for certification at the Bronze level.

For polymers containing multiple organohalogens, the percentage of total carbon-bonded halogens in the polymer must be calculated and compared with the 10% limit.

Example, Homogeneous Material Level: A homogeneous material contains 2% of the organohalogen pigment Phthalocyanine Green G, by weight. Phthalocyanine Green G contains 16 Cl atoms, each bound to carbon atoms. The molecular weight of the molecule is 1056.28 g/mol. The weight of each Cl atom is 35.45 g/mol. Thus, assuming no other organohalogen compounds are in the material, the concentration of carbon-bonded halogen in the material by weight is:

$$2\% \times 16 \times 35.45 \text{ g/mol} \div 1056.28 \text{ g/mol} = 1.07\%$$

Thus, use of this material would not be permitted in a Cradle to Cradle Certified product at the Silver level, unless it is covered by one of the exemptions.

Verifying Compliance – Gold Level

At the Gold level, homogeneous materials in the product may not contain organohalogen substances above subject to review limits (i.e., 100 ppm or lower if specific concentration limits are defined). Organohalogen substances are defined as any substances that contain a carbon-halogen bond (i.e., Cl, F, Br, or I). This restriction only applies if the carbon-halogen bond is present in the finished product (i.e., not hydrolyzed in the production/manufacturing process).

Note: The Gold level restriction is based solely on the concentration of organohalogenated substances within each homogeneous material, rather than on the percentage by weight of carbon-bonded halogens used to determine compliance with Bronze and Silver level requirements.

Exemptions

For the Bronze and Silver levels, a homogeneous material that is subject to review may be exempt from meeting the requirements if any of the following conditions are met:

1. It is present at < 1% of the finished product by weight. Materials that are surface coatings applied to foodservice ware or textiles, including apparel, carpets, and furnishings, do not qualify for this exemption. **Note:** Foodservice ware includes any product intended to be used for cooking, serving, distributing, holding, packaging and/or transporting food.
2. It is contained in a part that is < 1% of the finished product by weight.
3. The use of a halogenated organic substance or functionally related chemical of concern in the material is required to meet regulatory requirements (e.g., fire standards). To claim this exemption the following conditions must be met:
 - a. Alternative methods of meeting the regulatory requirement must not exist, and
 - b. The applicant must conduct ongoing research into alternative ways of complying with the regulation without the use of the substance or another x-assessed substance.

Exemptions #1 and #2 may be claimed for homogeneous materials that in sum make up no more than 5% by weight of the finished product. None of the exemptions (1-3 above) may be claimed to meet the Gold level requirement.

For all levels, a homogeneous material that is also an intermediate/input product intended for use in another end/finished product that is sold to the general public is exempt from meeting the restrictions in this section if it meets the following conditions:

1. It is listed as being exempt in Section 4.2.2 of the Version 5.0 Certification Manual, and
2. It is specified for use in the end/finished product at a concentration that ensures the organohalogen(s) or OPFR(s) in the final homogeneous material, as present in the end/finished product, is below the chemical subject to review limit or is below the relevant restriction limit for the associated achievement level.

When this intermediate/input product exemption is used, a disclaimer will be added to the certificate as follows: "The concentration of the certified [intermediate/input] product in final products sold to the general public must be at or below [X] for the assessment results to be valid. The requirements for certification have only been met under these conditions."

Further Explanation

Exemption #1: This exemption applies to the total weight of a homogeneous material in the finished product. If the exact same homogeneous material (i.e., a homogeneous material with the exact same chemical composition) is used in several different individual parts of the product, the sum total weight of that material (including all individual parts) must be < 1% of the product by weight to be exempt.

Example: Five different wires within an electrical product are insulated with the same highly halogenated polymer. In each instance, the halogenated polymer is present at < 1% of the product by weight. However, the combined weight of the halogenated polymer is > 1%. This means that the product is not eligible for the Bronze level via Exemption #1. If the combined weight of the halogenated polymer was < 1%, the product would be eligible for the Bronze level via Exemption #1.

As noted in the standard, *Surface coatings applied to foodservice ware or textiles, including apparel, carpets, and furnishings do not qualify for this exemption. Foodservice ware includes any product intended to be used for cooking, serving, distributing, holding, packaging, and/or transporting food.* For example, this means that fluoropolymer coated paper food containers and fluoropolymer coated pans cannot claim this exemption and are therefore not able to achieve this Bronze level requirement. The result is that these product types cannot be certified. Note that inks are not considered surface coatings.

Exemption #2: This exemption applies to the weight of a part or component in the finished product. If the product contains multiple parts/components, each individual part/component must be < 1% of the product by weight to be exempt (i.e., parts/components that are composed of the exact same homogeneous materials are not summed first and then compared to the 1% by weight of the finished product threshold as for Exemption #1).

Note: A part is a physical unit within the product made of one or more homogeneous materials, e.g., a wire, a screw, or a component (see definition of "component" in the Definitions section). In addition, materials that are surface coatings applied to foodservice ware or textiles qualify for this exemption. The intention of Exemption #2 is to allow for the exemption of small parts/components for which the full chemical and material composition of the part/component is unknown.

Example: An applicant has developed a rain jacket using non-halogenated, PFAS alternatives; however, for performance purposes, the jacket contains the same fluorinated coating on four small parts (e.g., zippers, fasteners) that are each present at < 1% of the product by weight. The product would be eligible for the Bronze and Silver levels since each part is < 1% of the product by weight and the total weight of the parts is < 5% of the product by weight (assuming the product does not contain any other restricted materials or parts/components that would sum to > 5% of the product by weight).

Regarding the allowance that *Exemptions #1 and #2 may be claimed for homogeneous materials that in sum make up no more than 5% by weight of the finished product*, note that 'homogeneous materials' includes parts and components. One or both exemptions may be claimed for materials in the product if the conditions for each exemption are met. To be eligible for certification, the total weight fraction of exempt homogeneous materials, including parts/components, may not exceed 5% of the finished

product by weight.

Example: A product may contain five different halogenated organic polymers that are otherwise restricted at the Bronze level if the total weight of each different polymer type is < 1% of the finished product by weight (resulting in a total % by weight for all types that is < 5%).

Exemptions for Intermediate Products

At the time of publishing this Certification Manual, this exemption **only** applies to dyestuffs and pigments. It may be applied at any achievement level. If applied to dyestuffs and pigments used in inks or paints, the concentration limit applies to the final dry product. Certificates for products utilizing this exemption will have a disclaimer that specifies the use level. Please refer to Section 12: Definitions for an explanation of products that may be classified as intermediate products.

Note: Dyestuffs and pigments to which this exemption is applied are still subject to Silver level restrictions on CMRs & SVHCs and Gold level restrictions on X/x-assessed materials and chemicals. These restrictions apply to the concentration in the homogeneous material, **not** the final product.

Required Documentation

For **all** homogeneous materials in the product, one of the following is required:

- *Accepted for the Bronze and Silver level restrictions:* Restricted Substances Declaration(s) regarding any substances on the Cradle to Cradle Certified Restricted Substances List (RSL) reference document (Section 4.2.2 lists) that are present in the material. The declarations must be signed or informed by an entity with sufficient knowledge of the material's chemical composition to substantiate the declaration.
Note: Note that formulators and part suppliers typically do not have sufficient knowledge to substantiate a declaration. For complex formulations and multi-material products, it is typically necessary to obtain declarations from multiple tiers of the supply chain to ensure Section 4.2.2 compliance.
- *Accepted for all achievement levels:* Bill of Materials Form containing sufficient compositional information to verify compliance with any applicable restrictions in Section 4.2.2 **and** Assessment Form attestation by the Cradle to Cradle Certified Material Health Conformity Assessment Body that Section 4.2.2 compliance was verified using full chemical composition.
 - *Bronze and Silver only:* For materials that contain carbon-bonded halogens, calculations to determine the concentration by weight must be provided.
- *Accepted for all achievement levels:* Analytical testing demonstrating compliance with Section 4.2.2 restrictions. The report must be from an ISO 17025 accredited laboratory and document total halogen (elemental concentration only) or carbon-bonded halogen concentrations (and/or total phosphorus, if applicable) in the material.
 - For any materials undergoing analytical testing, the analytical testing report must be

provided.

- Analytical tests must have been conducted within three years from the date of application and have not been used in a prior certification or recertification cycle.
- If using the [C2CPH-Recognized Certification Programs and Standards](#): Evidence of certification to a standard that is recognized by C2CPH for Section 4.2.2 compliance (i.e., a valid certificate).
- Calculations and/or other evidence that the conditions for any claimed exemptions are met.

If Exemption #3 is claimed for one or more materials in the product, the following additional evidence is required:

- The text of the regulatory requirement that cannot be met without the use of a restricted substance in the exempt material.
- An explanation of the restricted substance's role in complying with the regulation and why the regulatory requirement cannot currently be met without the use of a restricted substance.
- A summary of due diligence conducted to verify that competing manufacturers of similar products in the same market are also all using a restricted substance in order to comply with the regulatory requirement.
- For recertification, a summary of research or other concrete actions that took place over the course of the previous certification period to work towards complying with the regulation without the use of the restricted substance (this may include assessment and performance tests of non-halogenated alternatives, lobbying efforts to get the regulation amended, etc.).

If a company is claiming the Intermediate Product exemption for a dyestuff or pigment, the following is required:

- Evidence demonstrating that the specified input concentration will result in compliance with the relevant restriction limit in the final product.
- Statement from the applicant that explains how they will communicate the use limit to customers.

4.2.3 Restrictions Based on Hazard Endpoints and Risk

Applicable Achievement Level(s)

Silver, Gold, and Platinum

Requirement(s)

Silver level: Use materials in the product that do not contain chemicals or substances classified or listed as carcinogenic, mutagenic, or toxic to reproduction (CMRs) or causing an equivalent level of concern unless exposure to those substances during the product's final manufacturing, use, and end-of-use is unlikely or expected to be negligible. Additionally, the product and its homogeneous materials do not contain substances listed as persistent, bioaccumulative, and toxic (PBTs) or very persistent and very bioaccumulative (vPvBs).

Gold level: Use materials that are assessed as compatible with human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology, including only A/a-, B/b-, and C/c-assessed materials and chemicals in the product.

Platinum level: Use materials and process chemicals that are assessed as preferable for or compatible with human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology, including > 25% A/a- and B/b-assessed materials and chemicals in the product, and only A/a-, B/b-, and C/c-assessed process chemistry.

For the Silver level, restricted substances include those that are classified or listed by leading chemical regulations or institutions as carcinogenic, mutagenic, or toxic to reproduction (CMRs), persistent, bioaccumulative, and toxic (PBTs), very persistent and very bioaccumulative (vPvBs), or causing an equivalent level of concern (e.g., endocrine disruptors). See the Cradle to Cradle Certified® Restricted Substances List reference document for additional details including restricted classifications and referenced lists.

For the Gold and Platinum levels, A/a-, B/b-, and C/c-assessment criteria are further defined in “Assessing Chemicals and Materials” (Section 4.1) and the Cradle to Cradle Certified Material Health Assessment Methodology (MHAM) and supporting methodologies.

Further Explanation

Silver Level: Verifying Absence of CMRs, PBTs, vPvBs, and Substances of Equivalent Concern

Substances restricted at the Silver level are listed in the [Cradle to Cradle Certified® Restricted Substances List](#) reference document. Currently, substances from the following regulations and lists are restricted at Silver:

- Classification, Labelling, and Packaging (CLP) regulation Harmonized Category 1 and 2 carcinogens, mutagens, and reproductive toxicants (CMRs)
- Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Substances of Very High Concern (SVHC)

These substances may not be present in homogeneous materials at or above applicable subject to review limits (i.e., 100 ppm or a Specific Concentration Limit (SCL)), unless exposure is unlikely or expected to be negligible.

For each homogeneous material in the product (excluding exempt components as defined in Section 4.1), absence of Silver level restricted substances must be verified by:

- A signed Cradle to Cradle Certified® Restricted Substances Declaration from the material supplier including Silver level restricted substances,

OR

- Complete chemical composition information for the material (i.e., list of substances present at 100 ppm or above, or above SCLs if less), verified by the Material Health assessor.

Note: Additional analytical testing is required for recycled content materials and may be required for biological and geological materials. Consult the respective supporting Material Health Assessment Methodology for more information.

Note: These requirements also apply to all GREY/grey-assessed materials and substances, even if full composition is not obtained. In these cases, the material or substance must be covered by a Restricted Substances Declaration that includes Silver level restricted substances.

CLP Harmonized Category 1 and 2 CMRs

The European Chemicals Agency (ECHA) manages the harmonized classifications and labelling of hazardous substances, which is available in Table 3.1 of Annex VI to the CLP Regulation. These classifications are updated annually through an “Adaptation to Technical Progress (ATP)”, which is issued by the European Commission. Category 1 and 2 CMRs from this list are subject to this restriction. A list of these substances, including applicable SCLs, is provided in the [Cradle to Cradle Certified® Restricted Substances List](#) reference document.

Note: The most recent version of the ATP, including any changes to classified substances or SCLs, may be applied as soon as the ATP is published (including before the effective date).

At the Silver level, homogeneous materials may not contain Category 1 and 2 CMRs above subject to review thresholds. Exceptions apply when exposure is unlikely or expected to be negligible. Please see the sub-section below titled “Achieving Silver Level through Material Health Assessment (Including Exposure Assessment)” for additional information.

REACH Substances of Very High Concern (SVHCs)

SVHC candidates are hazardous substances targeted for addition to the REACH Annex XIV Authorization List. A list of SVHC candidates and CASRNs is available in the [Cradle to Cradle Certified® Restricted Substances List](#) reference document.

At the Silver level, homogeneous materials may not contain any substances on the SVHC candidate list above subject to review thresholds. Some exceptions apply. Please see the sub-section below titled “Achieving Silver Level through Material Health Assessment (Including Exposure Assessment)” for additional information.

Achieving Silver Level Through Material Health Assessment (Including Exposure Assessment)

Silver level may still be achieved when restricted substances exceed subject-to-review thresholds if an exposure assessment shows that exposure is unlikely or expected to be negligible. In these cases, the substances must receive c ratings rather than x ratings. As noted earlier, Material Health Assessment ratings are assigned by Material Health Conformity Assessment Bodies. Ratings are assigned per the Material Health Assessment Methodology, Exposure Assessment Methodology, and other supporting methods.

At the time of publishing this Certification Manual, conducting an exposure assessment is allowed for all harmonized Category 1 and 2 CMRs and for SVHCs (excluding PBTs, vPvBs, and substances of equivalent

concern) if present below the generic concentration limit (1000 ppm) or below an applicable SCL.

Please refer to the Material Health Assessment Methodology and Exposure Assessment Methodology, available on C2CPH's website (Resources page) for additional information.

Achieving Gold and Platinum Levels

For Gold and Platinum levels, all materials in the product must be fully assessed for human and environmental health. In addition, X/x-assessed materials and substances, and those with insufficient toxicity or composition data, may not be used. Achieving the Platinum level requires the same for process chemicals subject to review. In addition, for Platinum level at least 25% of materials in the product must be A/a- or B/b-assessed.

For a material to receive an A, B, or C rating, each of the substances subject to review within the material must receive an a, b, or c rating. The ratings for each substance consider its specific use in the applicant material/product. As noted above for Silver level, Material Health assessment ratings are assigned by Material Health Conformity Assessment Bodies. Please refer to the Material Health Assessment Methodology and supporting methodologies for additional information.

C2CPH-Recognized Programs

C2CPH-recognized programs may be available in future for (fully or partially) achieving the requirements in Section 4.2.3 Restrictions Based on Hazard Endpoints and Risk. Please refer to the [C2CPH Recognized Certification Programs and Standards](#) for the most recent information.

Required Documentation

All Certification Levels

- For each material and chemical that is counted as assessed, the final ABC-X or abc-x rating, along with any relevant notes, assessment rationale, and supporting information, as provided by a Cradle to Cradle Certified Material Health Conformity Assessment Body.

Silver Level

At Silver, **all** homogeneous materials in the product (excluding exempt components as defined per Section 4.1) require one of the following:

- Bill of Materials Form containing sufficient compositional information to verify compliance with any applicable restrictions in Section 4.2.3 and Assessment Form attestation by the Cradle to Cradle Certified Material Health Conformity Assessment Body that Section 4.2.3 compliance was verified using full chemical composition,

OR

- Restricted Substances Declaration(s) regarding any substances on the Cradle to Cradle Certified Restricted Substances List (RSL) reference document (Section 4.2.3 lists) that are

present in the material. The declarations must be signed or informed by an entity with sufficient knowledge of the material's chemical composition to substantiate the declaration.

Additionally, the following documentation may be required:

- If an Exposure Assessment was used for any Silver level restricted substances: any required documentation as described in the Exposure Assessment Methodology.
- For recycled content, biological materials, and geological materials, analytical testing demonstrating compliance with Section 4.2.3 restrictions. The report must be from an ISO 17025 accredited laboratory.
 - For recycled content: The filtered Recycled Content Materials Analyte List must be provided.
 - If these materials contain additives or other inputs beyond the biological, geological, or recycled material, Restricted Substances Declarations or full chemical composition as described above is required in addition to analytical testing.
 - Analytical tests are valid if they are conducted within three years from the date of application and have not been used in a prior certification or recertification cycle.
 - Consult the material-specific methodology for additional information on required testing.

Note: Declarations must be signed by an entity with sufficient knowledge of the material's chemical composition to verify the declaration. Note that formulators and part suppliers typically do not have sufficient knowledge. For complex formulations and multi-material products it is typically necessary to obtain declarations from multiple tiers of the supply chain to ensure Section 4.2.3 compliance. Assessors submitting Restricted Substances Declarations that cover input materials must explain how the supplier has sufficient knowledge to determine that the input materials do not contribute restricted substances above applicable threshold limits.

4.3 Volatile Organic Compound (VOC) Emissions

Intended Outcome(s)

Indoor air quality is protected.

Applicable Achievement Level(s)

Silver and Gold

Requirement(s)

Silver level: Products designed for permanent indoor use comply with leading standards that demonstrate low VOC emissions.

Gold level: Products designed for permanent indoor use comply with leading standards that demonstrate very low to no VOC emissions.

Products designed for permanent indoor use are products that are installed or placed into a building and remain there (e.g., this includes furniture but not cleaning products).

To demonstrate fulfilment of this requirement, an applicant must show compliance of the product with the requirements of at least one regional set of best practices for qualifying low VOC emission products. Best practices are defined by the current versions of the leading green building certification systems or standards in a given region (such as BREEAM, DGNB, or LEED). See the Cradle to Cradle Certified® Volatile Organic Compound Emissions Testing reference document for a list of recognized standards for the Silver and Gold levels.

Test Report and Laboratory Accreditation Requirements

For the Silver and Gold levels, the following conditions must also be met:

1. Test report or certificate must refer to a test completed/performed no more than three years prior to the date of application, and
2. The analytical laboratory conducting the test must be ISO/IEC 17025 accredited and the accreditation scope must include the applied test method, either explicitly or implicitly within the scope of a flexible ISO/IEC 17025 accreditation for VOC product emission testing.

Further Explanation

Scope:

The requirements in this section of the standard apply to products that are installed or placed into a building and remain there. Testing is required for products that are:

- Permanently installed in indoor rooms, e.g., floors, walls, ceilings and insulation material,
- Used to install the above-mentioned products permanently, e.g., adhesives and sealants,
- Permanently applied to surfaces in indoor rooms, e.g., paints and coatings, and
- Used as permanent or long-term equipment of indoor rooms, e.g., all kinds of furniture and furnishings.
 - Long-term equipment is defined as any product with a use phase that is typically greater than four years (aligns with the definition of “long-use phase product” in Product Circularity).

Testing is not required for products that are not permanently installed or used as long-term equipment of indoor rooms as described in the bullets above. Products not subject to testing include:

- Washable fabrics (e.g., clothing, bed sheets, and towels)
- Items that can be stored in cabinets or drawers when not in use (e.g., utensils, kitchenware, and hand tools)
- Décor (e.g., planters, art, paintings, and picture frames)

In addition, testing is not required for products that are sold exclusively as material inputs for other products (i.e., testing is not required for intermediate products).

If it is unclear whether a product is subject to the requirements in this section, please contact C2CPH.

Note: The composite wood category noted in the reference document includes particleboard, medium density fiberboard (both medium density and thin), hardwood plywood with veneer, composite or combination core, and wood structural panels or structural wood products. This scope is per LEED V4.1.

Note: Some products subject to VOC Emissions testing may also be subject to VOC Content testing (e.g. paint and other surface coatings). See Section 4.4, Volatile Organic Compound (VOC) Content to determine whether additional VOC Content testing is necessary for the product.

Testing and Laboratory Accreditation

ISO/IEC 17025 accreditation is valid for specific test methods (as opposed to applying to an entire lab). Some testing laboratories claim to be ISO/IEC 17025 accredited even though their accreditation is only valid for certain test methods, and not for all test methods. To ensure compliance, it must be confirmed that the applied test method is covered by the scope of the chosen laboratory's accreditation.

It must further be ensured that the tested sample(s) are representative of the range of products covered by the certification. If sample selection was conducted by the testing laboratory or third-party samplers, the test report should include a description of the sampling approach, and an explanation of why the selected samples are expected to be representative of the entire range of products covered by the certification. If the applicant selected the samples, this description must be submitted separately from the testing report.

Regarding the requirement that the test report must refer to a test completed/performed no more than three years prior to the date of application:

- For new certifications, the date of application is the date on which the certification application is received by C2CPH.
- For recertifications, a new test must have been conducted at some point during the previous certification period. Since the certification period is currently three years, this results in repeat testing being necessary approximately every three years.

See the [Cradle to Cradle Certified® Volatile Organic Compound Emissions Testing](#) reference document for additional information, including the list of accepted testing schemes.

Required Documentation

- Explanation of which pathway from the C2CPH Volatile Organic Compound Emissions reference document was followed and how the specific requirement(s) of the pathway have been met.
- Test report from an ISO/IEC 17025 accredited laboratory demonstrating compliance.
- Evidence of the laboratory's ISO/IEC 17025 accreditation and confirmation that the specific test method used is covered by the accreditation.

- If not part of the report, description of sampling approach and explanation of how the selected samples are representative of the products covered in the scope of the certification.

Exemption

Products made entirely from the following material types are exempt from VOC emissions testing and may be assumed to have low to no VOC emissions:

1. Materials classified as inherently non-emitting sources per the LEED v4 Building Design and Construction EQ Credit Low-Emitting Materials (stone, ceramics, powder-coated metals, plated metals or anodized metals, glass, concrete, clay brick, and unfinished/untreated solid wood) if they do not include integral organic-based surface coatings, binders, or sealants, and
2. Plaster and stucco that have < 1% organic additives.

Note: Unfinished/untreated wood (i.e., wood without organic-based surface coatings, binders, or sealants) can emit VOC and therefore it is not technically non-emitting. However, it is still exempt from this requirement in keeping with LEED v4 Building Design and Construction EQ Credit Low-Emitting Materials.

Further Explanation

The standard indicates *that plaster and stucco that have < 1% organic additives are exempt from VOC emissions testing and may be assumed to have low to no VOC emissions*. More generally, products that contain < 1% organic components (e.g., a metal plumbing fixture with a plastic gasket) are also exempt from testing. Organic components may include (but are not limited to) plastic or rubber gaskets, fasteners, tabs, and fittings. Materials listed in Exemption #1 (i.e., organic-based surface coatings, binders, and sealants) are not included and may not be counted towards the < 1%.

If it is unclear whether a product is inherently non-emitting per the LEED v4 Building Design & Construction EQ Credit Low-Emitting Materials (for example, because surface treatments have been applied), the applicant must verify the non-emitting status of their product via expert evaluation and explanation, supplier statements, or “streamlined” (i.e., short duration, high intensity) VOC emissions tests.

Required Documentation

If applying the non-emitting materials exemption, one of the following:

- Statement(s) from material suppliers asserting that materials are non-emitting.
- Streamlined VOC emissions test report documenting no detectable emissions. Analytical tests

are valid if they are conducted within three years from the date of application and have not been used in a prior certification or recertification cycle.

- Expert evaluation asserting that the materials/product are non-emitting and explaining why.

4.4 Volatile Organic Compound (VOC) Content

Intended Outcome(s)

Outdoor air quality and the health of product installers and users are protected.

Applicable Achievement Level(s)

Silver and Gold

Requirement(s)

Silver level: For liquid, viscous, or aerosol construction and building products, limit VOC content to low levels as established by leading standards.

Gold level: For liquid, viscous, or aerosol consumer products, limit VOC content to low levels as established by leading standards.

To demonstrate fulfilment of this requirement, an applicant must show compliance of the product with the requirements of at least one regional set of best practices for qualifying low VOC content products. Best practices are defined by the current versions of the leading green building certification systems or standards in a given region (such as BREEAM, DGNB, or LEED). See the Cradle to Cradle Certified® Volatile Organic Compound Content Limits reference document for a list of recognized standards and test methods.

The following conditions must also be met:

1. Test reports or certificate (if applicable) must refer to a test performed within three years prior to the date of application, and
2. The analytical laboratory conducting the test (if applicable) must be ISO/IEC 17025 accredited and the accreditation scope must include the applied test method, either explicitly or implicitly within the scope of a flexible ISO/IEC 17025 accreditation for VOC product testing.

Exemptions

Products that are not covered by any of the standards or regulations listed in the Cradle to Cradle Certified® Volatile Organic Compound Content Limits reference document are exempt from this requirement.

Water-based consumer products are exempt from this requirement if the only organic substances with vapor pressure ≥ 0.1 mm Hg at 20°C that are subject to review are ethanol, isopropanol, or fragrances and legally mandated denaturants (e.g., 2-butanone for ethanol products).

Further Explanation

The definition of “consumer products” includes all product types classified by the California Air Resources Board Consumer Product Regulation (CARB) as consumer products. This definition includes aerosol adhesives, including those used for consumer, industrial, and commercial uses. See the [Consumer Products Program](#) for more information on applicable product types.

VOC Content Testing

The [Cradle to Cradle Certified® Volatile Organic Compound Content Limits reference document](#) can be found on the C2CPH website.

ISO/IEC 17025 accreditation is valid for specific test methods (as opposed to applying to an entire lab). To ensure compliance, it must be confirmed that the applied test method is covered by the scope of the chosen laboratory’s accreditation.

It must further be ensured that the tested sample(s) are representative of the entire range of products covered by the certification. If sample selection was conducted by the testing laboratory or third-party samplers, the test report should include a description of the sampling approach and an explanation of why the selected samples are expected to be representative of the range of products covered by the certification. If the applicant selected the samples, this description must be submitted separately from the testing report.

Note: Some products subject to VOC Content testing may also be subject to VOC Emissions testing (e.g. paint and other surface coatings). See Section 4.3, Volatile Organic Compound (VOC) Emissions to determine whether additional VOC Emissions testing is necessary for the product.

Testing Applicability

For products that are regulated only by the CARB Consumer Product Regulation, testing may not be required. Refer to the most recent version of the Consumer Product Regulation, the most recently set limits for a product category (the regulation lists all prior limits for a single product type and the dates the limit was set), and the formula for calculating the % VOC content in [ARB Method 310](#) to make this determination.

Required Documentation

- Explanation of which pathway from the C2CPH Volatile Organic Compound Content Limits reference document was followed and how the specific requirement(s) of the pathway have been met.
- If applicable, test report from an ISO/IEC 17025 accredited laboratory demonstrating compliance. Analytical tests are valid if they are conducted within three years from the date of application and have not been used in a prior certification or recertification cycle.

- Evidence of the laboratory's ISO/IEC 17025 accreditation and confirmation that the specific test method used is covered by the accreditation.
- If applicable and not part of the report, description of sampling approach and explanation of why the selected samples are representative of the products covered in the scope of the certification.

4.5 Optimizing Chemistry in the Supply Chain

Intended Outcome(s)

The use and emissions of hazardous chemicals in the product's supply chain are reduced or eliminated over time.

Applicable Achievement Level(s)

Platinum

Requirement(s)

Address hazardous chemicals in the product supply chain.

Hazardous chemicals in the product supply chain must be addressed by meeting one of the following:

1. 25% or more of the product's input materials or chemicals have a C2C Certified Material Health Certificate at the Gold or Platinum level or 15% or more are Cradle to Cradle Certified (Full Scope) at the Gold or Platinum level or equivalent (percentage is calculated following the approach described for "Determining Percentage Assessed" in Section 4.1 but summing certified materials and/or chemicals rather than assessed materials and/or chemicals).

Further Explanation

The method for calculating the percentage of certified input materials or chemicals is the same as the method for calculating the percentage assessed for the product in Section 4.1, with one exception: only the percentage of certified input materials and/or chemicals, rather than the percentage of all assessed materials and/or chemicals, is determined.

For product groups, the overall percentage of certified inputs is equal to the percentage for the product with the lowest percentage of certified inputs among all the products covered by the certification. For modular products, the overall percentage of certified inputs is equal to the percentage for the individual module with the lowest percentage of certified inputs among all those covered by the certification.

It is possible to combine Cradle to Cradle Certified inputs and inputs with Cradle to Cradle Certified Material Health Certificates in order to fulfill this requirement. If $(1.5 * \% \text{ C2C Certified inputs in the product by weight} + \% \text{ inputs with Cradle to Cradle Certified Material Health Certificates by weight}) = 75\%$ or more, the requirement has been met.

Inputs certified to any active version of the Cradle to Cradle Certified Products Program receive credit for this Section 4.5 requirement.

Please see the [C2CPH Recognized Certification Programs and Standards](#) for additional information on C2CPH-recognized standards that receive credit for this requirement.

Required Documentation

- Calculations showing how the percentage of certified inputs for the product or product group was derived.
- Certificates or registry links as evidence that all inputs being claimed as certified are covered by active certifications.

2. A cradle to cradle human and environmental health impact hotspot analysis has been performed based on life cycle assessment per ISO 14040 or equivalent, and each of the hotspots identified through this analysis is addressed by a strategy/plan to reduce hazardous chemical use and/or emissions in the supply chain of the product. Progress toward achieving reductions must be demonstrated at each recertification. The life cycle assessment must be verified by a qualified third party. The strategy/plan must include steps to positively impact (i.e., eliminate or reduce use or emissions of hazardous chemicals) each of the supply chain hotspots identified through the life cycle assessment.

Further Explanation

The methodology for completing a hotspot analysis must be informed by the [EU Product Environmental Footprint \(PEF\)](#) method as detailed in Commission Recommendation (EU) 2021/2279 (see Annex I, Section 6.3 and Annex II, Section A.6.1).

In alignment with the EU PEF method, the following impact categories, with data expressed in the units listed in Table 2 in Annex I, Section 3.2.3 of the EU PEF method (e.g., tCO₂ eq), are to be used:

Impact Category	Indicators (units)	Model and Source
Human toxicity - cancer	CTU _h (Comparative Toxic Unit for humans)	USEtox2.1 model (Fantke et al. 2017), adapted as in Saouter et al., 2018
Human toxicity - non-cancer	CTU _h (Comparative Toxic Unit for humans)	USEtox2.1 model (Fantke et al. 2017), adapted as in Saouter et al., 2018
Particulate matter	Disease incidence	PM model (Fantke et al., 2016 in UNEP 2016)

Photochemical ozone formation - human health	kg NMVOC eq	LOTOS-EUROS model (Van Zelm et al.) 2008 as applied in ReCIPE 2008
Ionizing radiation - human health	kBq U ²³⁵ eq	Human health effect model as developed by Dreicer et al. 1995 (Frischknecht et al, 2000)
Acidification	mol H+ eq	Accumulated exceedance model (Seppälä et al, 2006; Posch et al., 2008)
Ozone depletion	kg CFC-11 eq	EDIP model based on the ODPs of the World Meteorological Organisation (WMO) over an infinite time horizon (WMO 2014 + integrations)
Land use	Dimensionless (pt)	Soil quality index based on LANCA model (De Laurentiis et al. 2019) and on the LANCA CF version 2.5 (Horn and Maier, 2018)

The following impact categories are not required to be included for the Material Health category analysis (although these are required per the EU PEF method and will be useful in meeting the requirements of other Cradle to Cradle program categories):

- Climate change: This endpoint is covered within the Clean Air & Climate Protection category.
- Ecotoxicity - freshwater: This endpoint will be covered in the Water & Soil Stewardship category.
- Eutrophication - freshwater, terrestrial, and marine: This endpoint will be covered in the Water & Soil Stewardship category and is also indirectly tied to energy use and type/quality.
- Water use: This endpoint will be covered in the Water & Soil Stewardship category.
- Resource use (fossil, metals, and minerals): This endpoint is indirectly covered by the Product Circularity requirements and Clean Air & Climate Protection requirements.

Also in alignment with the PEF method (see Annex I, Section 4.2), the following life cycle stages are to be included in the analysis:

- Raw material acquisition and pre-processing (including production of parts and components).
- Manufacturing (production of the main product).
- Distribution (product distribution and storage).
- Use stage.
- End-of-life (including product recovery or recycling).

Note: For intermediate products, distribution (only justified exceptions), product use and end-of-life stages may be excluded from consideration. Therefore, life cycle stages for intermediate products are limited to those occurring from the extraction of resources through the production process to the factory gate (cradle-to-gate).

A summary of the process for the identification of hotspots based on Annex I, Section 6.3 of the EU PEF is as follows:

- Impact categories that cumulatively contribute to at least 80% of the single overall score, starting from the largest contributions. These are the most relevant impact categories.
- Life cycle stages that cumulatively contribute to more than 80% any of the most relevant impact categories identified, starting from the largest contribution.
- Processes that cumulatively contribute (along the entire life cycle) to more than 80% any of the most relevant impact categories identified. These are the most relevant processes.
- Elementary flows that cumulatively contribute to more than 80% of any of the most relevant impact categories for each most relevant process, starting from the largest contribution.

Additional methods that may inform the analysis are as follows. These may be employed as long as the requirements in the standard and guidance are also met.

- [UNEP/SETAC Life Cycle Initiative Hotspots Analysis: Methodological Framework and Guidance](#).
- Other methods may be added here in the future at the discretion of C2CPIL.

Required Documentation

- All points mentioned in Annex II, E.1 Summary of the [EU Product Environmental Footprint \(PEF\)](#) method are to be provided:
 - The goal and scope of the study with relevant limitations and assumptions.
 - A description of the system boundary.
 - The main results of the life cycle impact assessment (LCIA): these shall be presented showing the results of all environmental footprint (EF) impact categories (characterized, normalized, weighted).
 - Relevant statements about data quality.
 - A description of what has been achieved by the study, any recommendations made and conclusions drawn. This must include a list of the hotspots identified using the definition above.
- Evidence of Life Cycle Assessment verification and third-party qualifications.

4.6 Transparency

Intended Outcome(s)*

Product and manufacturing data are available to stakeholders, demonstrating the manufacturer's commitment to accountability for their impacts and encouraging ever-improving performance.

Applicable Achievement Level(s)*

Bronze, Silver, Gold, and Platinum

Requirement(s)*

Publicly disclose information and/or data consistent with the product's level of achievement in the Material Health category, as defined by the requirements in the Cradle to Cradle Certified Transparency Requirements reference document.

***Note:** At the time of publishing the Version 5.0 standard, the Material Health disclosures are required for the C2C Certified Material Health Standard only. These Material Health disclosures are recommended for the C2C Certified (Full Scope) Standard. To obtain a C2C Certified Material Health certification together with C2C Certified (Full Scope) certification, the disclosures are required. Please see the most recent version of the Transparency Requirements reference document for the applicable requirements, as this reference document may be updated periodically even if the standard version has not changed.

Further Explanation

For additional information and documentation requirements please refer to the [Transparency Requirements](#) reference document and Transparency Report Form. The Form is available to Cradle to Cradle Certified Conformity Assessment Bodies.

5 // Product Circularity Requirements

Category Intent

Products are intentionally designed for their next use and are actively cycled in their intended cycling pathway(s).

Requirements Summary

To achieve a desired level within the category, the requirements at all lower levels must also be met.

Requirement	Bronze	Silver	Gold	Platinum
5.1: Intended cycling pathway(s) for the product and its materials are defined.	●	●	●	●
5.2: Potential cycling partners have been identified.	●	●	●	●
5.3: Select product and material types contain cycled and/or renewable content. Alternative: Limitations that prevent achievement of this requirement are publicly reported.	●	●	●	●
5.4: ≥ 50% of materials by weight are compatible with the intended cycling pathway(s) (e.g., recyclable, compostable, or biodegradable).	●	●	●	●
5.2: Partnerships for cycling (recovery and processing) of the product have been initiated. If the product is intended for cycling via municipal systems, materials are compatible with those systems.		●	●	●
5.3: Percentage of cycled and/or renewable content, by weight, is equal to or higher than industry averages and/or is consistent with common practice. Alternative: Limitations that prevent achievement of this requirement are publicly reported.		●	●	●
5.4: ≥ 70% of materials by weight are compatible with the intended cycling pathway(s) (e.g., recyclable, compostable, or biodegradable).		●	●	●
5.2: Partnerships for cycling (recovery and processing) of the product according to <u>all</u> intended cycling pathways have been initiated.			●	●

5.3: Percentage of cycled and/or renewable content, by weight, is consistent with values achieved by industry leaders for the product type. Alternative: Limitations that prevent achievement of this requirement are publicly reported.			●	●
5.4: ≥ 90% of materials by weight are compatible with the intended cycling pathway(s) (e.g., recyclable, compostable, or biodegradable) and support high-value cycling. This means that the materials are of high quality and are likely to retain their value for subsequent use. 5.6: If relevant, parts containing these materials are designed for easy disassembly.			●	●
5.5: A circular opportunity or innovation that increases product circularity has been implemented.			●	●
5.7: The product is actively cycled (recovered and processed) and/or a program is implemented to increase the cycling rate or quality of the product's materials after use. (Both are required for short-use phase products and for products required to be cycled per leading regulations; one is required for long-use phase products.) For select single-use plastic products, a minimum cycling rate of 50% is achieved.			●	●
5.3: Percentage of cycled and/or renewable content, by weight, has reached the technically feasible maximum.				●
5.4: ≥ 99% of materials by weight are compatible with the intended cycling pathway(s) (e.g., recyclable, compostable, or biodegradable). 5.6: If relevant, parts containing these materials are designed for easy disassembly.				●
5.7: The product is actively cycled in an amount consistent with the product's use phase (the shorter the use phase, the higher the minimum percentage required) and a program is implemented to increase the cycling rate or quality of the product's materials after use.				●

5.7: Cycling rates and quality are monitored over time, and an increase in cumulative cycling rate or quality is demonstrated.				●
5.8: Publicly disclose information and/or data consistent with the product's level of achievement in Product Circularity. (See the Transparency Requirements reference document for details.)	●	●	●	●

Further Explanation

Product Circularity – Framework

It is helpful to understand the conceptual framework of the Product Circularity category before reviewing the details of individual requirements. Product Circularity consists of three requirement focus areas: Circular Sourcing, Circular Design, and Circular Systems. The individual standard sections fit into the framework as follows.

- Circular Sourcing:
 - Section 5.3: Increasing Demand: Incorporating Cycled and/or Renewable Content
- Circular Design:
 - Section 5.1 Defining the Product's Technical and/or Biological Cycles
 - Section 5.4 Material Compatibility for Technical and/or Biological Cycles
 - Section 5.5 Circular Design Opportunities and Innovation
 - Section 5.6 Product Designed for Disassembly
- Circular Systems:
 - Section 5.2 Preparing for Active Cycling
 - Section 5.7 Active Cycling
 - Section 5.8 Transparency

The Circular Sourcing requirements focus on maximizing the amounts of cycled and/or responsibly sourced renewable content in products to support the demand side of circularity.

The Circular Design requirements focus on intentional product design that will enable cycling after use. This includes identifying the appropriate cycling pathways for products and materials, selecting materials with high cycling capacity and value, and designing the product so that it is compatible with the intended cycling pathways.

The Circular Systems requirements focus on ensuring the product is cycled after use. Initially, this requires developing a plan to address the challenge(s) inhibiting development of the cycling infrastructure for the product at the end of its first use. In addition, this requires providing information to product users to enhance cycling potential and developing (or supporting the development of) the systems and infrastructure required so that cycling can occur.

The term “cycling” is used throughout the standard. Per the Definitions section, this term refers to the processing of material, parts, or whole products toward a new use cycle via a technical or biological cycling pathway. The term encompasses the various methods of doing so, including reusing, repairing, refurbishing, remanufacturing, repurposing, recycling, composting, and biodegradation. The terms cyclable and recyclable are not widely used in the standard. This is because these terms have been deconstructed into their critical underlying elements—sourcing, design (including design for disassembly and compatibility for cycling), and systems. All three of these are necessary to ensure that materials are cyclable and recyclable.

5.1 Defining the Product’s Technical and/or Biological Cycles

Intended Outcome(s)

The applicant has designated all homogeneous materials subject to review in the product as either biological or technical and has identified appropriate cycling pathways for those materials once the product has reached the end of its current use cycle.

Applicable Achievement Level(s)

Bronze

Requirement(s)

Bronze level: Designate all homogeneous materials subject to review in the product as being intended for technical and/or biological cycles and define the intended cycling pathway(s) for each material. For materials designated for technical cycles, recycling must be one intended cycling pathway.

The following homogeneous materials must be designated for the biological cycle:

1. Materials designed to be released directly to the biosphere as part of their intended use or cycling pathway (e.g., liquid cleaning products, soaps, perfume, toilet paper),
2. Biological or biologically derived materials commonly released to the biosphere, and
3. Coatings, finishes, or liquids applied to materials intended for biological cycles.

For intermediate and wet-applied products, the Bronze level requirements must be applied in the context of at least one relevant finished product or applied substrate example application, respectively.

Further Explanation

Designating Materials for Technical and/or Biological Cycles

For the Bronze level, all homogeneous materials in the product that are **subject to review** must be designated as being intended for technical and/or biological cycles.

“Subject to review” is defined for Material Health in Section 4.1 Inventory and Assessment of Chemicals and Materials. In general, homogeneous materials present at a concentration $\geq 0.01\%$ (≥ 100 ppm) in the applicant product are subject to review. There is one exception to this limit in the Material Health category as follows: *Any homogeneous material in the final product that comes into routine and direct human contact during the normal use of the product is subject to review at any concentration.* This exception does not apply in the Product Circularity category because it is purely relevant to concerns with exposure to hazardous chemicals (which are addressed in the Material Health category).

The following definitions are included in the Definitions section:

Biological cycle – *The cycle by which materials or parts are released to, and ideally reprocessed in, the environment via composting, biodegradation, or other biological metabolic pathways.*

Technical cycle – *The cycle by which a product’s materials or parts are reprocessed for a new product use cycle via recycling, repair, refurbishment, remanufacturing, or reuse.*

Metals (e.g., steel, aluminum) are examples of materials that are appropriate for the technical cycle. Note that some materials may be appropriate for both the biological and technical cycle. Paper, for example, is highly recyclable as well as commonly biodegradable. Unless specified by the standard and explained below, it is not mandatory to designate biological materials to the biological cycle.

Homogeneous Materials that Must be Designated for the Biological Cycle

- Materials that are directly released to the biosphere as part of their intended use or cycling pathway.
- Examples: Toilet paper, cleaning products, and personal care products that are used in ‘down the drain’ type applications (e.g., shampoo) are, by design, intended for the biological cycle. Materials that are intentionally released into soil, water bodies, or the environment, where it is not feasible to recover them must also be designated for the biological cycle. Materials intended to be used in technical installations with soil contact, such as road construction and building foundations, are not considered directly released to the biosphere.
- Biological and biologically derived materials commonly released to the biosphere.
- This currently includes **paper** versions of single-use products (i.e., products designed and conceived to be used only once) that are commonly littered. Single-use products that are commonly littered are currently defined as all of those covered by the [EU Single Use Plastic Directive](#) (see Annex), which in turn derived its scope from marine litter. Other biological and biologically derived materials are not required to be considered commonly released to the biosphere at this time (e.g., cotton, paper materials in intermediate products, and non-single-use products).

- Coatings, finishes, or liquids applied to materials intended for biological cycles.
- This must be determined based on the most common cycling pathway of the materials (substrates) relevant to the wet-applied products. For example, a coating applied to a cellulose fiber based product that is most commonly composted must be designated for the biological cycle.

Defining the Intended Cycling Pathways

In addition to designating materials for the biological and/or technical cycle, the intended cycling pathway(s) for each material must be defined. The following definition is included in the Definitions section:

Cycling pathway – *A specific method, system, or other means of processing a material at the end of its use phase. Examples include: municipal recycling, home composting, aerobic biodegradation in wastewater (i.e., at municipal treatment plant), take-back and repair/remanufacture by the manufacturer*

Technical Cycling Pathways

If a material is designated for the technical cycle, one or more of the following must be selected as the intended cycling pathway(s)—**one of which must be recycling**. Recycling must always be a designated pathway because it is not possible to endlessly reuse, repair, refurbish, remanufacture, and/or repurpose.

- Reuse
- Repair
- Refurbish
- Remanufacture
- Repurpose
- Recycling (mechanical or chemical).

“Recycling” is defined as the process by which a material, after serving its intended function, is processed into a new material via mechanical or chemical transformation and then added to a new material formulation in a different context.

Notes: For liquid or particulate products, recycling does not necessarily require size reduction, remelting and/or chemical transformations. For example, the recovery of leftover paints which are mixed, repackaged and resold may be considered recycling. For loose-fill insulation, the recovery of the product during demolition or reconstruction and “reuse” in a different construction project may be considered recycling.

Incineration and waste-to-energy/energy recovery are not recycling. Energy recovery is not an accepted cycling pathway for the purposes of the Product Circularity requirements. However, the recovery of inorganic materials (or similar) from a composite material in an incineration process for use in a new material may be considered recycling. The portion incinerated may not be considered recycled.

Materials that are also designated to a technical cycling pathway and at least one active biological

cycling pathway (i.e., nutrient extraction, anaerobic digestion, industrial and home composting) are not required to always be intended for recycling. This means that it is possible for material to be intended for industrial composting and reuse only.

Other “R-strategies” not listed above (refuse, rethink, and reduce) are addressed in other sections of the Product Circularity category, to the degree they relate to product design. For example, see Section 5.5 Circular Design Opportunities and Innovation where credit is given for refillable systems and durability (as examples).

Biological Cycling Pathways

If a material is designated for the biological cycle, one or more of the following must be selected as the intended cycling pathway(s):

- Nutrient extraction
- Anaerobic digestion
- Composting (Home)
- Composting (Industrial)
- Biodegradation (Soil)
- Biodegradation (Water)
- Biodegradation (Anaerobic)

Note: Solid materials intended for the biological cycle may rely solely on passive biodegradation cycling pathways (e.g., soil, water, or anaerobic), only when their intended use case directly aligns with such pathways. An example would be toilet paper. For other products, please contact C2CPII to confirm. In all other cases, at least one additional pathway, either recycling or an active biological cycling process (such as industrial composting, home composting, anaerobic digestion, or nutrient extraction), must be also selected for solid materials. For example, a cotton t-shirt may be designated to both recycling and soil biodegradation as intended cycling pathways but not soil biodegradation alone.

Requirements for All Pathways

It must be possible to cycle the product via the chosen intended pathway(s), at least at the pilot scale (e.g., at small-scale under “normal” processing conditions). This may be demonstrated specifically for the product or for one or more similar product(s) that is/are already being cycled in the intended pathway(s). A similar product is defined as a product with similar application/use, material composition, disassembly requirements, and end-of-use conditions.

In addition to specifying the pathway (i.e., process(es) in the lists above), the applicant must also specify the entity intended to carry out the process (i.e., consumer, municipal waste processing facility, the applicant, current or future partner organization(s), etc.) per the requirements in Section 5.2.

Important note: All intended pathways for the product seeking certification must be included and verified as part of the certification process. Example: If a certified product is to be marketed as being both recyclable and compostable, both recycling and composting (industrial or home) must be selected

as intended cycling pathways. All requirements applicable to these intended pathways apply. It is not permitted to include only some of the intended pathways in the certification while excluding others. Please contact C2CPH when in doubt.

Intermediate and Wet-Applied Products

The standard notes: *For intermediate and wet-applied products, the Bronze level requirements must be applied in the context of at least one relevant finished product or applied substrate example application, respectively.*

The intended cycling pathway of an intermediate product depends on the most common cycling pathway of the relevant finished product.

For wet-applied products, the most common cycling pathway of a relevant substrate application must be determined for the assessment of Section 5.4 requirements. The substrate may be either the material in direct contact with the wet-applied product, or alternatively the main material of the underlying structure in which the wet-applied product is applied (concrete in a concrete wall).

For example, for paint intended to be applied on steel, the steel recycling pathway must be considered because steel is commonly recycled. For substrates in the technical cycle, recycling must be selected even when the evidence shows that recycling is not commonly executed in practice (i.e., the substrate is often landfilled or incinerated).

It is recommended, but not mandatory, to select the most common finished product or substrate application. At minimum, the selected finished product or substrate must be relevant.

An additional intended cycling pathway must be indicated for wet-applied products when they are not cycled together with the substrate and incorporated into the recycled material (e.g., paint intended to be applied to metals that is burnt off when the metal is recycled). This may be for the unused wet-applied product, or the product as applied. For example, when leftover paint is collected from the end users for recycling, or when the wet-applied product is removed from the substrate to be cycled separately.

Concrete and plaster used as structural elements instead of as a coating are not considered wet-applied products for the purposes of Section 5, and thus the intended cycling pathway depends on concrete and plaster itself. Wet-applied products that have the same formulation but that are marketed for different pathways are considered separate products (and thus need to meet the requirements on their own).

Required Documentation

- C2C Certified Bill of Materials Form or similar including the intended cycling pathway(s) for each homogeneous material.

- Evidence that materials in the product can be cycled via the chosen intended pathway(s), including a description of at least pilot scale cycling for the applicant product or similar, and indication of the entity(ies) intended to carry out the process. If the evidence is for a similar product, a description of how the comparable/similar product is similar in application/use, material composition, disassembly requirements, and end-of-use conditions is required.
 - For cycling processes where the output material is not the same type as the input(s) (e.g., production of shredded material from mixed textiles or pyrolysis of plastic waste producing monomers), explanation and evidence on how the output has further use(s).
 - For technical materials that are intended for a recycling pathway and are commonly known to be recyclable (i.e., steel, aluminum/aluminium, copper, paper, and grades of HDPE, PET, and PP used for packaging), a comment/description in the Bill of Materials Form is sufficient. Additional evidence is not required to demonstrate that these materials can be cycled via a recycling pathway.
 - For down-the-drain type formulations intended for biodegradation (e.g., shampoo, laundry detergent, toilet cleaner, general household surface cleaner), the evidence required in Section 5.4 Material Compatibility for Technical and/or Biological Cycles is sufficient and may be referenced for the purposes of achieving this requirement in Section 5.1.
 - For other materials, the required evidence may include, for example, documentation of successful cycling pilot studies/experiments, industry reports, and/or journal articles.
 - Lack of evidence for minor product components (e.g., inks, adhesives, coatings, finishes) is acceptable.
- For intermediate or wet-applied products, evidence (e.g., industry reports or journal articles) indicating the most common cycling pathway for the final product or substrate, including the entities that carry out the process. When cycling is not common, evidence of the end-of-life disposal method of the final product or substrate. For technical materials that are intended for a recycling pathway and are commonly known to be recyclable (i.e., steel, aluminum, copper, paper, and grades of HDPE, PET, and PP used for packaging), a comment/description in the Bill of Materials Form is sufficient.

5.2 Preparing for Active Cycling

Intended Outcome(s)

The applicant has taken demonstrable steps toward addressing any barriers to material recovery and processing in order to actively cycle those materials for their next use.

Applicable Achievement Level(s)

Bronze, Silver, and Gold

Requirement(s)

Bronze level: Identify potential partners that can recover and process the product.

Silver level: Initiate partnerships for recovery and processing of the product according to its intended cycling pathway(s). If there is more than one intended pathway for individual materials, partnerships may focus on one of those pathways (e.g., reuse, repair, refurbish, remanufacture, or recycling for the technical cycle). If the product is intended for cycling via municipal systems, use materials that are compatible with those systems.

Gold level: Initiate a partnership for recovery and processing of the product according to all intended cycling pathway(s).

For the Bronze level, the applicant company has identified potential partners or internal resources for product recovery and processing in accordance with the intended cycling pathway(s) in countries and/or states that cumulatively cover a region accounting for 60% or more of product sales. Products intended to be cycled via municipal systems or addressed by regional/national product stewardship laws are exempt from this requirement.

Further Explanation

Determining if 60% or More of Product Sales are Covered (Bronze level)

At the Bronze level, potential partners, internal resources, or suitable municipal cycling systems must be *identified in countries and/or states that cumulatively cover a region accounting for 60% or more of product sales*. To determine if the required 60% has been achieved:

- List the countries and/or (for the United States and other countries where appropriate) states/regions where the product is sold and where the partners and/or internal resources for product recovery and processing have also been identified (or where the exemption for municipal cycling applies).
- List the percentage of applicant product sales that occurs in each of these countries and/or states/regions. For products that are new to the market without product specific historical data, sales may be estimated from data for similar product(s) for the purposes of the initial certification.
- Check that the sum of these percentages is $\geq 60\%$.

The standard notes that *Products intended to be cycled via municipal systems or addressed by regional/national product stewardship laws are exempt from this requirement*. See the Silver level requirements and related Further Explanation box to determine when a material or product may be considered exempt due to the existence of a suitable municipal cycling systems or stewardship laws. Note that, typically, municipal cycling is not relevant to building materials.

Receiving Credit for Repair

To receive credit for repair as an intended pathway, it must be demonstrated that repair contributes to a longer use phase compared to the norm/most common for the product type. For example, repairing tires is common practice as part of normal use and is not expected to extend the use phase of a tire

beyond the most common use phase time (i.e., mode). See the information in Section 5.5 Circular Design Opportunities and Innovation, Further Explanation box, for determining the most common use phase time (i.e., mode) for the product type.

For the Silver level, one or more of the following is required for at least one intended pathway in countries and/or states that cumulatively cover a region accounting for 60% or more of product end sales:

1. The applicant company or retail partner has initiated partnership(s) or dedicated internal resources for product recovery and processing. (Initiation of a partnership is defined as the applicant company having an active agreement or contract(s) with entities involved in the recovery and processing of the product for another use cycle.)
2. A product stewardship law or program for the particular product type is in place (e.g., California Carpet Stewardship Law).
3. If intended for cycling via municipal systems, materials are a type that is commonly recycled or composted via curbside pickup and the material is accepted by municipal recycling programs in the region(s) where the product is sold.

For liquid formulations and formulated products in technical cycling pathways (e.g., paint and similar wet-applied products), Silver level may alternatively be achieved by meeting the Gold level requirements in Section 5.5 Circular Design Opportunities and Innovation. This alternative is not applicable at the Gold level.

For the Gold level, the Silver level requirements must be applied to all additional intended pathways (if any).

Further Explanation

Determining if 60% or More of Product Sales are Covered (Silver level)

To determine if the required 60% has been achieved:

- List the countries and/or (for the United States and other countries where appropriate) states/regions where the product is sold and where one or more of the cycling solutions as listed in #1-3 above has been initiated.
- List the percentage of applicant product sales that occurs in each of these countries and/or states/regions. For products that are new to the market without product specific historical data, sales may be estimated from data for similar product(s) for the purposes of the initial certification.
- Check that the sum of these percentages is $\geq 60\%$.

Liquid Formulations and Formulated Products

For liquid formulations and formulated products that are not exempt (e.g., paint not intended for the biological pathway), Section 5.2 requirements may be met either for the applied product (i.e., the liquid formulation or formulated product is recycled separately or together with the substrate after use) **or** the unused product (e.g., collection of leftover paint for recycling). Wet-applied products may only get credit using the recycling system of the substrate(s) when the wet-applied product is incorporated into the recycled substrate material, instead of being removed and/or discarded during the substrate recycling process.

Receiving Credit for Partnerships or Dedicated Internal Resources (Pathway #1)

This is the only option for products for which there is no product stewardship or extended producer responsibility laws in place and/or no government funded (municipal) cycling infrastructure available. Partnerships may be newly and uniquely tailored to a specific certified product offering or involve voluntary participation in existing privately operated systems.

To receive credit, internal systems and/or partners must be capable of recovering and processing the product for its next use in each of the regions that count towards the 60%. For example, a product take-back offer is available to end users in each of the regions that receive credit. Take-back and/or processing systems may be different for each region. Processing facility(ies) need not be present in all regions as long as there is a system ensuring collected product from each region is sent to the relevant facility(ies) for processing.

The processing partner (or internal systems) must be able to process the product as made. For example, to receive credit for a partnership with a textile collection and recycling company (if not using the municipal recycling route described below), it must also be demonstrated that the company can process the specific fiber blend and/or product composition. Note that certain fiber blends and product characteristics may not be accepted or recycled by some potential textile recycling partners and parts of some product types may be cut out and removed. This will have to be determined on a case-by-case basis when depending on partners for product cycling.

For materials in technical cycles, Silver level may be achieved with partnership(s) for reuse, repair, refurbish, remanufacture only. Recycling partnership(s) are required to achieve Gold level.

Example: [RESEAT](#) and [Rheaply](#) are examples of potential cycling partners for furniture products for reuse. Applicants should assess the applicability of partners to their products and intended cycling pathways on a case-by-case basis.

Home composting

For home composting, end users may be considered the cycling partners. Companies must ensure home composting instructions are publicly available to end users to receive credit for this pathway in Section 5.2. Test requirements in Section 5.4 also apply.

Receiving Credit for Product Stewardship Laws (Pathway #2)

Note: “Product Stewardship Laws” includes extended producer responsibility laws. These laws often provide funding for municipal cycling systems and so the two (i.e., the laws and municipal systems) are not necessarily mutually exclusive.

In the European Union, an Extended Producer Responsibility scheme is in place, covering:

- The following products sold on the EU market: Batteries, end-of-life vehicles, vehicle tires, waste electrical and electronic equipment (per the Waste from Electrical or Electronic Equipment (WEEE) Directive), and packaging.
- Textile and apparel products: Based on the EU Waste Framework Directive, all EU Member States must establish systems for the separate collection of textiles by 1 January 2025. This is considered municipal cycling for the purposes of the Cradle to Cradle Certified standard (although the actual funding and management structure may vary by member state). See the municipal cycling section below for additional information. In addition, the EU Waste Framework Directive is in revision to require mandatory and harmonized Extended Producer Responsibility (EPR) schemes for textiles in all EU Member States.
- In France: Mattresses, furnishings, printed paper, balloons, wet wipes, fishing gear, toys, sports and leisure articles, DIY and gardening products, construction materials and construction demolition waste.
- In the Netherlands: Balloons, wet wipes, tobacco products with filters, single-serve food packaging, disposable cups, bags and wrappers, light plastic carrier bags, beverage packaging (and fishing gear as of 2025).

For products in which the laws listed above apply, a reference to this list in the Certification Manual with evidence and explanation that the product is in scope of the law is sufficient.

The stewardship law must include product end-of-use management and cycling requirements to receive credit. Laws that have passed, but that are not yet implemented, receive credit if implementation will occur within one year of application for certification and the median product use phase is greater than one year.

Receiving Credit for Municipal Cycling (Pathway #3)

A municipal cycling system is a structured program managed by local governments to collect, sort, and process cyclable materials from households, businesses, and other sources. For materials in construction and demolition waste, refer to the applicable requirements in the section titled “Materials in Construction and Demolition Waste” below.

“Curbside pickup” includes pick up from recycling bins that are widely available at curbside and/or throughout a community. Curbside pickup also includes pickup directly from individual households (e.g., by recycling trucks).

If the system is not curbside (e.g., centralized collection points and/or take-back at stores), additional evidence is required to demonstrate that cycling through the system is common practice. This applies, for example, when relying on civic amenity sites, which are typically not widely distributed throughout a

community. Regional statistics showing that the relevant materials are commonly cycled through the system is accepted, i.e., $\geq 20\%$ actively cycled. Please refer to Section 5.8 for the definition of active cycling. The evidence must be specific to the intended cycling pathway and should come from more than one scientific article or independent reports, or official statistics not older than five years. Other forms of evidence may also be considered.

The following materials may be automatically considered *commonly recycled or composted via curbside pickup* as required for Requirement #3 above. If a product made from these materials are accepted by municipal recycling programs in the region (country or state) where the product is sold, the region may be counted towards the required 60%. Some product types are not accepted by municipal cycling programs, please refer to the section titled “Product type must be accepted by municipal cycling programs” below.

- For all regions: aluminium/aluminum, steel, paper, and glass.
- For the European Union and Switzerland: polyethylene terephthalate (PET), high-density polyethylene (HDPE), and polypropylene (PP).
- For the United States and other regions not included in the bullet above: PET and HDPE (PP is excluded).

For other materials not listed above, regional evidence is required to demonstrate *commonly recycled or composted via curbside pickup* and the acceptance of that material and product type combination in that system.

Textiles and Apparel

Textiles are primarily collected by charitable and commercial collectors, with municipal waste companies increasingly playing a role in used textile collection. When the term “municipal cycling” is used it could involve charitable or commercial collectors, offering regional public collecting systems, like dedicated textile bins on the street, called “curbside pickup”.

It may be assumed that textiles and apparel are accepted by municipal recycling programs in all EU Member States as this is required by law (per the Waste Framework Directive) by 2025.

- **Reuse** may be assumed ‘common’ for all EU Member States given that separate collection is required by law as of 2025 and reuse rates are already high. As per Circular Economy Perspectives in the EU Textile sector, European Commission Joint Research Center, June 2021: “Reuse shares typically range between 50% and 75% depending on the country where the textiles were collected and how the collection was carried out.”

Note: This is especially relevant to the Silver level because reuse may be the only intended cycling pathway for which cycling partnerships or systems are in place for achieving the Silver level in Section 5.2 Preparing for Active Cycling requirements. In other words, all EU countries may automatically be counted towards the required 60% at the Silver level for the reuse pathway.

Textile and apparel items commonly sorted for reuse include outerwear, pullovers, t-shirts shirts, pants and shorts, dresses, skirts, jackets, household textiles, shoes, and accessories. Items that are

not commonly sorted for reuse include workwear, socks, tights, and undergarments. These items cannot be considered commonly cycled (i.e., reused) via municipal systems.

- **Recycling** may also be assumed 'common' for all EU Member States given that separate collection is required by law as of 2025.

Note: After separate collection, recycling is usually considered only after the reusable fraction is sorted out. It should be noted that most of the non-reusable material is downcycled. In EU countries with available data, recycling rates were greater than 10%. Materials (and products) that are of a type commonly recycled via these systems are defined in Section 5.4 Material Compatibility for Technical and/or Biological Cycles. When the compatibility requirements for municipal recycling are met, private partnerships or dedicated internal resources for recycling are not required for sales in the EU.

Note on Industrial Composting: Textiles are not typically accepted by municipal (or other) industrial composting facilities. Regional research is needed to find out if industrial composting facilities (per region) would allow textiles to be part of their composting system.

Product Type Must be Accepted by Municipal Cycling Programs

Products that are not household waste at their end-of-life, for example, those that will be cycled as part of construction and demolition waste, bulky waste (e.g., furniture), or industrial waste may not automatically be categorized as *materials are a type that is commonly recycled or composted via curbside pickup and the material is accepted by municipal recycling programs in the region(s) where the product is sold*. To place non-household waste in this category, evidence must be provided showing that both portions of the requirement are met for the specific product type (i.e., curbside/construction site pickup and acceptance by the related municipal cycling facilities is required). For example, glass is commonly recycled via curbside pickup and recycled through municipal programs as noted in the bullets above. However, if the product is window glass it may not be possible to recycle it via the usual municipal curbside pick programs which are often limited to recovery and recycling of glass bottles and similar.

Materials in Construction and Demolition Waste

Municipal cycling systems are typically set up for municipal solid waste (e.g., household waste) and not construction and demolition waste. For materials in construction and demolition waste to receive credit via Pathway #3, evidence must be provided. Examples of accepted evidence include one (or a combination) of the following:

- **Cycling is required by regulations:** Demolition projects and/or operators are required by law or local regulations to source separate the material for cycling (i.e., sort materials for cycling by type at the construction or demolition site). Alternatively, it is required to arrange for the treatment of (mixed) construction and demolition waste, such as through industrial recycling services. In addition, the regional treatment facilities must either be capable of or required by law or local regulations to sort out the specified materials for cycling, when no separate collection is required and sorting is necessary for the relevant cycling pathway.

Example: Ferrous and non-ferrous metals* in construction and demolition waste may meet this requirement in Germany through the German Commercial Waste Ordinance – GewAbfV. The ordinance mandates the separate collection of metals and sets minimum technical requirements for the operation of mixed commercial waste sorting facilities, including metal separation units.

- **Cycling is common practice supported by due diligence:** Regional evidence showing that the relevant materials are commonly cycled (i.e., $\geq 20\%$ actively cycled) through established treatment systems for construction and demolition waste, indicating that no additional internal resources or partnerships are needed. The evidence must be specific to the intended cycling pathway and should come from more than one scientific article or independent report, or official statistics not older than five years.

Example: Construction and demolition waste were shown to be recovered at a rate of 82%, and 100% of the metals* were sent for recycling in [Ireland](#).

*Metals may be assumed to include steel and aluminum since they are commonly recycled. Other materials require more specific evidence beyond just having regulations for separation, or generic cycling statistics for metals.

Exemptions

Products with a use phase greater than one year that have been on the market for less than their average use phase are exempt from the Silver level requirement at initial certification.

The following are exempt from all requirements in this section:

1. Intermediate products.
2. Liquid formulations and formulated products intended for biological cycling pathway(s) that require no intervention for active cycling to occur.

Further Explanation

Exemptions

Liquid Formulations and Formulated Products

The standard states that 2. *Liquid formulations and formulated products intended for biological cycling pathway(s) that require no intervention for active cycling to occur* are exempt from all Section 5.2 requirements (all achievement levels). This exemption also applies more generally to products that are designed to be biodegradable, are demonstrated to be compatible for the biodegradation pathway (per the applicable requirements in Section 5.4 Material Compatibility for Technical and/or Biological Cycles), and for which no intervention is needed to ensure active cycling occurs (e.g., passive biodegradation in water or soil). This will be true when the most likely cycling pathway aligns with the intended end-of-use

pathway. For example, in addition to liquid formulations, this may also include non-liquid cosmetics and personal care consumables (e.g., solid soaps, face powder, and lipstick). The exemption for liquid formulations applies in this way to all instances where liquid formulations are noted as being exempt throughout the Product Circularity category.

The standard states that *For liquid formulations and formulated products in technical cycling pathways (e.g., paint and similar wet-applied products), Silver level may alternatively be achieved by meeting the Gold level requirements in Section 5.5 Circular Design Opportunities and Innovation. This alternative is not applicable at the Gold level.* This means that liquid formulations and formulated products that are not exempt according to the exemptions section (e.g., paint in technical cycles) may still be exempt from Silver level requirements if the Section 5.6 Product Designed for Disassembly Gold level requirements are met for the product. Bronze level requirements to identify internal resources and/or cycling partners still apply. In addition, to achieve overall Gold level in Product Circularity, Section 5.2 Gold level requirements must also be met. This means that municipal cycling systems, stewardship laws, partnerships, and/or internal resources must be in place at the Gold level.

Products with a Use Phase Greater than One Year

Products with a use phase greater than one year that have been on the market for less than their average use phase, the exemption only applies at the Silver level at initial certification. This means that at recertification at any level, or initial certification at the Gold level, this exemption may not be applied.

Intermediate Products

Intermediate products are exempt from all Section 5.2 requirements (all achievement levels). Please refer to Section 12: Definitions for an explanation of products that may be classified as intermediate products.

Biological or Biologically Derived Material that Must be Designated to the Biological Cycle

Section 5.1 Defining the Product's Technical and/or Biological Cycles requires that select paper products (i.e. paper products that are single-use and commonly littered) be designated for the biological cycle. Paper materials in these select products that meet Section 5 requirements for the recycling pathway, and that are not marketed for the biological pathway are not required to meet Section 5.2 requirements for the biological pathway—even though they must be designated to a biological pathway, and testing must be conducted as per Section 5.4.

Required Documentation

Bronze Level

- List of partners identified (if applicable).
- Evidence that 60% of product sales are covered by planned partnerships, planned internal

- resources, stewardship laws, and/or by municipal cycling programs (see Pathway #3 at the Silver level), as applicable.

Silver Level

- Calculations used to determine that 60% of product sales is covered by existing partnership(s), existing internal resources, stewardship laws, and/or by municipal cycling programs for at least one intended pathway. This requirement also applies to biological cycles, such as for municipal industrial composting, unless no intervention is needed to ensure active cycling occurs.
- Pathway #1: Evidence of partnership(s) and/or internal resources, if applicable. Evidence of internal resources may include (for example) job descriptions of staff responsible for product recovery and processing (where such activities are noted in the job descriptions) combined with evidence of these activities occurring internally. The evidence must show that the partnership(s) and/or internal systems are able to recover and process (e.g., recycle) the product as designed.
- Pathway #2: Evidence of active stewardship law(s) and their applicability to the product and/or material type, if applicable.
- Pathway #3: Municipal cycling.
 - For materials listed as commonly recycled via curbside pickup, evidence that the materials and product type are accepted by the recycling programs in the region(s).
 - For materials not listed as commonly recycled via curbside pickup, regional evidence that the materials and product type are *commonly recycled or composted via curbside pickup* (e.g., $\geq 20\%$ active cycling rates or other evidence that recycling or composting via curbside pickup is common practice) and accepted by cycling programs in the region(s).
 - For non-curbside municipal cycling systems, evidence that cycling through the system is common practice (e.g., $\geq 20\%$ active cycling rates or other evidence that cycling through the system is common practice) in the region(s), if not already provided.
- (Alternative) Pathway #3 for materials cycled as part of construction and demolition waste: Evidence that cycling is required by regulations and/or evidence that cycling is common practice in the region(s). Evidence must be specific to the material type (e.g., HDPE or PET).
- If claiming the exemption for products with a use phase greater than one year that have been on the market for less than their average use phase, evidence of how use phase duration was determined per Section 5.7 Active Cycling, Required Documentation section.

Gold Level

- Same as for Silver level with documentation provided for all intended cycling routes (including recycling for products and materials in technical cycles).

5.3 Increasing Demand: Incorporating Cycled and/or Renewable Content

Intended Outcome(s)

Demand for cycled or renewable materials is increased as a result of their increased use in the product, helping to close the loop and advance the circular economy. Negative impacts of virgin material use are also minimized.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirement(s)

Bronze level: For select commonly cycled product and material types, incorporate the required percentage of cycled and/or renewable content into the product using an approved method. Alternatively, publicly disclose an explanation of the limitation(s) preventing achievement of the required minimums.

Silver level: Incorporate a percentage of cycled and/or renewable content into the product equal to or greater than industry averages and/or consistent with common practice. Alternatively, publicly disclose an explanation of the limitation(s) preventing achievement of the required percentage(s).

Gold level: Incorporate a percentage of cycled and/or renewable content into the product that is consistent with industry leaders for the product type. Incorporate either post-consumer cycled or renewable content depending on material type. Alternatively, publicly disclose an explanation of the limitation(s) preventing achievement of the required percentage(s).

Platinum level: Incorporate the maximal technically feasible percentage of cycled and/or renewable content into the product. Incorporate either post-consumer cycled or responsibly sourced renewable content depending on the material type.

For the Bronze through Platinum certification levels, the required percentages of cycled and/or renewable content are listed by homogeneous material and/or application type in the Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type reference document. The intent of the required percentages is to reflect industry averages at Silver level, industry leaders at Gold level, and the maximum technically feasible percentages at Platinum level when sufficient data is available. In general, the percentages increase with achievement level, but for products and materials where it is challenging to use cycled materials, the percentage may be zero at one or more levels. The required percentages must be met at the homogeneous material level or the product level as noted below and in the “Instructions for Use” tab in the Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type reference document.

When meeting the required percentages at the homogeneous material level, the following are required for multi-material products (i.e., products containing more than one homogeneous material):

1. For the Bronze and Silver levels, at least 90% of the homogeneous materials by weight that are subject to review (as defined for Material Health in Section 4.1) must meet the required percentages of cycled or renewable content.
2. For the Gold and Platinum levels, at least 95% of the homogeneous materials by weight that are subject to review must meet the required percentages of cycled or renewable content.

When meeting the required percentages at the product level, the percentages provided may be met in a variety of ways, as long as the finished product overall achieves the required percentage of cycled or renewable content by weight. In these cases, there are no minimum percentages required for individual materials in the product.

Further Explanation

Determining if 90% or More of the Homogeneous Materials in the Product Meet the Required Percentages of Cycled and/or Renewable Content

As noted in the standard, the required percentages of cycled and/or renewable content are listed by homogeneous material and/or application type in the Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type reference document. In general, the percentages increase with achievement level.

The percentages were derived such that the Silver requirements are commonly achieved (or industry average values where such data are available), Gold requirements are consistent with industry leaders, and Platinum requires use of the technically feasible maximums. **Applicants may choose to meet product-level percentages or material-level percentages.**

Pathway #1: Meeting Product-Level Percentages

The required percentages apply at the product-level and may be met flexibly via one or more materials present in the product.

Pathway #2: Meeting Material-Level Percentages

In nearly all cases, the required percentages apply to individual materials within a product. This means that products made from more than one material are typically required to achieve different percentages for the different materials that they contain. The percentages differ by material type because the limitations and challenges associated with using cycled and/or renewable content also differ by material.

For the Bronze and Silver levels, at least 90% of the homogeneous materials by weight that are subject to review (as defined for Material Health in Section 4.1) must meet the required percentages of cycled or renewable content. For Gold and Platinum levels, at least 95% is required.

Note that it is not necessary to identify the amount of cycled and renewable content in all materials in the product to determine if the required percentages have been achieved.

Use of the following process is recommended:

1. Identify the homogeneous materials that make up 90% or 95% (for the Bronze/Silver and Gold/Platinum levels, respectively) of the product by weight (as reported within the Bill of Materials Excel form).
2. List these materials along with:
 - Their concentration in the total product, and
 - Any known amounts of cycled and renewable content for this sub-set of materials.
3. Identify the appropriate material categories and required percentages from the [Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type](#) reference document, and
4. Paste these into additional columns of the spreadsheet.

This format will help to determine if it will be necessary to contact additional suppliers to determine if cycled or renewable content is used and/or where to best focus additional action to increase the percentages used. The Bill of Materials Form provides a section for gathering and reporting this information.

For both pathways, please see the “Instructions for Use” tab in the [Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type](#) reference document for further information on how to calculate the required percentage of cycled and renewable content. See the Further Explanation boxes of this section of the Certification Manual that follow for information regarding how the amounts of cycled and renewable content must be verified to count towards the required percentages. Finally, see the Section 12: Definitions section of the standard for definitions of cycled content, pre-consumer recycled content, post-consumer recycled content, and renewable content.

Note: Externally Managed Components (EMCs), defined in the [Externally Managed Components Assessment Methodology](#), are **not** exempt from the Section 5.3 Increasing Demand requirements.

Approved methods

The required percentages may be achieved based on minimum content, average content, rolling average content, and/or via a credit method (i.e., mass balance) approach. **Note:** Credit method (i.e., mass balance, also referred to as mass balance allocation method) is as defined by ISO 22095.

For the Bronze, Silver, Gold, and Platinum levels:

1. For cycled content to count toward the required percentages, the amount of cycled content must be verified based on chain of custody documentation.
If applying the credit method (i.e., mass balance) approach, the method must not count fuel as recycled, and for relevant material types (e.g., single-use plastic), must apply methods aligned with the European Commission’s implementation decision(s) applicable to mass balance accounting (i.e., (EU) 2023/2683 and any future related updates).

Further Explanation

Approved Methods

As noted, the required percentages of cycled and renewable content may be found in the [Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type](#) reference document. The required percentages may be achieved via a variety of approved methods (i.e., minimum, average, rolling average, and credit method/mass balance).

- Minimum refers to the minimum percentage of cycled and/or renewable content achieved for a material or product (as applicable per the reference document) when considering all batches or samples evaluated.
- Average refers to the average percentage of cycled and/or renewable content achieved for the material or product (as applicable per the reference document) when considering all batches or samples evaluated (i.e., the sum of the percentages for all batches divided by the number of batches).
- Rolling average refers to the average percentage of cycled and/or renewable content calculated at regular shifting intervals. The lowest of the averages (out of all rolling averages evaluated) must be used to determine if the required percentage has been achieved.
- Credit method (i.e., mass balance) refers to cases where an accounting ledger is established and as inputs are processed, the account builds up credits (e.g., tons of recycled material). Credits are subsequently deducted from the account as claims are assigned (or allocated) to products sold on the market. This definition does not include book and claim. **Book and claim methods currently are not accepted for achieving the Section 5.3 Increasing Demand requirements.**

Note that with controlled blending, the ratio between virgin and recycled inputs (or renewable and non-renewable inputs) is always known, the physical presence of the cycled or renewable content is maintained, and the output percentage (e.g., minimum content, average content) can be ensured in all cases.

When using a credit method (i.e., mass balance), a C2CPH-recognized cycled content standard is currently required. The standard requires that *the method must not count fuel as recycled, and for relevant material types (e.g., single-use plastic), must apply methods aligned with the European Commission's implementation decision(s) applicable to mass balance accounting (i.e., (EU) 2023/2683 and any future related updates)*. C2CPH may further develop credit method requirements in future.

Note: When using a credit method (i.e., mass balance) approach an individual product or part may not physically contain the specified characteristics at the level claimed (and in some cases, could have zero physical presence). Content claims are therefore not possible with the credit method approach. Please refer to the section titled "Transparency Requirements: Reporting the Type and Percentage(s) Achieved" below for more details.

Required Percentages for a Product Group and/or Multiple Production Lines

Note that Cradle to Cradle Certified currently allows for groups of similar products to be certified on the

same certificate. However, the required percentages must be achieved for the applicable materials for each product in the group individually. Whether the requirements are met for the group depends on the worst case within the group (i.e., the product and material(s) with lowest percentage—whether it be the minimum, average, etc.).

The required percentages must be achieved at the process level, that is, for each individual production line within a facility. Alternatively, compliance may be demonstrated at the facility level (across multiple production lines) if controls are in place to ensure that the overall average consistently meets the required percentages. In such cases, a production-weighted average may be used to calculate the overall average across lines with known production volumes.

When using averages, it is strongly preferred, but not required, that the percentages achieved for each batch and/or production line do not fall below 20% of the overall average. This supports consumer-facing claims of cycled and/or renewable content, and aligns with the approach used for Multi-Site Rolling Average Content in the [Recycled Material Standard](#), issued May 06, 2021. However, transparency is still required regarding the calculation methods and percentages achieved. Refer to the “Reporting the Methods Used and Percentage(s) Achieved” section below for more details.

Averages across multiple facilities generally fall under mass balance methodologies and are only permitted through a C2CPH-recognized program. For facilities and/or regions that do not meet the requirements, the feasibility analysis pathway may be used as an alternative.

Verifying Cycled and Renewable Content

The standard requires that *For cycled content to count toward the required percentages, the amount of cycled content must be verified based on chain of custody documentation.* Chain of custody accounting methods are defined in accordance with ISO 22095:2020 Chain of custody – General terminology and models. Chain of custody may be verified via one of the two pathways:

- **Pathway #1:** As part of the Cradle to Cradle certification process based on the list of documentation as described in the Required Documentation box at the end of this section.
- **Pathway #2:** Alternatively, C2CPH-recognized cycled and renewable content certifications may be employed (and are required when applying the credit method/mass balance approach). Note that certificates may not be used before the standards are C2CPH-recognized. Please contact C2CPH early in the certification process to inquire on the possibility for a review and recognition of standards that are not yet recognized.

Chain of custody is defined by [ISEAL](#) as “a means by which inputs, outputs, and associated attributes are transferred, monitored and controlled as they move forward through each step in the supply chain (adapted from ISO 22095:2020)”. This process requires verifying documentation and information starting from the point at which the attributes are generated (e.g., recycling facility) to the point where any claims are made. Therefore, when attributes originate beyond tier 1 suppliers, verification of the supply chain beyond tier 1 is necessary.

Chain of custody documentation as described in the Required Documentation box at the end of this section is crucial for validating cycled and/or renewable content claims. When chain of custody

limitations are present in an industry, the "feasibility analysis" alternative pathway may be applied at the Bronze, Silver, and Gold Levels. The alternative pathway is described at the end of this section. This allows the standard to recognize industry specific limitations and facilitate change in the industry for more transparency and traceability.

C2CPH-Recognized Standards

See the most recent version of [C2CPH-Recognized Certification Programs and Standards](#), available on C2CPH's website, for the list of recognized recycled and responsibly sourced renewable content certifications. Refer to Appendix 2 in this Certification Manual for requirements and the application process for recognition.

Note that in some cases, certain conditions apply to the recognitions to ensure the requirements of the Cradle to Cradle Certified standard are met. For example, for chemical recycling, fuel may not be counted as recycled. This means that any recycled attributes associated with fuel produced as part of the chemical recycling process may not be transferred to polymers (or to other co-products) produced. This requirement will have been considered by C2CPH when determining if a standard will be recognized. However, it may also need to be considered (and controlled for) when purchasing certified input materials because some standards allow for applying a variety of methods (and only certain of those may be recognized). Please refer to the "Recognition Notes" column in the list of recognized programs (linked above) to review applicable conditions. These conditions must be met to receive credit for use of a recognized program or standard.

Data and Documentation Requirements

The data and documentation requirements for determining and verifying the minimum, average, or rolling average will depend on if the applicant and/or its suppliers hold relevant C2CPH-recognized certifications for input materials (ensuring the percentages of recycled or renewable content or amount credited for a given material have already been determined and verified through another standard), or if it will be necessary to make these determinations as part of the Cradle to Cradle certification process.

If the recycled or renewable content in the product has been verified by a C2CPH-recognized recycled or renewable content standard, the applicable certificates and any documentation mentioned in the recognition notes are required. This also applies for recycled or renewable content covered by facility- or organizational-level certificates from a C2CPH-recognized recycled or renewable content standard.

When C2CPH-recognized standards are not used and the percentage of recycled or renewable content must be determined for individual materials (or the final product) as part of the Cradle to Cradle certification process, the minimum, average, or rolling average for each material must be determined from **at least five production batches** or samples from the prior 12 months for each applicable material. Ten batches or samples are recommended. More than five may be required if the application review surfaces concerns with, for example, data quality or variability. **This information must be collected from all applicable supply chain tier(s), including the final manufacturing stage.** Some exemptions apply as listed in the Required Documentation box at the end of this section.

The batches to be evaluated should be selected with the aim of honestly representing the true minimum or average (i.e., without the aim of favorably skewing results) from the full set of batches covering the relevant period. The batches selected should reflect different batch sizes (if applicable) as well as different time periods during the period being assessed (e.g., from different work shifts and different months). For continuous processes, a batch (or production run) is defined as a period during which the facility is making the same type of product on the same equipment. In some cases a run length may be short (a few hours) and in other cases could run for days, weeks, or more. For continuous processes for which it is not possible to define distinct batches or runs, samples of production data must be evaluated to determine if the requirements are met.

Rolling averages must be based on three points or time intervals at a minimum and may be calculated on a variety of intervals (e.g., hourly, daily, monthly) which will depend on the specific process. The time interval used must be consistent with historical accounting and process control methods (e.g., methods used for internal reporting and financial purposes). The time period of the rolling average may not exceed 12 months. Note that rolling averages may be used for continuous and also for batch/non-continuous processes. A separate accounting system that favorably skews cycled or renewable content values may not be used.

Please refer to the Required Documentation box for this section of the standard for detailed documentation requirements.

Transparency Requirements: Reporting the Type and Percentage(s) Achieved

Standard Section 5.8 Transparency and the related Transparency Requirements reference document requires that the *percentage and type of recycled and/or renewable content as demonstrated for Section 5.3* be publicly disclosed. This means that the following are required to be disclosed:

- Specify the type of cycled and/or renewable content.
 - Indicate what material(s) contain cycled or renewable content (e.g., aluminum, cotton).
 - For cycled content, specify if the material is pre-consumer or post-consumer.
 - For renewable content, specify if certified to a C2CPH-recognized responsible sourcing program. The identity of the certification program is not required to be disclosed.
- Specify if the percentage(s) reported are at the material- and/or product-level, and how the percentage was calculated and/or the chain of custody model used.
 - Minimum content: Report the minimum percentage achieved across all batches evaluated.
 - Average content: Report the minimum, maximum, and average percentage achieved across all batches evaluated, and the number of batches used in the calculations.
 - Rolling average content: Report the minimum rolling average, maximum rolling average, the time interval over which a single rolling average is calculated, and the number of batches or samples used in the calculations.
 - **For credit method/mass balance systems:** Report the percentage of cycled or responsibly sourced renewable material allocated to the applicable material and product. **Note: The term “content” should not be used** in the disclosure because the material and product

may not include actual content when using this approach. For example, it is not allowed to claim that “The product contains 20% recycled aluminum.” A more appropriate claim is “The product is made of 20% aluminum. A mass balance approach was used to attribute the aluminum to recycled sources.” Additionally, report if the allocation method was proportional or non-proportional and (for non-proportional) if a fuel-use excluded/fuel-exempt or polymer only approach was applied. **Note:** “Proportional” means that recycled or renewable attributes are assigned to all outputs of a process in proportion to their mass.

- When meeting the required percentages at the facility level: Report the information above as required for each production line based on the approved methods used. Additionally, report how the facility-average was calculated.

Note that if materials with claims based on different accounting systems are combined, a weighted average may be employed to determine the total percentage achieved for the material. However, the type of claim must be downgraded to the less specific claim. For example, if a material is made from the combination of (1) an input with a known minimum content from controlled blending, and (2) a material based on a credit system, the recycled content claim for that material must be a credit system (or mass balance) claim.

Misleading (Including Vague) Claims are Not Allowed

More specifically, claims of “some” recycled and/or renewable content are not allowed. Cycled and/or renewable content claims must always include the percentage (i.e., numbers). The exact percentage, or a range of percentages, is allowed. For example, 5% FSC certified wood, or 5-10% post-consumer PET.

Additional Requirements for Select Cycling Pathways and Technologies

Select cycling pathways and technologies which are associated with high environmental, human health, and/or social risks are subject to additional requirements.

Chemical Recycling

For chemical recycling, the mass balance allocation method *must not count fuel as recycled*.

If mass balance is based on proportional allocation, the same relative amount of recycled content is assigned to all output products in relation to the amount of waste material that went into the production process. This approach is accepted.

If mass balance is based on non-proportional/“free” allocation, the waste material and recycled input attributes may be allocated freely to the various co-products produced via the process. This allows for some outputs to be claimed as having a higher proportion of recycled content than others. In non-proportional allocation, a fuel-use excluded/fuel-exempt approach allows reattribution of the relative share of recycled content from all outputs (including non-polymer petrochemicals but excluding fuels) to one single polymer. A polymer only approach allows reattribution of the relative share of recycled content from different polymer outputs to one single polymer. Both of these approaches are accepted. What is not accepted, is the reattribution of recycled content from fuels to other non-fuel co-products.

Transparency recommendations (not required) for chemical recycling: The Transparency Requirements reference document states that it is recommended to disclose *information about negative impacts of chemical recycling if chemically recycled materials are used*. It is recommended to disclose the technology pathway (e.g. depolymerization, pyrolysis, hydrocracking, or solvent purification), source of the cycled feedstock (e.g., textiles, mixed rigid plastics, or flexible plastic packaging), and potential negative effects. This should include available alternatives, rationale for selecting chemically recycled material over mechanically recycled, and a quantitative or qualitative description of the known and likely environmental and human health related impacts and trade-offs. The latter may be determined based on the publicly available literature and reports on this topic. It is also encouraged to conduct and disclose a comparative impact assessment for the specific material or product.

Materials Derived from Carbon Capture and Utilization (CCU)

The carbon and oxygen atoms from captured carbon dioxide (CO₂) in materials produced using carbon capture and utilization (CCU) technologies qualify as pre-consumer recycled content, provided all following conditions are met:

1. The CCU material is certified by a C2CPH-recognized standard or an alternative equivalent to certification is in place (see Appendix 2), which addresses the following requirements:
 - The captured CO₂ is not intentionally produced and can be considered waste and/or process residue. Industrial point (fossil) sources are accepted. Please contact C2CPH in case other sources are used.
 - The CCU material must demonstrate a CO₂eq emission savings (or equivalent) from cradle-to-gate compared to material produced using the conventional production pathway. CO₂eq emission saving calculations does not include carbon capture and storage (CCS). When the calculation is not part of a C2CPH-recognized program, it must follow appropriate international standards such as ISO 14044 and be verified by a qualified third party.
 - CO₂eq emission savings are fully attributed to the CCU material and not double counted elsewhere.
2. If the CCU material undergoes further chemical transformation before being incorporated into the product, the final cycled content must be determined by assessors with expertise in chemical manufacturing. This determination must involve tracing the carbon and oxygen atoms through chemical equations, supported by relevant chain-of-custody documentation. If a credit or mass balance approach is used for the chemical transformation steps, the final material must be certified by a C2CPH-recognized program.

Transparency recommendations (not required) for CCU materials: It is recommended to disclose the available alternatives, rationale for selecting CCU materials (and their derivatives) over recycled and renewable, and a quantitative or qualitative description of the known and likely environmental and human health related impacts and trade-offs. Like the recommended disclosure for chemical recycling, this may be determined based on publicly available literature and reports on the topic.

Ocean and Ocean-Bound Plastics

Ocean-bound plastics refer to plastic waste collected from coastlines or major waterways at risk of entering the oceans, often in regions with underdeveloped waste management systems. Ocean plastics refer to plastic waste recovered from the ocean. The standard does not currently define ocean plastics or ocean-bound plastics but C2CPII is considering including these definitions in the next update. Recycled material made from ocean plastics, ocean-bound plastics, and similar may be considered alternatives to pre- and post-consumer recycled content.

Transparency requirements for ocean and ocean-bound plastics: The cycled content must be distinctly and clearly described for the required disclosure. For example, "Ocean-bound plastics that were collected from coastlines" or "Ocean plastics that were recovered from the ocean." The material must not be referred to as pre- or post-consumer cycled content.

Transparency recommendations (not required) for ocean and ocean-bound plastics: It is recommended to disclose the available alternatives, rationale for selecting recycled material derived from ocean-bound or ocean plastics over pre- or post-consumer recycled, and a quantitative or qualitative description of the known and likely environmental and human health related impacts and trade-offs. Like the required disclosure for chemical recycling, this may be determined based on publicly available literature and reports on the topic.

2. For biologically derived plastics and liquid formulations to count as renewable, the amount of biobased content must be determined based on:
 - a. Established standards that quantify bio-based content using radiocarbon dating, or
 - b. Chain of custody documentation.

Further Explanation

Verifying Renewable Content in Biologically Derived Plastics and Liquid Formulations

Both the biomass source(s) of the biobased content and the percentage in liquid formulations and biologically derived materials, including biologically derived plastics, must be verified to count as renewable. This may be verified via chain of custody. Verification of the biomass source is required for all biological and biologically derived materials that are either extracted and/or derived from biomass (e.g., wood, oil palm), in which the biomass source is not immediately apparent. Chain of custody may be verified as part of the Cradle to Cradle certification process (see Required Documentation box below for additional information). The biomass sources are also subject to responsible sourcing requirements when applicable (see Further Explanation box for Requirement #3 below this section).

Verifying Biobased Content Based on Radiocarbon Dating

ASTM D6866 and EN 16640 are currently accepted as a means of quantifying biobased content using radiocarbon dating. Note that the required percentages as listed in the Required Percentages of Cycled

and Renewable Content by Product and Material Type reference document are the same regardless of the method employed (i.e., chain of custody documentation or radiocarbon dating). EN 16640 expresses biobased carbon content based on total carbon (organic and inorganic), which might result in lower values compared to ASTM D6866, which is based on total organic carbon. The required percentages may be met based on both ratio types.

However, note that radiocarbon dating alone is not sufficient evidence for responsible sourcing. To verify whether a biomass source requires responsible sourcing, a sufficient chain of custody must be established to confirm the identity of the source. Alternatively, the identity of the biomass source may be verified via due diligence as noted below. When the biomass source is determined to require responsible sourcing, Requirement #3 of this section applies.

Alternative Due Diligence Pathways to Verify the Biomass Source(s) and Biological Materials with 100% Biobased Content (Non-Exhaustive)

In addition to chain of custody, alternative verification pathways based on due diligence may be used to verify that biological or biologically derived materials (e.g., chemical substances in liquid formulations) are sourced from biomass sources that do not require responsible sourcing.

- The biological material source may be verified using official databases of chemicals through their chemical identifiers, for example using the [EU Cosmetic Ingredient Database](#). CAS# must reference a specific plant species, the plant species must not require responsible sourcing. Other official databases will be considered as well. This pathway may not be possible for all chemicals.
- More than one scientific article or independent report from the past five years showing evidence that the substance is not extracted from biomass sources that require responsible sourcing and not produced synthetically from fossil fuel inputs.

If due diligence proves that the biomass source does not require responsible sourcing, Requirement #3 does not apply. For biological materials (i.e., naturally occurring and chemically unmodified substances extracted from biomass), due diligence may also be used to confirm 100% biobased content. These due diligence pathways do not verify the biobased content percentage in biologically derived materials. This includes biologically derived plastics as well as substances derived from biological materials through chemical transformations. For these materials, chain of custody documentation is needed from the point when biological materials are chemically transformed. Alternatively, radiocarbon dating may be used to ascertain the biobased content percentage.

3. For biological and biologically derived materials associated with extensive evidence of ecosystem destruction due to land conversion and/or poor management practices (e.g., palm oil, wood, peat) to count as renewable, the material must be certified to a C2CPH-recognized responsible sourcing standard, or an alternative equivalent to certification must be in place, that requires:
 - a. Compliance with all applicable laws and regulations of the country in which farming or harvesting operations occur.

- b. Operations that respect land rights and land use rights and are unlikely to cause displacement of food production.
- c. Planning, monitoring, management, and continuous impact assessment for the farming and/or harvesting of material.
- d. Maintenance, conservation, or enhancement of biodiversity in the forest/vegetation or other ecosystem.
- e. Maintenance or enhancement of the productive function of the forest/vegetation or other ecosystem area and efficient use of harvested materials (e.g., rate of harvest does not exceed rate of regrowth in the long term).
- f. Maintenance or enhancement of the health and vitality of the forest/vegetation or other ecosystem and its protective systems (soil and water).

Further Explanation

Bronze Level Responsible Sourcing Requirements

Materials that are associated with extensive evidence of ecosystem destruction that must be certified to a C2CPH-recognized responsible sourcing standard at the Bronze level, including biologically derived materials produced from these materials. These currently include the following:

- Wood,
- Oil palm,
- Sugarcane,
- Peat,
- Cotton,
- Soy and leather if sourced from de facto high-risk tropical regions, or if region unknown (de facto high risk is as defined in the Social Fairness category), and
- Materials sourced from fisheries (due to the risk of destructive fishing practices occurring).

Table – Examples of Biologically Derived Materials at Risk of Being Sourced from Materials Requiring Responsible Sourcing (Non-Exhaustive)

Wood	Manmade cellulotics (MMCFs) such as viscose , lyocell , and modal .
Oil palm	Substances in liquid formulations such as glycerol , stearic acid , cetyl alcohol , and sodium lauryl sulfate .
Sugarcane	Biobased plastics , Ethanol .

Note: For the Bronze, Silver and Gold levels, the biobased content in biologically derived materials may be considered renewable if chain of custody documentation proves that they are not sourced from materials requiring responsible sourcing, or they are sourced from materials with a C2CPH-recognized responsible sourcing certificate. Alternatively, a combination of radiocarbon dating, chain of custody, and/or due diligence may be used to verify renewable content. This means that for certain materials, chain of custody and/or radiocarbon dating is not required provided that due diligence has verified the material is 100% biobased (i.e., naturally occurring and chemically unmodified), and it is not derived

from biomass sources that require responsible sourcing. Please refer to the Further Explanation box for Requirement #2 above when using a combination of methods. Note that at the Platinum level, all biological and biologically derived materials require responsible sourcing to be counted as renewable.

C2CPH-Recognized Responsible Sourcing Certification Programs

Currently recognized certification programs for responsibly sourced material include:

- Forest Stewardship Council (FSC)
- Roundtable on Sustainable Palm Oil (RSPO)
- [Programme for the Endorsement of Forest Certification \(PEFC\)](#)

Please see the most recent version of [C2CPH-Recognized Certification Programs and Standards](#), available on C2CPH's website for the list of recognized certifications and conditions for recognition.

Additional programs may be recognized and subsequently added to this list. Refer to Appendix 2 in this Certification Manual for requirements and the application process for recognition. Appendix 2 also lists requirements for alternative equivalents to certification.

Responsible Sourcing Not Required for Cycled Materials and Agricultural Crop Residue that is Non-Merchantable as Food (All Achievement Levels from Bronze to Platinum)

Note that responsible sourcing does not apply to material that meets the definition of pre- or post-consumer recycled content. For example, recycled wood, recycled sawdust, or recycled cotton. Agricultural crop residue that is non-merchantable as food may be considered renewable without certification to a C2CPH-responsible sourcing standard. However, it must be demonstrated that the material is residue. Residue is defined per the Renewable Energy Directive II as "a substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process, and the process has not been deliberately modified to produce it".

Note: By-products are not considered residue. Please see the Section 12: Definitions section for further information.

For the Gold and Platinum levels: For cycled content to count toward the required percentages, at least some of the cycled content must be post-consumer (with specific percentages required for certain material and product types per the Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type reference document).

For the Platinum level: For any type of biological material to count as renewable, the material must be certified to a C2CPH-recognized responsible sourcing standard, or an alternative equivalent to certification must be in place (see #3 above for required responsible sourcing program elements applicable at the Bronze level and above).

Alternative to Meeting Required Percentages of Cycled and/or Renewable Content: Feasibility Analysis

For the Bronze, Silver, and Gold levels: A feasibility analysis may be applied as an alternative to meeting the required percentages of cycled and/or renewable content in any case where it is not feasible for a product to meet the required percentages, including post-consumer recycled and responsibly sourced content as relevant. This alternative is intended to recognize technical and/or industry-wide limitations and give credit to an applicant's efforts on these issues. This alternative may be used for one or more materials in a product and at any achievement level except for Platinum.

The following are required:

1. An explanation of the limitation(s) preventing the incorporation of the target amount of cycled or renewable content (including post-consumer or responsibly sourced as relevant) and how, based on these limitation(s), the amount of cycled or renewable content currently used represents the maximum that is currently feasible.
2. The explanation must be reported publicly.
3. A plan for addressing the identified limitation(s) and increasing the amount of cycled and/or renewable content (including post-consumer or responsibly sourced as relevant) over time must be developed. The plan must include discrete objectives and an associated timeline.
4. For recertification:
 - a. The applicant must demonstrate progress toward achieving the objectives.
 - b. A description of progress made must be reported publicly.

Further Explanation

Alternative to Meeting Required Percentages of Cycled and/or Renewable Content

The Alternative to Meeting Required Percentages of Cycled and/or Renewable Content described above may be applied at the Bronze, Silver, and Gold Levels. This means that the required percentages of cycled and renewable content (as listed in the Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type reference document) are not absolutely required to be achieved until the Platinum level. Note also that it is not required to achieve the percentages for the lower achievement levels to apply the alternative. In other words, the Gold level may be achieved through this alternative pathway alone without considering Bronze and Silver requirements.

For recertification, examples of progress that receive credit include:

- Work that has been done toward investigating the feasibility of incorporating more cycled content.
- Establishment of partnerships that will allow for incorporating more cycled content.

Examples of accepted limitations (other than those listed in the standard):

- Limitations to source cycled and/or renewable material that meet the Material Health requirements, applicable to the standard applied and Material Health level achieved,

- Absence of a suitable responsible sourcing certification for the material, and
- Chain of custody limitations.

Transparency Requirements when Using the Feasibility Analysis Pathway

Per Requirement #2 above, *the explanation [of the limitation(s) preventing the incorporation of the target amount of cycled or renewable content] must be reported publicly*. When meeting material-level required percentages, it must be clear for which material the limitation(s) apply.

Applying the Alternative Pathway when there are Chain of Custody Limitations

The alternative pathway may be used when there are limitations in obtaining the required chain of custody documentation for verifying cycled and/or renewable content. To claim this limitation, documentation demonstrating that there is a limitation must be provided. For example, email communications with supplier(s) stating that the requested documentation cannot be provided, or where suppliers provide only a portion of what is requested.

When chain of custody is entirely unavailable and/or unverified, cycled or renewable content claims are not allowed through any outlet, including C2CPH's Transparency Report Form, C2CPH's website, and other websites and publications where it is indicated that the claims were verified through C2C Certified. The public disclosure (per Requirement #2) may include, as an example, "Due to supply chain limitations, it was not possible to source material for the product's steel casing with the required chain of custody documentation for cycled content."

When chain of custody is partially verified, recycled and/or renewable content claims are allowed when all of the following conditions are met:

- Inputs have either a supplier declaration or an unrecognized recycled and/or renewable content certificate (i.e., not C2CPH-recognized), that includes the following information:
 - Type of content (e.g., pre- or post-consumer) per Section 12: Definitions.
 - For renewable content, information on the biomass sources. Only renewable content from biomass sources that do not require responsible sourcing may be counted.
 - Content calculation method (e.g., minimum, average or rolling average) or chain of custody model (e.g., controlled blending or segregation).
 - Confirmation that the credit method (i.e., mass balance) and book and claim chain of custody models were not used. These are not allowed using this pathway.
 - For supplier declarations, refer to "Documentation requirements when using supplier declaration(s)" in the Section 5.4 Required Documentation section.
- Chain of custody documentation (see Required Documentation at the end of this section) is collected for the applicable final manufacturing stages to trace recycled and/or renewable content from the inputs to final products.
- The feasibility pathway must be applied, since the required percentages are not considered met. Thus, this is only allowed at the Bronze, Silver, and Gold levels.
- This statement or similar is also publicly reported (i.e., in addition to the claim): "The chain of

custody for recycled and/or renewable content in the product was not fully verified. The determination of recycled and/or renewable content in production inputs relied on supplier declarations and/or content certificates that are not C2CPII-recognized. Chain of custody was verified only for the final manufacturing stage."

For single-use plastic products and plastic packaging products (certified as separate products), excluding packaging that is part of a refill/reuse system (e.g., detergent refill pouch), the following two limitations preventing the incorporation of the target amount of cycled or renewable content are accepted:

1. The product or package is used in food contact applications and regulations applicable to the region(s) where the product is sold do not permit the use of recycled content.
2. Product or packaging performance specifications cannot be achieved when using the required percentages of cycled or renewable content.

For all other product types, including plastic packaging that is part of a reuse/refill system, other types of limitations (e.g., cost and availability) are accepted.

Further Explanation

For cases where *The product or package is used in food contact applications and regulations applicable to the region(s) where the product is sold do not permit the use of recycled content*, if the product is sold in several regions and is limited from incorporating recycled content in only one region, the strictest regional requirements may be applied in the event the same packaging is used interchangeably in regions with and without restrictions.

Required Documentation

- Bill of Materials Form or similar listing percentages of recycled and/or renewable content per material and supplier. Include material type (and CASRN if possible), indication of pre-consumer or post-consumer content, responsibly sourced renewable content, indication of how the content has been verified (e.g., reference to valid recycled or renewable content certificates associated with the relevant suppliers), relevant accounting method for each applicable material (minimum, average, rolling average, or credit method), weights, and concentration(s).

Note: The Bill of Materials Form includes space for a signature that serves as confirmation from the manufacturer intends to incorporate the specified amounts of recycled and/or renewable content throughout the certification period.

- Calculations demonstrating how the total percentage(s) were determined.
- Chain of custody documentation (see below) and/or recycled or renewable content certification certificate(s) from a C2CPII-recognized recycled or renewable content standard. **Note:** Chain of custody documentation is not required for supply chain and production stages in which the chain of custody was verified by a C2CPII-recognized program.
- When using C2CPII-recognized standards, a description of how the certification status may be validated (e.g., by checking a scheme's certificate database).
- When using a C2CPII-recognized recycled or renewable content standard and the certificate is held by a supplier, evidence of purchase. For example, for a company to receive credit for FSC certified material for their Cradle to Cradle certification, they do not themselves have to be FSC certified. However, the suppliers of FSC certified material must be in possession of a valid FSC certificate. Evidence of purchase is an invoice or delivery documentation clearly stating the FSC claim(s) (e.g., FSC 100%) for the purchased products. Please refer to the [C2CPII-Recognized Certification Programs and Standards](#) document for additional information on recognized claims and recognition conditions.
- For biologically derived plastics and liquid formulations, certificate, test results, and/or chain of custody documentation. Note that radiocarbon dating alone is not sufficient evidence to prove responsible sourcing.
 - When using due diligence pathways to verify renewable content for chemical substances in liquid formulations: Evidence showing that the substances are extracted from biological materials that do not require responsible sourcing and/or the substance is naturally occurring and extracted from biomass (thus 100% biobased) and not fossil fuels. Example of acceptable evidence include references to official chemical databases, more than one scientific article or independent report.
- Bronze through Gold Level alternative: If unable to meet the required percentages for recycled or renewable content, an explanation of the limitation(s) and a strategy for addressing the identified limitation(s). The explanation and strategy must clearly indicate which materials are in scope. The strategy document must specify the limitations and strategies specific to each material (with a required percentage) in the product, unless there is only a single applicable

required percentage for the product. If claiming chain of custody limitations, evidence (e.g., email communication with suppliers) demonstrating this limitation.

- Bronze through Gold level alternative, recertification: Evidence of progress towards achieving the strategy.

Verifying Chain of Custody (Without C2CPH-Recognized Standards)

To verify chain of custody for cycled or renewable content (when the input material or final product is not already certified to a C2CPH-recognized cycled content standard or, for renewable content, a responsible sourcing standard that includes chain of custody tracking), the following must be provided for each applicable supply chain tier including the final manufacturing stage (please refer to the table below for scenarios where each element is applicable):

1. A description of how each cycled or renewable material meets the definition of pre- or post-consumer cycled content or renewable content, as applicable (see Section 12: Definitions).
2. A description of how the relevant recycled and/or renewable materials are received, recorded as inventory, and stored. For the final manufacturing stage and suppliers, this may be verified during an in-person or a remote site-visit conducted by a Cradle to Cradle Certified Conformity Assessment Body. If a site visit is conducted, no additional documentation beyond the Cradle to Cradle Certified Site Visit Verification Checklist and Report is required for the final manufacturing stage.
3. A diagram and/or a description of the manufacturing process that clearly defines the beginning and end of the process. The diagram and/or description must define how cycled or renewable materials are tracked, and chain of custody is maintained. Include a description of all inputs of materials and all internal material flows (e.g., reuse or recycling of scrap, products, and losses). Description of input materials may be documented using a Bill of Materials (BoM).
4. Records that demonstrate the applicant has an active business relationship with each supplier of the cycled or renewable material. These records might include proof of purchase, invoices, bills of lading, delivery receipts, supplier affidavits, or manufacturer evaluations/audits of suppliers. If the applicant does not purchase the cycled or renewable content as a raw material input (i.e., if the material is first processed, re-packaged, or (re) sold by an entity other than the original waste or recycling facility (for post-consumer waste), waste producer (for pre-consumer), and/or renewable material producer), this documentation must also be collected from supplier(s). This is not required for biological materials that are 100% biobased, naturally occurring, and do not require responsible sourcing. For example, 100% natural hemp (at Bronze). For chemical substances (e.g., fragrances), "100% biobased, naturally occurring, and do not require responsible sourcing" must be verified via due diligence to be exempt.
5. Production records confirming the amounts of virgin and cycled or renewable material used as follows:
 - For new certifications, a minimum of five production batch records must be evaluated for each product. Ten production batch records are highly recommended. For continuous processes for which it is not possible to define distinct batches or runs, samples of production data must be

evaluated to determine if the requirements are met.

- If five product specific production batch records are unavailable (i.e., less than five batches have been produced for a new product), then provide as many product-specific records as possible, plus production records from similar cycled or renewable material products (with the goal of providing five in total).
- For new certifications, production records from the most recent 12 months. For recertification, records from across the full time span of certification including extensions (with at least three from each prior year).

Note: The production batch data to be evaluated must be selected by the verifier from the full list of batches covering the relevant period (rather than by the applicant or other entity producing the material). The batches selected must reflect different batch sizes (if applicable) and different time periods during the period being assessed (e.g., from different work shifts and different months).

- If the applicant does not purchase the cycled or renewable content as a raw material input (i.e., if the material is first processed or re-packaged by an entity other than the original waste or recycling facility (for post-consumer waste), waste producer (for pre-consumer), and/or renewable material producer), this documentation (per the sub-bullets above) must also be collected from supplier(s).

Production records for a supply chain stage are not required:

- When biobased content was verified via radiocarbon dating.
- For the final manufacturing stage (or portions thereof) if there is evidence that production and/or design controls are in place to ensure the same amount of renewable or recycled inputs are added to the product over time with no risk of variation between batches. Currently, this only applies to assembly processes for solid parts that were manufactured to exact dimensions. For other cases, C2CPII pre-approval is required. Production records are required when blending and mixing (or similar) processes occur.
- When production in a final manufacturing or supply chain stage utilizes 100% renewable or 100% recycled inputs (no mixing with virgin non-renewable), thus ensuring 100% renewable or recycled outputs respectively. A remote or in-person site visit is required to verify this in all cases, including for supplier facilities (see required site visit documentation in the next bullet below). For supplier facilities, if a site visit is not conducted, production records are still required.

If a site visit is used to verify suppliers instead of providing production records: A Site Visit Verification Checklist and Report with the following sections completed:

- Administrative Information.
- Site Visit Summary (**Note:** Instead of the final manufacturing stage, the manufacturing process relevant to the chain of custody must be verified. The Material Health related point need not be verified.)
- Section 4a (4b and 4c are not applicable). In particular, verify that production records are available, align with the requirements, and are consistent with the content claims.

- Section 12 (if relevant).
- Section 13.
- Section 15 (documentation related to verifying cycled or renewable content only).

Sufficient chain of custody documentation is required to verify:

- That pre- or post-consumer cycled content, as well as renewable content can be traced back to a biological source or waste material. Alternatively, if applicable, traced back to materials with C2CPH-recognized responsible sourcing or cycled content certificates. This is mainly achieved via #2 and #4 above.
- That the percentages of cycled and/or renewable content in the input materials and final product is calculated based on an approved method through production records for each supply chain stage where controlled blending or manufacturing takes place. This is mainly achieved via #3 and #5 above.

Table – Supply Chain Stages Relevant for Chain of Custody Documentation Requirements

The table below explains which supply chain stages are typically relevant for each required element (#1-5 above) of the chain of custody (CoC) documentation. The chain of custody elements also apply when C2C Certified inputs are used to meet requirements, e.g., for Material Health. In these cases, please replace “cycled or renewable” with “C2C Certified” in points #1 to 5 respectively.

CoC element	Biological and biologically derived materials (including chemical substances)	Cycled content	C2C Certified Inputs
#1	Required in all cases.		Not applicable, instead include an explanation on which requirement is met using the certified input.
#2, #4	For materials requiring responsible sourcing or those at risk, required for supply chain stages back to the first purchaser from the farm. Alternatively, if applicable, back to the point where C2CPH-recognized responsibly sourced certified material was purchased. For chemical substances that do not require responsible sourcing, required back to the	Required for supply chain stages back to and including the first process where cycled materials are extracted from waste. Alternatively, if applicable, back to the first process with material inputs with C2CPH-recognised cycled content certificates.	Required for all supply chain stages up to but <u>excluding</u> the C2C Certified producer (the certification holder). If the applicant sources materials directly from a C2C Certified producer, no additional documentation is needed from that producer—only proof of purchase is required. #2 is checked during a site visit

	point the chemical substance was extracted from biomass (to confirm biomass identity). For biologically derived materials, additionally required from the first point chemical transformations are applied.		for final manufacturing stage facilities.
#3, #5	Required for supply chain stages where controlled blending or manufacturing was done, e.g., mixing of biological materials with other materials or manufacturing steps with process losses. Other materials include non-biological materials or biological materials that require responsible sourcing. For biologically derived materials, additionally required for supply chain stages where chemical transformations are applied. Exemptions for #5 apply as described above.	Required for supply chain stages where controlled blending or manufacturing was done, e.g., mixing of cycled and other materials or manufacturing steps with process losses. Exemptions for #5 apply as described above.	Required for supply chain stages where controlled blending or manufacturing was done, e.g., mixing of C2C Certified and non-C2C Certified material or manufacturing steps with process losses. Exemptions for #5 apply as described above.

5.4 Material Compatibility for Technical and/or Biological Cycles

Intended Outcome(s)

Product materials with the highest capacity for biological and/or technical cycling have been intentionally selected, increasing the likelihood that such materials will retain their value and move through subsequent cycles of use.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirements

Bronze level: For 50% of the product by weight, incorporate materials that are compatible with the intended cycling pathway(s).

Silver level: For 70% of the product by weight, incorporate materials that are compatible with the intended cycling pathway(s).

Gold level: For 90% of the product by weight, incorporate materials that are compatible with the intended cycling pathway(s). Materials must have high-value technical or biological cycling potential for at least one intended cycling pathway.

Platinum level: For 99% of the product by weight, incorporate materials that are compatible with the intended cycling pathway(s).

For a material to count toward the percentage of materials compatible with the intended cycling pathway(s) the following conditions must be met:

1. Homogeneous materials that need to be separated in order to be cycled must be separable by the entity implementing the intended cycling pathway with given instructions and no additional special knowledge.
2. For products that are installed prior to use (e.g., in a building, a vehicle, or fixed within a sidewalk), it must be possible to extract the product from the installed location.
3. For products and materials intended for technical municipal cycling (e.g., municipal recycling systems or systems set-up through product stewardship laws), the product and/or material must be compatible for municipal cycling systems (e.g., painted plastics and plastic laminated paper are not currently compatible for municipal recycling).

Further Explanation

Compatibility Requirements

The standard requires an increasing percentage of materials to be compatible with all intended cycling pathway(s) with increasing achievement level (50%, 70%, 90%, and 99% for Bronze, Silver, Gold, and Platinum levels, respectively). In general, a material is considered compatible for cycling in an intended pathway if it does not have characteristics inhibiting it from being cycled in that pathway and/or features that interfere with the functionality of the relevant cycling system.

The term compatible instead of cyclable or recyclable is used in this section (the terms cyclable and recyclable are not widely used in the standard). The focus of Section 5.4 is to ensure materials are compatible for cycling from a product design perspective. Other standard sections focus on ensuring the necessary cycling systems exist and on supporting the demand side by specifying cycled and/or responsibly source renewable content. All of these are necessary for a material to indeed be cyclable.

The compatibility requirements vary with material type (e.g., aluminum or wood), cycle (i.e., technical or biological), and pathway (municipal recycling, composting, biodegradation in wastewater treatment plants, etc.). In most cases, individual homogenous materials within a product are either compatible (as defined by this section of the standard) or not.

Materials may only be considered compatible when they meet compatibility requirements and are one of the targeted outputs of the cycling pathway. Distinct portion(s) of a material that are purposely removed and disposed of during cycling must not be counted as compatible. For example, additives may be purposely removed and disposed of during chemical recycling of polymers, and composite materials may be burned to retrieve geological or metallic fractions. In these cases, as long as the compatibility requirements are otherwise met, the portion of the material that is compatible (and likely to be cycled) may be counted as such, but the portion that is disposed of must not be counted.

Accounting for small portions of a material that may be lost during mechanical processing (e.g., due to grinding and abrasion of the materials during recycling), or that have yet to biodegrade at the end of a passed compost test, is not required. For solid products consisting of a single homogenous material (e.g., a product that is only stainless steel, paper, wood, or polypropylene), 100% of the product must be compatible.

An exception is for liquid formulations which may be counted as partially biodegradable based on the biodegradability of the individual substances within the formulation.

Important: As noted above, the required percentages apply to homogeneous materials within a product. Homogenous materials within a product must be determined using the final product formulation and/or configuration and not based on input materials. For example, a homogenous material blend of polymers and wood fibers must be considered a single homogenous material. The requirements in this section apply to the blend instead of to the polymer and wood fibers separately. Homogeneous materials are further defined in the [Methodology for Defining Homogeneous Materials](#).

Reminder: The Certification Manual for standard Section 5.1 notes that it must be possible to cycle the product via the chosen intended pathway(s), at least at the pilot scale (e.g., at small-scale under “normal” processing conditions). Evidence of this must be provided for achieving the Bronze level in Section 5.1. This evidence that cycling is theoretically possible complements the Bronze level requirements in this section of the standard (Section 5.4), which apply to the characteristics of the product itself.

Separability and Extractability (Bronze level)

The standard requires that:

1. *Homogeneous materials that need to be separated in order to be cycled must be separable by the entity implementing the intended cycling pathway with given instructions and no additional special knowledge.*
2. *For products that are installed prior to use (e.g., in a building, a vehicle, or fixed within a sidewalk), it must be possible to extract the product from the installed location.*

Note that for solid materials intended for technical cycles that will **not** be cycled via municipal systems, the only compatibility requirements at the Bronze and Silver levels are that the materials must be extractable (if installed) and separable (if this is necessary for cycling to occur) per Requirements #1 and #2 above. Compatibility may be assessed separately for materials that are separable per Requirement

#1 above and intended for separate cycling pathways and/or systems. Note that compatibility requirements must be met separately for each intended cycling pathway. Additional compatibility requirements apply to these material types at the Gold level.

Requirement #2 applies to any product that will be installed after it is sold. In other words, it applies to all building materials, furnishings that are attached to the building interior in some way, and to products that become part of other products.

Determining Compatibility for Technical Municipal Cycling Systems (Bronze Level)

The standard requires that:

3. *For products and materials intended for technical municipal cycling (i.e., municipal recycling), the product and/or material must be compatible for municipal cycling systems (e.g., painted plastics and plastic laminated paper are not currently compatible for municipal recycling).*

To be considered “compatible for municipal cycling systems” as required per Requirement #3, the material must meet the following requirements. (Note that there are additional requirements applicable to the Gold and Platinum levels. Please see the portions of the manual that follow for information on Gold and Platinum level requirements.)

- **For metals and glass**, meet the requirements for determining recyclability according to section 7.3 of UL ECV 2789: “Calculation of Estimated Recyclability Rate”.
- **For plastic, one of the following:**
 - Meet the requirements for determining recyclability according to section 7.3 of UL ECV 2789: “Calculation of Estimated Recyclability Rate” (Exception: This guideline may not be applied to plastic packaging),

OR,

- Contains no attributes that are classified as “Renders the Plastic Non-recyclable” as per the [Association of Plastic Recyclers’ \(APR\) Design-for-Recyclability Guidance*](#),

OR,

- All attributes are classified for at least “Limited Compatibility” as per the [RecyClass Design for Recycling Guidelines](#) (previously the [Plastics Recyclers of Europe’s Guidelines for Recycling*](#)

***Note:** if applying one of these options to plastic packaging, 100% of the packaging must meet the requirements of the referenced guideline at all achievement levels. This is because the guidelines are written to be applied in this way and in some cases minor components impact the recyclability of the packaging overall. For example, per the APR guidance, use of PVC closures with PET bottles renders the entire bottle non-recyclable.

- **For paper**, the material may not contain the materials or substances that are noted in the Sustainable Packaging Coalition’s Design Guide for Sustainable Packaging as features that can complicate recycling at $\geq 1\%$ of the material by weight:
 - Plastic film lamination or extruded coatings
 - Foil stamping

- UV-cured printed inks
- Wax and moisture-preventative coatings
- E-beam inks

Paper must be assessed on the homogenous material level. For example, the cover of a book containing $\geq 1\%$ plastic film lamination or coatings must not be considered compatible. The remaining pages without any of the above features may be considered compatible if they are *separable by the entity implementing the intended cycling pathway*. The entity may be the consumers or the municipal cycling systems. For the latter, evidence of acceptance (compatibility) in all sales regions relying on municipal cycling systems (Section 5.2) must be provided.

Compatibility of Textiles and Apparel for Technical Municipal Cycling Systems (Bronze level)

Below is a list of features (i.e., disruptors) that in nearly all cases will render a textile or apparel product as non-recyclable via the municipal and similar recycling systems that are currently used in the EU. These features cannot be used on 50% of the product by weight at the Bronze level and 70% of the product by weight at the Silver level, including the weight of the attached material.

For textiles and apparel, the following disruptive features must not be considered compatible with municipal recycling, unless designed for disassembly per Section 5.6 Product Designed for Disassembly:

- Multi-layered items of different materials (e.g., as often used for jackets and coats).
- Complex fiber blends of three or more fiber/material types. (This means that mono-material fiber or blends with only two fiber/material types can be counted as compatible. Example: A cotton, polyester, elastane blend has three fiber types.) Applicants may submit proof that other compositions are being recycled through municipal cycling systems and similar (i.e., public separate collection) to C2CPII for consideration.
- Fiber blends with $> 5\%$ elastane (and similar stretch fibers).
- Blends containing metal (e.g., metallized threads).
- Textiles with coatings such as polyvinyl chloride (PVC), polyurethane, acrylic, or silicone that form a continuous layer over the fabric, flocking, and glue.
- Bonded textiles and leather (textiles with adhesive layers) and lamination.
- Heat transferred, silicone, and other non-water-based prints that are $\geq 10\text{cm}^2$.
- Non-functional hard and soft parts including embellishments such as sequins, metallic or plastic beads, metal threads, embroidery, and other decorations made from hard or soft materials. Functional hard and soft parts added solely for aesthetic purposes are considered non-functional, such as zippers on sides of the jacket not involved in fastening and ribbons added for decoration. Excessive use of functional hard and soft parts, such as multiple buttons on a pocket where one button would suffice, is also considered non-functional. Note that soft parts made of the same material as the main fabric are considered compatible.
- Electronic components.

As noted, the design features listed above may be considered compatible with municipal cycling systems if they are designed for disassembly (i.e. designed for removal prior to recycling), see Section

5.6 Product Designed for Disassembly for more details. However, design for disassembly might not be possible for some of the disruptors listed above. Please refer to the [C2C Certified Certification Manual Supplement – Product Circularity Apparel and Textiles](#) for the list of supporting sources.

Compatibility of Functional Hard and Soft Parts (Textiles and Apparel)

Functional hard and soft parts are essential for the functioning of the textile product. However, they are also disruptors to the mechanical recycling process and thus should be reduced. For the Bronze and Silver levels, it is recommended (but not required) that functional hard and soft parts be designed for disassembly for the attached fabric to be considered compatible.

For the Gold level, functional hard and soft parts must be designed for disassembly for the attached fabric to be considered compatible. "Cut-off" or trim removal strategies (i.e., strategic placement to facilitate removal and reduce material loss before recycling) is accepted as a design for disassembly feature. For example, if the functional hard and soft parts are visible and placed together on a placket, cuff, or collar so they can easily be removed (i.e., cut off) this receives credit as a design for disassembly. The weight of fabric lost due to trim removal must not be considered compatible. It may be calculated by considering the area occupied by the hard and soft parts and the fabric's weight per square meter (grammage).

Examples of functional hard and soft parts include:

- Hard parts such as buttons, zippers, and fasteners made from metal, plastic, and other materials.
- Soft parts that are made from a material different from the main material for functional reasons such as ribbon, sewing thread, pocketing fabric, and labels. Soft parts must be made using the same material as the main fabric, unless functional reasons are given for the use of a different material.

Percentage of Product Compatible for Cycling (Bronze and Silver Level)

The standard requires that *1. Homogeneous materials that need to be separated in order to be cycled must be separable by the entity implementing the intended cycling pathway with given instructions and no additional special knowledge.* For textiles and apparel that will be cycled via municipal and similar systems (as being implemented in the EU), this requirement is considered met for the sum of the parts that comply with the compatibility requirements above. Only the fabric blend weight (including dyes, finishes, and elastane) of the compatible parts is counted, excluding the weight of the incompatible prints, hard and soft parts, and the fabric these are removed with. As noted, the percentage compatible must be at least 50% and 70% for the Bronze and Silver levels respectively.

Assessing Compatibility Requirements for Individual Homogenous Materials

Compatibility for individual homogenous materials (e.g., the presence and concentration of problematic additives and/or features) may be assessed using collected chemical composition data (e.g., using the Bill of Materials), and/or supplier declaration(s) as appropriate. This applies to "Determining

Compatibility for Technical Municipal Cycling Systems (Bronze Level)” as well as “Defining High-Value Cycling Potential (Gold Level) – Pathway #1 for Archiving Requirement #1.a.i”. Declarations must be signed by an entity with sufficient knowledge of the material or formulation's chemical composition to substantiate the declaration. Please refer to the Required Documentation box for this standard section for the required elements of supplier declarations.

Supplier declarations or chemical composition are not required if the additive or feature can be fully verified through:

- Visual inspection by the assessor,
- Laboratory testing, or
- Official specification documents or safety data sheets from the supplier. (However, if an additive or feature is not specifically mentioned to be absent, this cannot be assumed.)

Table – Verification Method Example

Example of possible verification methods for a paper product applying Pathway #1 for achieving the Gold level requirement 1.a.i: *Must not contain additives or features that are likely to result in low-value (i.e., low-quality) reprocessed material*).

Additive or feature	Possible verification method
Plastic film lamination or extruded coatings, Wax and moisture-preventative coatings	Material information on the specification sheet in combination with visual examination to confirm absence. (Visual examination is necessary because specification sheets are likely to indicate the presence of these features, but do not specify absences. Reviewing the specification sheet is also necessary because some intentionally added coatings may not be visible.)
Foil stamping	Visual examination confirming no foil stamping.
UV-cured printed inks, E-beam inks	Visual examination confirming no printing done (no inks are used). When inks are used, a supplier declaration or chemical composition data is required.
Copper containing pigments blue PB 15:3 and Green PG 7	Visual examination confirming no printing done (no inks are used) and the paper is unpigmented. When inks are used or when the paper has unknown pigments, a supplier declaration or chemical composition data is required.

Required Thresholds and Recycled Content

When a concentration limit threshold is not indicated for a problematic additive or feature in Section 5.4 (also relevant for Gold level Requirement #1.a.i, Pathway #1), it is intended that the additive or feature is not present at any concentration and not intentionally added.

Per Section 4.1 Inventory and Assessment of Chemicals and Materials, 100 ppm may be used as a subject to review limit to collect chemical composition data. However, if there are indications during the

assessment that an additive or feature fully restricted in the Product Circularity category is intentionally added or known to be present below 100 ppm, the material is not compatible.

Small amounts of additives stemming from waste in recycled content are out of scope for Section 5.4, if not intentionally added and not known to be significantly present. Examples based on restrictions listed in Pathway #1 of Gold level high-value cycling potential Requirement #1.a.i:

- Recycled polyethylene terephthalate (PET) can be considered to be compatible if ethylene vinyl alcohol (EVOH) is not intentionally added to the material. Small amounts of EVOH stemming from PET waste is not in scope.
- Opaque recycled PET is not compatible (as specified for Gold level). This applies in all cases because it can be visually verified (including when the concentration of additives is unknown due to their presence in recycled content).
- Adding recycled EVOH to PET will render the material non-compatible (this is intentionally adding EVOH).

Supplier-Sourced Component with More Than One Homogenous Material

Supplier-sourced components must be assessed based on all relevant Section 5.4 requirements similar to a certified product to be counted as compatible, including Requirement #1 *Homogeneous materials that need to be separated in order to be cycled must be separable by the entity implementing the intended cycling pathway with given instructions and no additional special knowledge.*

A supplier declaration alone is typically not sufficient. A Bill of Materials (or equivalent) for the supplied component is required. Declarations from tier 2 material or formulation suppliers are also required (as applicable).

Note: It is not necessary to assess the entire product for Section 5.4, as long as the compatibility requirements (e.g., 50% at Bronze) are verified to be met at the desired achievement level.

4. For solid materials intended for the biological cycle, one of the following conditions must be met:
 - a. The material must biodegrade in the intended cycling pathway(s) within the time period and to the extent specified by a C2CPII-recognized compostability or biodegradability standard test.
 - b. For paper and biological materials with $\geq 99\%$ unmodified organic material:
 - i. The material, at its maximum thickness and/or density, must disintegrate in the intended cycling pathway(s) within the time period and to the extent specified by a C2CPII-recognized compostability or biodegradability standard test, and
 - ii. If the intended cycling pathways include composting, a soil sample that is exposed to the material, after disintegration tests have been performed, must pass an ecotoxicity test demonstrating that the exposed soil sample is conducive to plant growth (OECD 208 or equivalent).
 - c. For plastic materials, biologically derived materials, and biological materials with $< 99\%$ unmodified organic material (including paper that is $< 99\%$ cellulose), all of the following conditions must be met:

- i. The material must biodegrade in the intended cycling pathway(s) within the time period and to the extent specified by a C2CPII-recognized compostability or biodegradability standard test.
 - ii. For any individual organic additives (e.g., pigments, inks, colorants, scents, secondary polymers, glues) present at a concentration of $\geq 1\%$, the additive must biodegrade in the intended cycling pathway(s) within a specific time period and to the extent specified by:
 - 1. A C2CPII-recognized biodegradability standard test, or
 - 2. The available scientific literature and/or research studies.
 - iii. The material, at its maximum thickness and/or density, must disintegrate in the intended cycling pathway(s) within the time period and to the extent specified by a C2CPII-recognized compostability or biodegradability standard test, and
 - iv. A soil sample that is exposed to the material, after disintegration tests have been performed, must pass an ecotoxicity test demonstrating that the exposed soil sample is conducive to plant growth (OECD 208 or equivalent).
- d. For geological and/or biological materials intended to be released to the environment via the intended cycling pathways, all of the following must be met:
- i. The material, including any additives, must be assessed as compatible with human and environmental health (e.g., A/a-, B/b-, or C/c-assessed according to the Cradle to Cradle Certified Material Health Assessment Methodology) and not cause acute or long-term ecotoxic effects in the environment as demonstrated by C2CPII-recognized standard tests, and
 - ii. Physical, chemical, and leaching parameters per leading regulations (if any) must be met.

Further Explanation

C2CPII-Recognized Compostability and Biodegradability Testing Methods

C2CPII-recognized compostability and biodegradability testing methods currently include those in the list below. To receive credit, the test(s) employed must be applicable to the intended cycling pathway(s). The tests used should be those most appropriate for the specific material type. Please refer to the scope section in the testing methods (e.g., ISO document) and/or certification program documentation for more information on applicability.

- EN 13432 Packaging – Requirements for Packaging Recoverable Through Composting and Biodegradation – Test Scheme and Evaluation Criteria for the Final Acceptance of Packaging.
- EN 14995 Plastics - Evaluation of Compostability - Test Scheme and Specifications.
- EN 14897 Plastics - Evaluation of Disposability in Waste Water Treatment Plants - Test Scheme for Final Acceptance and Specifications.
- ISO 17088 Specifications for Compostable Plastics.
- ISO 18606 Packaging and the Environment — Organic Recycling.
- ASTM D6400 Test for Compostability (this specification covers plastics and products made from plastics that are designed to be composted in municipal and industrial aerobic composting facilities).

- ASTM D6868 Standard Specification for Labeling of End Items that Incorporate Plastics and Polymers as Coatings or Additives with Paper and Other Substrates Designed to be Aerobically Composted in Municipal or Industrial Facilities.
- AS 4736 Biodegradable Plastic-Biodegradable Plastics Suitable for Composting and Other Microbial Treatment - Australian Capital Territory.
- Standardized tests (e.g., ISO, ASTM) employed by the following certification programs (with certification encouraged but not required at the Bronze and Silver levels):
 - European Bioplastics: Seedling.
 - DIN-Geprüft: Industrial Compostable.
 - Biodegradable Products Institute (BPI).
 - TÜV AUSTRIA: OK Compost HOME, OK Compost INDUSTRIAL, OK biodegradable SOIL, WATER, and MARINE.
 - Renewable Energy Assurance Limited: Compostable Materials Certification Scheme (CMCS).

Please contact C2CPII in cases where applicable testing methods are not yet recognized. Additional testing methods may also be recognized and subsequently added to this list. Refer to Appendix 2 in this Certification Manual for requirements and the application process for recognition.

Analytical laboratories conducting required tests must be accredited or certified for the specific analysis per ISO 17025, DIN CERTCO approved, or equivalent. Biodegradability and/or compostability tests, such as those based on EN 13432, can be time-consuming to complete. It is therefore recommended to engage with laboratories early in the certification process to avoid delays.

Transparency requirement: The test methods used, and all parameters (e.g., maximum thickness, density, or grammage) that are relevant design restrictions to ensure compliance with the compostability and biodegradability test results must be disclosed. This is further specified in the Transparency Requirements reference document C2CPII's Transparency Report Form.

Testing Exemptions

Select Paper Products Designated for Recycling and the Biological Cycle

Select paper products (i.e., single-use products that are commonly littered) are required to be designated to the biological cycle as per Section 5.1. Paper materials in these select products that have recycling as one of the intended pathways, meet all Section 5 requirements for the recycling pathway, and are not marketed for the biological cycle, are not required to undergo testing for biological pathway(s) at the Bronze and Silver levels. Testing for biological pathway(s) is required at Gold and Platinum. Certification to A C2CPII-recognized standard may still be necessary to demonstrate compatibility with high-value cycling at the Gold level. Please refer to the Further Explanation box for Gold level requirements in this section for additional information.

Demonstrating Compatibility for the Biological Cycle for Paper and Biological Materials with 100% Unmodified Biological and Certified Organic Material (Without Testing)

For paper and biological materials with $\geq 99\%$ unmodified organic material, a disintegration test and (if applicable) a composability test are required per Requirement #4b.

Materials that are 100% unmodified biological and organic certified (e.g., organic certified hemp fiber) may meet this requirement via review and provision of published information demonstrating the requirements are met. This is an alternative to conducting testing on the specific material as produced by the applicant or their supplier. This pathway is applicable for the Bronze and Silver levels.

Required Tests are Specified by Requirement #4 Depending on Material Composition, Cycling Pathway, and the C2CPH-Recognized Test Methods Applied

- Requirement #4b is applicable for *paper and biological materials with $\geq 99\%$ unmodified organic material*. Materials in this category must undergo disintegration testing at their maximum thickness and/or density for all intended biological cycling pathways as well as ecotoxicity testing if intended for the composting pathway(s).
- Requirement #4c is applicable for *plastic materials, biologically derived materials, and biological materials with $< 99\%$ unmodified organic material (including paper that is $< 99\%$ cellulose)*. Materials in this category need to undergo (ultimate) biodegradability testing, disintegration testing at their maximum thickness and/or density, and ecotoxicity testing for all intended biological cycling pathways. In addition, each *individual organic additives (e.g., pigments, inks, colorants, scents, secondary polymers, glues)* present at a concentration of $\geq 1\%$ must be proven to be able to biodegrade either through separate tests or available scientific literature or research studies.
- Requirement #4a is only applicable when #4b and #4c are not relevant. Please contact C2CPH in these cases for confirmation.
- Any other tests or characterization as required by the C2CPH-recognized test methods are also required. For example, EN 13432 places limits on heavy metals such as Zn, Cu, Ni, Cd, Pb, Hg, Cr, Mo, Se, As, and F. EN 13432 also requires at least 50% volatile solids.

The testing methods for (ultimate) biodegradability, disintegration, and ecotoxicity may be specified in the recognized testing methods such as EN 13432. An example of acceptable testing method matrix is given in the table below.

Table – Example of Accepted Test Methods and Qualifying Conditions

Note that other testing options are available. This is an example.

Intended pathway	Biodegradation (Ultimate Biodegradability)	Disintegration (at max thickness and/or density)	Ecotoxicity
Industrial composting for materials typically used for packaging such as biodegradable plastics and paper (based on EN 13432 and similar)	Test method: ISO 14855 as specified in EN 13432 / OK compost INDUSTRIAL Qualifying condition: Maximum duration and minimum disintegration % based on EN 13432	Test method: ISO 16929 as specified in ISO 18606 / OK compost INDUSTRIAL (EN 13432 does not specify a disintegration method) Qualifying condition: Maximum duration and minimum disintegration % based on EN 13432	Test method & qualifying condition: OECD 208 with modifications based on Annex E of EN 13432

Differences between ultimate biodegradability and disintegration testing (adapted from EN 13432):

- Ultimate biodegradability: Breakdown of organic chemical constituents in a material by microorganisms into end products such as carbon dioxide, mineral salts, and water.
- Disintegration: Physical Breakdown of a material into small fragments.

Required Testing for Product Groups and/or Material from Multiple Suppliers

In cases where the certified product consists of variants (e.g., different thicknesses) and/or uses material from multiple suppliers, the applicable tests for the intended pathway(s) must be conducted on each material variant (i.e., each unique composition in the final products) at the maximum thickness and/or density. Similar materials from different suppliers used as alternatives, or different material variants from the same supplier need to be considered to have different compositions and tested individually unless compositional information proves that they are the same. Material variants in a product group containing different concentrations of additives must be considered to have different compositions.

The testing matrix may be reduced if it can be demonstrated—e.g., through information from scientific literature on how the material compositional (including additives) and the material structure affects the outcomes of the applicable tests—that the test on a material represents the worst case within a group of materials of known composition and structure. However, note that a material representing the worst case for one test (e.g., ecotoxicity) may not represent the worst case for another (e.g., disintegration). In such cases, multiple materials must be tested to ensure coverage of worst-case scenarios across all required tests.

Demonstrating Compatibility for Solid Geological and/or Biological Materials in the Biological Cycle

This section is currently in development.

5. For materials with unavoidable release to the environment during product use (e.g., tires, shoe soles, brake pads, apparel textile fibers), the fraction of material that on average is likely to be released to the environment from the total product over its lifetime may not be counted as compatible with the intended cycling pathway, unless it is biodegradable in the likely environment where release occurs.
6. For wet-applied products that are intended to be applied to materials with likely biological cycling pathways (e.g., paints intended to be applied to wood), one of the following conditions must be met:
 - a. The wet-applied product must not typically comprise > 1% by weight of the base material(s) to which it is likely to be applied and the wet-applied product, in combination with the one likely base material, must meet the requirements for solid materials intended for biological cycling (per #4b), or
 - b. The wet-applied product, in combination with one likely base material, must meet the requirements for solid materials intended for biological cycling (per #4c).
7. For wet-applied products that are intended to be applied to materials with likely technical cycling pathways, one of the following conditions must be met:
 - a. If the wet-applied material is an ink for printed products, it must pass the qualifications for de-inkability stated in INGEDE Method 11.
 - b. If the wet-applied material is an adhesive for printed products, it must pass the qualifications for adhesive separation stated in INGEDE Method 12.
 - c. If the wet-applied material is an adhesive for printed products, it must pass the qualifications for adhesive separation stated in INGEDE Method 12.
 - d. Evidence must be provided that the wet-applied material will not adversely affect the reprocessing value of the material to which it has been applied.

Further Explanation

Wet-Applied Products that are Intended to be Applied to Materials with Likely Technical Cycling Pathways

Per Requirement #7a, if the wet-applied material is an ink for printed products, it must pass the qualifications for de-inkability stated in [INGEDE Method 11](#).

INGEDE Method 11 is applicable for ink used for printed paper products only. For other inks, Requirement #7c applies.

In addition to inks specifically, the INGEDE Method 11 test is also required for dispersion paints. This includes pigment dispersions and also gloss and matte paints/varnishes that do not include any

pigments.

Note that the type of paper (coated or uncoated) and the grammage have a significant impact on the deinking result. When assessing deinkability, not only the color, but also the carrier product, must be considered. The grammage with which the INGEDE test was carried out according to Method 11 cannot be undercut (i.e., the proof only applies to the same or higher grammage). Furthermore, a test on coated paper cannot replace that on uncoated paper, as deinking on uncoated paper is usually more challenging.

INGEDE refers to the [European Paper Recycling Council](#) (EPRC) Deinkability scorecard for making deinkability determinations. See the most recent version of the Assessment of Printed Product Recyclability, [Deinkability Score](#) (Section 5: Ratings), EPRC. **For deinkability, the score must be at least 51.**

Per Requirement #7b, *If the wet-applied material is an adhesive for printed products, it must pass the qualifications for adhesive separation stated in INGEDE Method 12. For adhesives, the score must be at least 71 per Assessment of Printed Product Recyclability, [Scorecard for the Removability of Adhesive Applications](#), (Section 5 Rating of the Results), EPRC.*

The required scores are aligned with the requirements of the Blue Angel certification for Printed Matter (DE-UZ 195).

INGEDE Method 12 is applicable for adhesives used for printed paper products only. For other adhesives, Requirement #7c applies.

Per Requirement #7c, *Evidence must be provided that the wet-applied material will not adversely affect the reprocessing value of the material to which it has been applied.*

For substrates commonly recycled via technical municipal cycling systems (e.g., metal, glass, plastic, and paper), the wet-applied product may count towards the percentage compatible when they do not affect the compatibility of the substrate with the recycling pathway based on the requirements specified under "Determining Compatibility for Technical Municipal Cycling Systems (Bronze Level)".

For other substrates in the technical cycle, the wet-applied product may count towards the percentage compatible when the substrate can be recycled together with the applied wet-applied product using the industry-standard recycling process. Alternatively, the wet-applied product can be removed during the industry-standard recycling process. The required evidence may include (as examples) pilot studies/experiments, industry reports, and/or journal articles. At Bronze and Silver, it is not required to demonstrate that "material of the same type or economic value" can be produced, evidence that the recycled materials are of some value or has further uses is sufficient.

Note: In cases where an industry-standard recycling process is not available (i.e., the substrate is not commonly recycled in the sales regions), best available technologies (e.g., from other regions) may be considered. 100% of the wet-applied product must meet the Requirement #7c.

Transparency requirement: A description of how the wet-applied product is compatible with substrate

recycling must be made publicly available per the Transparency Requirements reference document.

8. For products that are liquid formulations (excluding wet-applied products), individual substances within the formulation, or the formulation as a whole may be evaluated when determining the percentage compatible for the biological cycle.
 - a. When evaluating based on individual substance(s), the following conditions apply:
 - i. For organic chemicals and surfactants to count toward the percentage compatible, the substance must biodegrade in the intended cycling pathway(s) within the time period and extent specified by a C2CPII-recognized biodegradability standard test. In addition:
 1. Organic chemicals that have negligible sorption to soil and sediment (i.e., $\log K_{oc} < 1.5$ or comparable alternative) must meet the OECD definition for ultimate biodegradability (aerobic).
 2. Chemically unmodified organic chemicals that have very strong sorption to soil and sediment (i.e., $\log K_{oc} \geq 4.5$ or comparable alternative) must meet the OECD definition of anaerobic biodegradability or ready biodegradability.
 3. Chemically modified organic chemicals that have very strong sorption to soil and sediment (i.e., $\log K_{oc} \geq 4.5$ or comparable alternative) must meet the OECD definition of anaerobic biodegradability.
 - ii. For inorganic chemicals, benign minerals may be counted toward the percentage compatible.
 - iii. Water weight is excluded from the calculation.
 - b. When evaluating the formulation as a whole, if one of the following requirements have been met the product counts as 100% compatible for the biological cycle:
 - i. The formulation has demonstrated ready biodegradability in both anaerobic and aerobic conditions as demonstrated by a C2CPII-recognized biodegradability standard test. (The formulation may also contain benign mineral nutrients.)
 - ii. For consumable consumer products (e.g., shampoo, detergents), the material must biodegrade in the intended cycling pathway(s) within the time period and to the extent specified by a C2CPII-recognized biodegradability standard test.

Further Explanation

Determining Compatibility (i.e., Biodegradability) of Substances within Formulations

The standard indicates that the requirements in this section apply to liquid formulations. The information in this section of the standard and manual may also be used to determine the compatibility of similar solid formulated down-the-drain type products such as a solid soap bar, powder detergent, and cosmetics powders and pastes. However, non-formulated products like toilet paper must be evaluated via the Requirement #4 for solid materials intended for the biological cycle in this section (Section 5.4). Please see information under "C2CPII-recognized Compostability and Biodegradability

Testing Methods” for information on how to assess these product types.

Note: Cradle to Cradle Certified Material Health assessors are qualified and required to verify the requirements in this section.

Organic Chemicals (Including Surfactants)

For Requirement 8.a.i, *For organic chemicals and surfactants to count toward the percentage compatible, the substance must biodegrade in the intended cycling pathway(s) within the time period and extent specified by a C2CPII-recognized biodegradability standard test.*

1. *Organic chemicals that have negligible sorption to soil and sediment (i.e., $\log K_{oc} < 1.5$ or comparable alternative) must meet the OECD definition for ultimate biodegradability (aerobic).*
2. *Chemically unmodified organic chemicals that have very strong sorption to soil and sediment (i.e., $\log K_{oc} \geq 4.5$ or comparable alternative) must meet the OECD definition of anaerobic biodegradability or ready biodegradability.*
3. *Chemically modified organic chemicals that have very strong sorption to soil and sediment (i.e., $\log K_{oc} \geq 4.5$ or comparable alternative) must meet the OECD definition of anaerobic biodegradability.*

As noted in the standard, compatibility (i.e., biodegradability) may be determined on an individual chemical substance basis for formulations. To determine which OECD biodegradability test(s) is/are required for an individual chemical, it is first necessary to determine the $\log K_{oc}$ for that chemical. K_{oc} data can often be located in chemical databases (e.g., the European Chemical Agency’s (ECHA) Chemicals Information system). In addition, K_{oc} may be estimated by a Cradle to Cradle Certified Material Health assessor through substance group-specific, appropriate Quantitative Structure Activity Relationship (QSAR) techniques (see for example [Doucette, 2001](#)) when no experimental values are available for a substance. Once $\log K_{oc}$ has been determined, the next step is to search the literature and other publicly available information for the appropriate biodegradability test data. Comparable alternatives to $\log K_{oc}$ are not yet developed at the time of publishing this manual. Please contact C2CPII to determine if specific alternatives may be applied. Material Health Assessment bodies are also qualified to identify comparable alternatives (e.g., based on $\log K_{ow}$).

C2CPII-recognized biodegradability standard tests for chemical substances include the following:

- For inherent ultimate biodegradability (aerobic): OECD 302A, OECD 302B, OECD 302C, or OECD 304A | $\geq 70\%$ DOC Removal is required.
- For anaerobic biodegradability: OECD 311 | $\geq 60\%$ DOC Removal is required; or $\geq 50\%$ anaerobic degradation probability according to QSAR Biowin 7, or $T_{1/2} < 16$ days in water, soil, or sediment.
- For ready biodegradability: OECD 301 | $\geq 70\%$ DOC removal or $\geq 60\%$ ThOD or $ThCO_2$ removal is required in a 10-day window within the 28-day timeframe; or overall prediction of readily biodegradability according to QSAR.

In summary, this means that an organic substance is compatible and may count toward the required percentages if the following apply:

- $\log K_{oc} < 1.5$: The substance must meet the OECD definition for ultimate biodegradability (aerobic) under OECD 301, 302A, 302B, 302C, or 304A, or QSAR.
- $\log K_{oc} 1.5 - 4.4$: The substance must meet the OECD definition of anaerobic biodegradability **OR** ultimate biodegradability (aerobic). Any one of OECD 301, 302, 304, 311, or QSAR are accepted.
- $\log K_{oc} \geq 4.5$: The substance must meet the OECD definition of anaerobic biodegradability under OECD 311 or QSAR. Exception: Chemically unmodified organic substances with $\log K_{oc} \geq 4.5$ that meet the OECD definition of ready biodegradability are not required to meet the definition of anaerobic biodegradability at the Bronze and Silver levels. Anaerobic biodegradability is required for these substances at Gold level.

Additional requirements apply for the Gold level. Please see the Gold level high-value cycling potential portion of this section of the standard and the related Further Explanation boxes for information.

Note: At the time of publishing this manual, the approach applied in the Material Health Assessment Methodology (MHAM) for assessing persistence does not require consideration of $\log K_{oc}$. This means that **it is possible for a substance with a yellow or green rating for persistence per the MHAM to not meet the Product Circularity requirements.**

Note that it typically will not be necessary to carry out these tests for the purposes of Cradle to Cradle certification. OECD biodegradability test data for individual substances are often available in the publicly available literature and/or chemical information databases. If test data are not available, QSAR results, although less accurate, may be applied as an alternative for both aerobic and anaerobic biodegradability. Cradle to Cradle Certified Material Health assessors are qualified to identify appropriate QSAR derived results.

Benign Minerals

For Requirement 8.a.ii, *For inorganic chemicals, benign minerals may be counted toward the percentage compatible.*

The following salts that contain a combination of the cations or anions listed in the table below may be considered benign minerals if they are not x-assessed or grey as defined by the Cradle to Cradle Certified Material Health Assessment Methodology. Any halogen-containing reactive inorganic substance used for bleaching or disinfectant purposes cannot be considered benign. This is regardless of the intended purpose/function in the product and means it cannot count toward the percentage compatible. For example, sodium chloride can be considered benign, but not sodium hypochlorite.

Geological materials that are not salts may also be considered benign if they are not x-assessed or grey. Please refer to the Geological Materials Assessment Methodology (available on C2CPII's website) for information on how to assess geological materials. When conducting the assessment, eutrophication potential must be considered as part of the "other" hazard endpoint. Note that the need for a hydrolysis step prior to dissolution would not limit classifying a substance as benign, particularly if hydrolysis occurs quickly and fully in the applicable end-of-use pathway(s).

Table – Benign Minerals

Element	Cations	Anions
Phosphorus (P)		H_2PO_4^- , HPO_4^{2-}
Potassium (K)	K^+	
Sulfur (S)		SO_4^{2-}
Calcium (Ca)	Ca^{2+}	
Nitrogen (N)	NH_4^+	NO_3^- , NO_2^-
Iron (Fe)	Fe^{3+} , FeO^+	
Magnesium	Mg^{2+}	
Molybdenum (Mo)	MoO_2^{2+}	MoO_4^{2-}
Manganese (Mn)	Mn^{2+}	
Zinc (Zn)	Zn^{2+}	
Boron (B)		BO_3^{3-} , $\text{B}_4\text{O}_7^{2-}$
Copper (Cu)	Cu^{2+}	
Sodium (Na)	Na^+	
Silicon (Si)	Si_4^+	$[\text{SiO}_{4-x}^{(4-2x)-}]_n$, $0 \leq x \leq 2$
Cl (Chlorine)		Cl^-
Al (Aluminum)	Al^{3+}	AlO^{2-}
Ti (Titanium)	Ti^{4+}	TiO_3^{2-}
Others (if contained in a salt with the above cations or anions)		OH^- , CO_3^{2-} , O^{2-}

Note: Additional minerals or salts may be added to this list upon request to C2CPII and at C2CPII's discretion.

Calculating Percentage Compatible for Formulations

Per Requirement 8.a.iii: *Water weight is excluded from the calculation.*

Therefore, the total percentage compatible is equal to the sum of the percentages of benign minerals, biodegradable organic substances (including surfactants) within the formulation when water is excluded from the percentage calculations. Example: For a formulation that is 75% water, 20% benign minerals and biodegradable organic substances, and 5% non-biodegradable organic substances, the percentage compatible (excluding water) = $(20/25) \times 100 = 80\%$.

Evaluating Whole Formulas for Compatibility (i.e., Biodegradability)

Per Requirement 8b, formulations may be evaluated as a whole (rather than by individual substance as described above). Note that the OECD biodegradability tests specified above for substances may not be used on complex mixtures (although they may be acceptable for simple mixtures of structurally similar substances). Currently, there are no C2CPII-recognized standard tests for evaluating the biodegradability of formulas as a whole. Biodegradability standard tests may be added to this list with pre-approval from C2CPII and at C2CPII's discretion. Until acceptable methods and standards become available for evaluating whole formulations (and are recognized), this section of the standard may be disregarded.

For the Gold and Platinum levels: The use of materials with high-value cycling potential (i.e., high-quality material as defined in #1-2 below) for at least one intended cycling pathway is required.

1. For a material to count toward the required percentage (e.g., 90% at Gold level) of materials compatible with the intended cycling pathway(s), the following conditions must be met:
 - a. Materials intended for technical cycles and solid materials intended for biological cycles must meet one of the following:
 - i. Must not contain additives or features that are likely to result in low-value (i.e., low-quality) reprocessed material,
 - ii. Must be able to substitute for virgin material without loss of essential product function or material durability, or
 - iii. Have at least two subsequent intended cycling pathways.
 - b. Solid materials intended for biological cycles must be certified by a C2CPII-recognized biodegradability or compostability program, or an equivalent alternative to certification must be in place.
2. Select liquid formulations (e.g., soaps, cleaning products, lubricants) must meet minimum percent ready biodegradability and/or anaerobic biodegradability requirements; testing may be required.
3. For plastic beverage containers, plastic caps and lids must remain attached to the container during the product's intended use.

Analytical laboratories conducting required tests must be accredited or certified for the specific analysis per ISO 17025, DIN CERTCO approved, or equivalent.

Further Explanation

Defining High-Value Cycling Potential (Gold Level)

The requirements in this section of the standard essentially define what it means to not downcycle and must be met for at least one intended cycling pathway. The opposite of this definition, and what is encouraged by the standard, is upcycling. Note that each point in this section (#1a, #1b, and #2 above) is addressed in separate Further Explanation boxes.

There are three alternatives for meeting Requirement #1.a (i.e., only one is required):

Materials intended for technical cycles and solid materials intended for biological cycles

1. *Must not contain additives or features that are likely to result in low-value (i.e., low-quality) reprocessed material,*
2. *Must be able to substitute for virgin material without loss of essential product function or material durability, or*
3. *Have at least two intended subsequent cycling pathways.*

Requirement 1.a.i: Must not contain Additives or Features that are Likely to Result in Low-Value (i.e., Low-Quality) Reprocessed Material

There are three pathways for meeting Requirement 1.a.i:

- Materials that are listed in the table under Pathway #1 below and are intended to be cycled via technical municipal recycling systems (as indicated for meeting the Section 5.2 requirements) must follow Pathway #1.
- Any material-pathway combination that is not listed in the Pathway #1 table, and all materials intended for cycling via internal resources and private partnerships (as indicated for meeting the Section 5.2 requirements), must follow Pathway #2. Pathway #2 also applies for wet-applied products recycled separately from their substrate material.
- Wet-applied products recycled with their substrate material must follow Pathway #1 if relying on municipal recycling, and Pathway #3 if relying on internal resources and private partnerships.

Pathway #1 for Achieving Requirement 1.a.i (Municipal Recycling)

Additives or features that are likely to result in low-value (i.e., low quality) reprocessed material are listed in the table below. Materials with these features do **not** meet Requirement 1.a.i above. For plastics, the features listed below for 'All Plastics' **and** those listed for the more specific plastic type (Polyethylene Terephthalate, etc.) both apply.

Solid materials intended for biological cycles and certified by a C2CPII-recognized composability or biodegradability program are considered to have met Requirement 1.a.i for the relevant biological pathway.

Table – Additives or Features that are Likely to Result in Low-Value Reprocessed Material by Material and Pathway

Material and applicable pathway	Additives or features that are likely to result in low-value reprocessed material
All Plastics – mechanical recycling (i.e., shredding followed by extrusion)	• Photo-, oxo-degradable additives (Note that materials containing such additives also render the product as ineligible for certification per Section 2.0 Product Eligibility of this Certification Manual. Note also the oxo-degradable additives are different from oxo-biodegradable additives.) • Optical brighteners. • Dense additives making overall density > 1 g/ml (except for polyethylene terephthalate (PET)). • Incompatible, inseparable polymer coatings (see below for specifics).
Polyethylene Terephthalate (PET) – mechanical recycling	• Melting point < 225° or > 255° C or non-crystallizable. • Additives that create opaque and metallic colors. • Additives that create transparent colors other than clear, light blue, light green. • Nucleating agents. • Oxygen scavengers. • UV Stabilizers. • Hazing agents. • Fluorescers. • Incompatible polymers: Polylactic acid (PLA), polyvinyl chloride (PVC), polystyrene (PS), polyethylene terephthalate glycol (PETG), polyamide (PA) > 1%. • Ethylene vinyl alcohol (EVOH) layer.
Polypropylene (PP) – mechanical recycling	• Additives that create black or opaque colors (i.e., PP that is black and near black). Black and near black colors must be tested or assumed to be incompatible/non-sortable. See Association of Plastics Recyclers (screening test) or ReCyclclass (test methods) for additional information. • Incompatible polymers: EVOH > 1 %, PA, PET, PETG, PVC, polyvinylidene chloride (PVDC), PLA > 1 %.
High-Density Polyethylene (HDPE) – mechanical recycling	• Additives that create dark colors (i.e., HDPE that is black and near black e.g., very dark navy, very dark grey, or very dark purple with L value < 40 or NIR reflectance ≤ to 10%). Black and near black colors must be tested or assumed to be incompatible/non-sortable. See Association of Plastics Recyclers (screening test) or ReCyclclass (test methods) for additional information. • Incompatible polymers: PLA, PVC, PS, PET, PETG, PA, PVDC, EVOH > 1%.
Low Density Polyethylene	• Additives that create dark colors (i.e., LDPE that is black and near black e.g., very dark navy, very dark grey, or very dark purple).

(LDPE) – mechanical recycling	- Any other polymer. - Barrier layers. - Additives ≥ 0.97 g/ml. - Optional: Ensure that the product does not include additives, viscosity, density, or discoloration that negatively affect recycling per the APR Benchmark Polyethylene(PE) Films and Flexible Packaging Innovation Test Protocol (Association of Plastic Recyclers, 2018).
Paper – recycling into paper products, i.e., pulping of paper fibers	- Plastic film lamination or extruded coatings. - Foil stamping. - UV-cured printed inks. - Wax and moisture-preventative coatings. - E-beam inks. - Copper containing pigments blue PB 15:3 and Green PG 7.
Steel – recycling into steel, i.e., remelting of scrap metal	- Lead-based ink. - Attached features containing other metals.
Aluminum – recycling into aluminum, i.e., remelting of scrap metal	- Too many different types of aluminum (> 3 types). - Thin-foil laminations.
Glass - recycling into glass, i.e., remelting of cullet	- Cobalt blue pigment. - Metal tamper-evident rings. - Metal-based inks. - Glass colors other than flint (clear and colorless), green, or amber.
Textiles and Apparel – mechanical fiber-to-fiber recycling	The Bronze and Silver level requirements also apply at the Gold level. This means that the disruptors restricted at the Bronze and Silver levels and the attached material are not compatible with technical municipal cycling systems, unless they are designed for disassembly, see Section 5.6 Product Designed for Disassembly. Additionally, for the Gold level, the following elements are not compatible for high-value municipal (fiber-to-fiber) recycling, unless they are designed for disassembly, see Section 5.6 Product Designed for Disassembly: - Multi-colored fabrics (for mechanical recycling). - Functional hard and soft parts. Note: Soft parts made of the same material as the main fabric are considered compatible. Strategic placement to facilitate

	removal (i.e., “cut-off”) and reduce material before recycling is accepted as a design for disassembly feature. For example, they are visible and placed together on a placket, cuff, or collar so they can easily be removed. See the Bronze and Silver level Further Explanation box for additional Information on functional disruptors. Fabric and fabric blends must contain one of the following: • ≥ 85% cotton when blended with cellulose-based fibers (if not at least 95% cotton), • ≥ 95% wool, • ≥ 90% linen, • 100% polyester, or • 100% polyamide. This means that polyester and polyamide blends are not compatible for high-value recycling. 100% polyester and 100% polyamide fabrics that are not multi-colored and have only removable hard and soft parts are compatible for high-value cycling. Applicants may submit proof that other compositions are being recycled through municipal cycling systems and similar (i.e., public separate collection) to C2CPH for consideration. Design for disassembly might not be possible for some of the disruptors listed.
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Note: This list is derived from Plastic Recyclers of Europe’s RecyClass Tool Guidance (additives or features noted for Limited Compatibility or No Compatibility) and the Association for Plastic Recycler’s Design Guide for Plastics Recyclability (additives or features noted “Detrimental to Recycling” or “Renders Packaging Non-Recyclable”) for plastics, and the Sustainable Packaging Coalition (SPC) Design Guidelines for Sustainable Packaging for paper, metal, and glass materials. Please refer to the [C2C Certified Certification Manual Supplement – Product Circularity Apparel and Textiles](#) for supporting sources specific to textiles and apparel.

Pathway #1 for wet-applied products: Wet-applied products that are applied to substrates (as determined in Section 5.1) listed in the table above (e.g., the substrate is steel), the wet-applied product must not affect the compatibility of the substrate with the recycling pathway as specified in the table above. This means that the wet-applied product may not be part of or contain the listed problematic additives or features. 100% of the wet-applied product must meet the requirement. **Note:** Wet-applied products that will be discarded or burnt off during substrate recycling may not get credit for Pathway #1 (i.e., the wet-applied product must become part of the recycled material to apply Pathway #1).

Pathway #2 for Achieving Requirement 1.a.i

A material is considered to not contain additives or features that are likely to result in low-value (i.e., low quality) reprocessed material when all three of the following conditions are met:

1. The product (or for products new to the market, a similar product) has achieved the Gold level Active Cycling requirements for short use phase products per Section 5.7: *Actively cycle at least some (> 0%) of the product's materials and implement a program to increase the cycling rate or quality of the product for its next use.* For the purposes of the Gold level compatibility requirements, this means that at least some (> 0%) of each material or part that will count towards the $\geq 90\%$ of the product with 'high-value cycling potential' must be actively cycled. Theoretical or planned systems do not receive credit. However, evidence of successful cycling of the same type of product or materials occurring via the relevant system, and evidence demonstrating that it is highly likely that the product will enter the relevant system, is accepted.
2. A product or material(s) of the same type or economic value can be produced in an economically competitive way using the cycled material by the applicant or applicant's cycling partner(s). The partners are those that were identified and engaged for achieving the requirements in standard Section 5.2 Preparing for Active Cycling. Same type means having the same function. Economically competitive means the product can be sold. For products new to the market that are not yet able to be cycled because none have yet reached the end of the use phase, the requirement that a product of the "same type or economic value can be produced" may be demonstrated using cycled material from a laboratory or pilot-scale reprocessing test. "Produced in an economically competitive way" may be demonstrated by the same type of product actively cycled via the relevant system.

Note: Pyrolysis may meet Requirement #2 only when it can be proven that active cycling includes subsequent processing that produces material(s) of the same type or economic value in an economically competitive way. This may not be possible given the typically highly variable mix of hydrocarbons and other substances produced from pyrolysis processes.

3. Communication requirement: For products of a type similar to those that would typically be collected in a curbside recycle bin and recycled at a municipal facility (e.g., plastic water bottles that are not recyclable via municipal systems and so are achieving the requirements via this pathway instead), the applicant must take actions that aim to ensure the municipal recycle stream is not contaminated by their product. This must include communicating directly on the product how it should be cycled (i.e., reused, remanufactured, refurbished, recycled, or made available for anaerobic digestion, composting, or biodegradation) and that it should not be placed in the curbside collection/recycle bin. This must go beyond use of the typical 'chasing arrow' recycling marks (e.g., #7 for plastics, which is misleading in most locations).

Pathway #3 for Achieving Requirement 1.a.i (for Wet-Applied Products Recycled Together with Substrate)

A material (i.e., substrate together with the wet-applied product) is considered to not contain additives or features that are likely to result in low-value (i.e., low quality) reprocessed material when the following conditions are met:

1. Material (composed of the substrate together with the wet-applied product) of the same type or economic value can be produced, using the industry-standard recycling process, in an economically competitive way. This could (for example) be due to high compatibility of the wet-applied product with the recycled material. Same type means having the same function. Economically competitive means the product (recycled substrate) can be sold. The required evidence may include (as examples) pilot studies/experiments, industry reports, and/or journal articles.

Gold level active cycling requirements for short use phase products (Section 5.7) and communication regarding municipal stream contamination (as required in pathway #2 above) is not required for wet-applied products.

Note: In cases where an industry-standard recycling process is not available (i.e., the substrate is not commonly recycled in the sales regions), best available technologies may be considered. 100% of the wet-applied product must meet the requirements.

Wet-applied products that are cycled separately from the substrate **or** have a cycling system for unused product (e.g., unused paint) may use Pathway #2.

Further Explanation

Requirement 1.a.ii: Must be Able to Substitute for Virgin Material Without Loss of Essential Product Function or Material Durability

Requirement 1.a.ii may only be met using a recycling pathway.

Evaluating for Loss of Function and Durability

No (or minimal) loss of essential function and material durability must be demonstrated for the material (including additives) used in the certified product by comparing measurable functional and durability indicators between the recycled material and virgin material. The recycled material tested must be produced by or in consultation with the reprocessing partners as identified in Section 5.2.

- Loss of function must be assumed if cycled material must be mixed with > 50% virgin material and other additives in the next use.
- Loss in material function or durability must also be assumed if there is a > 10% change in suitable physical and/or other measurable indicator(s) in the cycled material compared to virgin material (i.e., > 10% decrease for the parameters currently listed).

Suitable indicators must be determined for the material in question and pre-approved by C2CPH when not listed below. A suitable explanation must be provided on how the indicator(s) chosen are best suited to determine material function and durability. Please refer to the Required Documentation section for additional information required for the approval and the addition of suitable indicators. Thresholds > 10% also require pre-approval by C2CPH.

Potential indicators per material type (non-exhaustive):

- Polymeric plastics
 - Decrease in ductility
 - Decrease in number, weight, or viscosity average molecular weight (g/mol)
 - Decrease in impact strength (kJ/m²)
 - Decrease in tensile strength (MPa)
- Cellulosic fibers
 - Decrease in tensile strength
 - Decrease in bursting strength
 - Decrease in apparent density
- Textiles in general
 - Decrease in abrasion resistance
 - Decrease in tensile strength
 - Decrease in tear strength
 - Decrease in pilling resistance
 - Decrease in colorfastness
- Concrete (per ISO 1920-4:2020)
 - Compressive strength
 - Flexural strength
 - Tensile splitting strength

Wet-applied products that will be recycled, either after separation from the substrate or together with the substrate via the industry-standard recycling process, might be able to meet "substitute for virgin material without loss of essential product function or material durability" with sufficient evidence. For example, zinc coatings can be recycled through a specific steel recycling process. However, this might not be possible for all wet-applied products. In the case of wet-applied products that are recycled together with the substrate, this will entail a comparison between the recycled substrate with wet-applied product and the virgin substrate material.

Note: In cases where an industry-standard recycling process is not available (i.e., the substrate is not commonly recycled in the sales regions), best available technologies may be considered. 100% of the wet-applied product must meet the requirements.

Requirement 1.a.iii: Have at Least Two Intended Subsequent Cycling Pathways

The standard requires *at least two intended subsequent cycling pathways*. This means two successive cycling pathways (i.e., one after the other) rather than two alternative pathways. The two intended

pathway(s) must be defined in Section 5.1 and achieve Bronze level compatibility requirements in Section 5.4, and all other requirements in Section 5.2 and 5.7.

This means that high-value cycling requirements may be considered met for a material if it is intended to be:

- First reused (Bronze compatibility) and subsequently recycled (Bronze compatibility).
- First reused (Bronze compatibility) and subsequently composted (Bronze level testing requirements.) A C2CPH-recognized composting certificate is not required in this scenario to achieve high-level cycling compatibility.

Reminder: At least 90% (at Gold) and 99% (at Platinum) of homogenous materials in the product must meet high-value cycling requirements. This means that for achieving Gold level through requirement 1.a.ii, at least 90% of the materials in a product must have at least two subsequent intended cycling pathways.

Textiles and Apparel

Textiles and apparel that have reuse and recycling as their intended pathways and meet all the Section 5 requirements can be assumed to meet this requirement. However, reuse cannot be assumed for textile and apparel items that are not commonly sorted for reuse via technical municipal collection systems such as socks, tights, undergarments, and workwear.

Further Explanation

For Requirement 1.b, *Solid materials intended for biological cycles must be certified by a C2CPH-recognized compostability program).*

C2CPH-Recognized Compostability Certification Programs

The following are recognized compostability certification programs:

- European Bioplastics: Seedling
- DIN-Geprüft: Industrial Compostable
- Biodegradable Products Institute (BPI)
- TÜV AUSTRIA: OK Compost HOME and OK Compost INDUSTRIAL
- Renewable Energy Assurance Limited: Compostable Materials Certification Scheme (CMCS)

Biodegradability certification programs (e.g., soil biodegradability) may also be used to meet this requirement if they are C2CPH-recognized and applicable to the intended cycling pathway.

Please see [C2CPH-Recognized Certification Programs and Standards](#) for the current list of recognized standards. Additional programs may be recognized and added to this list. Refer to Appendix 2 in this Certification Manual for requirements and the application process for recognition. Materials that are

certified may be assumed to have met Bronze level testing requirements for solid materials in biological cycles (Requirement #4), unless otherwise stated in the recognition notes.

Analytical laboratories conducting required tests must be accredited or certified for the specific analysis per ISO 17025, DIN CERTCO approved, or equivalent.

Further Explanation

Minimum Percent Ready Biodegradability and/or Anaerobic Biodegradability Requirements for Select Liquid Formulations

For Requirement #2, Select liquid formulations (e.g., soaps, cleaning products, lubricants) must meet minimum percent ready biodegradability and/or anaerobic biodegradability requirements; testing may be required.

The *select liquid formulations* subject to this requirement are all consumer and professional use liquid formulations (e.g., both professional use only and household cleaning products). Wet-applied products (e.g., paint) are excluded.

The following is required: Organic substances with log K_{oc} falling between 3 and 4.5 (i.e., having moderate to strong sorption) must be both readily biodegradable and anaerobically biodegradable to count towards the required percentage compatible. Refer to the most recent version of the [Detergents Ingredients Database](#) (DID) for indication of ready and anaerobic biodegradability. If data are not available for the applicable substances in the DID, the following apply:

- For ready biodegradability, OECD 301 or equivalent must be used; ≥ 70% DOC removal or ≥ 60% ThOD or ThCO₂ removal is required in a 10-day window within the 28-day timeframe; or overall prediction of readily biodegradability according to QSAR.
- For anaerobic biodegradability, OECD 311 or equivalent must be used; ≥ 60% DOC removal is required or ≥ 50% anaerobic degradation probability according to QSAR Biowin 7.

In summary, this means that an organic substance is compatible and may count toward the required percentage at the Gold level if the following apply:

- log K_{oc} < 1.5: The substance must meet the OECD definition for ultimate biodegradability (aerobic) under OECD 301, 302A, 302B, 302C, or 304A, or QSAR.
- log K_{oc} 1.5 – 3: The substance must meet the OECD definition of anaerobic biodegradability **OR** ultimate biodegradability (aerobic). Any one of OECD 301, 302, 304, 311, or QSAR are accepted.
- log K_{oc} 3 – 4.4: The substance must meet the OECD definition of anaerobic biodegradability (OECD 311 or QSAR) **AND** ready (aerobic) biodegradability (OECD 301 or QSAR).
- log K_{oc} ≥ 4.5: The substance must meet the OECD definition of anaerobic biodegradability under OECD 311 or QSAR. This also applies to chemically unmodified organic substances.

This is in comparison to the following, which is applicable at all achievement levels. Substances that meet the requirements below may be used towards achieving the required percentages at Bronze, Silver, and for any remaining percentage required to achieve Gold and Platinum level (as a reminder, the required compatibility percentages are Bronze: 50%, Silver: 70%, Gold: 90%, and Platinum 99%).

- $\log K_{oc} < 1.5$: The substance must meet the OECD definition for ultimate biodegradability (aerobic) under OECD 301, 302A, 302B, 302C, or 304A, or QSAR.
- $\log K_{oc} 1.5 - 4.4$: The substance must meet the OECD definition of anaerobic biodegradability **OR** ultimate biodegradability (aerobic). Any one of OECD 301, 302, 304, 311, or QSAR are accepted.
- $\log K_{oc} \geq 4.5$: The substance must meet the OECD definition of anaerobic biodegradability under OECD 311 or QSAR. Only at Bronze and Silver, chemically unmodified organic substances may meet the definition of ready biodegradability instead of anaerobic biodegradability.

As described earlier, for inorganic chemicals, benign minerals may be counted toward the percentage compatible. In addition, water weight is excluded from the calculation.

For more details, refer to the Material Health Assessment Methodology (MHAM), Section 3.3.14 Persistence. However, note that at the time of publishing this manual, the approach applied in the MHAM does not require consideration of $\log K_{oc}$. This means that it is possible for a substance with a yellow or green rating for persistence per the MHAM to not meet the Product Circularity requirements.

If biodegradability test data are not available, QSAR results, although less accurate, may be applied as an alternative both for aerobic and anaerobic biodegradability.

References

The following references support the approach required for the Gold level:

- European Commission, [Impact Assessment Report Part 2/5](#), Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling, and packaging of substances and mixtures (2022).
- German Environment Agency, [REACH: Guidance and Methods for the Identification and Assessment of PMT/vPvB Substances](#) (2023).
- Organisation for Economic Cooperation and Development (OECD), [QSAR Toolbox](#).
- United States Environmental Protection Agency, [Guidance for Reporting on the Environmental Fate and Transport of the Stressors of Concern in Problem Formulations](#) (2010).
- United States Environmental Protection Agency, [Sustainable Futures / P2 Framework Manual 2012 EPA-748-B12-001 5. Estimating Physical / Chemical and Environmental Fate Properties with EPI Suite](#) (2012).

Required Documentation

For a material to count towards the percentage compatible, the following must be provided:

- Bill of Materials (BoM) form or similar listing the materials that are compatible for technical or biological cycling.
- Description of how each material meets the compatibility requirements, for all intended cycling pathway(s). Include supporting evidence (e.g., reference to BoM data, supplier declarations, official specification documentation from the supplier, photos, or test reports).
 - For textile and apparel products, documentation as required per Section 5.6 Product Designed for Disassembly (Gold level) if applicable.
- Calculations demonstrating how the total percentage was determined.
- Evidence of the relevant certifications and/or tests conducted to verify compatibility as required per the standard and manual above (i.e., certificate(s) and/or test results).
 - Tests are valid if they are conducted within three years from the date of application and have not been used in a prior certification or recertification cycle, unless a different validity period is specified by the recognized standard or certificate.
 - C2CPII will consider tests older than three years if sufficient controls are in place to ensure that the material formulation and properties relevant to the tests results did not change. For example, via testing and confirmation from an accredited lab using infrared spectroscopy (relevant for biodegradability and/or compostability tests). This is subject to C2CPII pre-approval on a case-by-case basis.

Documentation requirements when using supplier declaration(s):

- Company letterhead.
- Supplier and company information: Company name, address, contact name, title, and email.
- Material information: Material name, number, type, and affiliated part/product name, number and type (as applicable).
- A list of the specified additives or features, stating either that the material does not contain any of them, and/or identifying each additive or feature present along with its concentration.
- An attestation: "I attest that I am the person named below, and that the information provided in this document is complete, true, and accurate to the best of my knowledge" or equivalent, including name, title, signature, and date.
- Declarations must be signed by an entity with sufficient knowledge of the material or formulation's chemical composition to substantiate the declaration. Physical signatures, electronic signatures, and typed signatures are all acceptable.
- An electronic document generated without a signature may be accepted if it otherwise meets the requirements and includes the following statement (or equivalent): "This document is valid without signature."
- Flexibility in declarations as described in Section 4.2 applies.

Note: C2CPII will be developing a declaration form for this section in future.

In addition, at the Gold level the following are required:

- An explanation of how the high-value cycling potential requirements were met, for at least one intended cycling pathway.
- For materials intended for technical cycles and solid materials intended for biological cycles, documentation is required for at least one of the pathways:
 - For #1.a.i Pathway #1:
 - Confirmation and documentation (i.e., within the Bill of Materials) that additives or features likely to result in low-value reprocessed material are not used. **Note:** Solid materials intended for biological cycles and certified by a C2CPII-recognized composability or biodegradability program are considered to have met requirement 1.a.i for the relevant biological pathway.
 - Include supporting evidence (e.g., reference to BoM data, supplier declarations, official specification documentation from the supplier, photos, or test reports).
 - For #1.a.i Pathway #2:
 - Evidence that active cycling is occurring via the chosen intended cycling pathway(s). Theoretical/planned systems do not receive credit.
 - Evidence of active partnerships with the companies involved in the recovery and processing of the product and/or its materials.
 - Evidence demonstrating that the product or material(s) of the same type or economic value are being produced, in an economically competitive way.
 - For any product of a type similar to those that would typically be collected in a curbside recycle bin: Evidence of communication regarding how to cycle the product on the product itself.
 - For recertification: Evidence that all requirements (#1-4 above) have been met over the past three-year certification period (i.e., a pilot project conducted more than three years prior to the recertification date and not active in the subsequent three-year period does not receive credit at recertification). This must include evidence that the program to increase the cycling rate or quality of the product for its next use has been active over the prior certification period.
 - For #1.a.i Pathway #3: Material (composed of the substrate together with the wet-applied product) of the same type or economic value can be produced, using the industry-standard recycling process, in an economically competitive way.
 - For #1.a.ii Evidence of minimal loss of function or durability:
 - An explanation of the currently implemented process for reprocessing of the material and its use in the same application for a similar product.
 - Supporting evidence showing that the recycled material is produced by or in consultation with the reprocessing partner in Section 5.2 and does not require the incorporation of > 50% virgin material or additives in the next use.
 - An explanation on how the indicator chosen is most relevant in evaluating loss of function and durability for the material. This is required even when indicators are

already listed in the manual. Indicators not yet listed require C2CPII pre-approval, the required documentation are listed at the end of this section.

- Supporting evidence (e.g., test results) showing that there is < 10% decrease comparing the recycled material with the originally sourced virgin material (or increase in the case that a decrease would lead to improved performance for the specific application) in the indicator(s) relevant to the material.
- For #1.a.iii. Evidence of at least two subsequent cycling pathways: An explanation of the physical capability of cycling the material in the two intended subsequent pathways (i.e., one after another). The material must meet Bronze level compatibility requirements for both cycling pathways in Section 5.4 as well as all other requirements in Section 5 (e.g., Section 5.2 and 5.7) for the intended cycling pathways.
- For select liquid formulations: Evidence of achieving the minimum percent ready biodegradability and/or anaerobic biodegradability requirements as described in the Further Explanation box
- For solid materials intended for biological cycles, C2CPII-recognized compostability and/or biodegradability certification certificate. (**Note:** This is not required if a material met high-value cycling using Requirement #1.a.iii.)

Requesting Additions to the List of Indicators Used to Demonstrate Function and Durability

The following must be provided:

- Identity of the material.
- Physical and/or other measurable indicators proposed.
- Academic or other credible publications (i.e., more than one) showing a strong correlation between the indicators and the durability, function and performance of the material.
- A summary of the justification provided within the publications/articles for the high degree of correlation between material durability and function and the indicators.
- Testing data showing how the specific product or material maintains its function and durability based on the corroborated indicator (to be provided after use of the specific indicator has been approved by C2CPII).

Note: C2CPII may accept thresholds > 10% on a case-by-case basis based on the submitted supporting evidence.

5.5 Circular Design Opportunities and Innovation

Intended Outcome(s)

The product is designed in a way that creates more end-of-use cycling opportunities.

Applicable Achievement Level(s)

Gold

Requirement(s)

Gold level: Implement a circular design opportunity or innovation.

For the Gold level, circular design opportunities and innovations receiving credit are those that are commonly known and/or can be demonstrated to contribute to one or more of the following:

1. Increased end-of-use cycling.
2. Greater engagement with users for end-of-use cycling.
3. Prolonged use of the product.
4. Decreased need to extract and produce virgin materials.

For intermediate and wet-applied products, the applicant company must communicate how to implement the circular design opportunity to finished product manufacturer(s) or the customers of the wet-applied material, respectively.

Further Explanation

Scope

Products that are designed to be biodegradable, are compatible for the biodegradation pathway (per the applicable requirements in Section 5.4 Material Compatibility for Technical and/or Biological Cycles), and for which no intervention is needed to ensure active cycling occurs are out of scope for these requirements. For example, this includes cleaning products, soaps, personal care products, and cosmetics.

For intermediate and wet-applied products, the requirements described below apply **in addition to** the requirement to communicate how to implement the circular design opportunity to finished product manufacturer(s), if relevant.

Implementing a Circular Design Opportunity or Innovation

In general, the intent of the requirements in this section is to encourage intentional product design that results in greater product cycling. Therefore, projects that receive credit are those that require that specific design decisions be made. This may include a decision to specify different input materials (e.g., from an industrial symbiosis) or a design decision to specify inputs from the product itself (e.g., when recovered via a take back system). Projects that focus on cycling infrastructure separate from product design decisions are not in scope here. The latter receive credit through other sections of the standard (e.g. Section 5.2 Preparing for Active Cycling).

Choose at least one of the circular design opportunities or innovations below to meet this requirement. The work to implement the design opportunity or innovation may have occurred in the past, as part of the initial product design process or following initial product launch.

1. Designed to Minimize Material Weight

Description: Any product design strategy that will lead to or has led to at least a 10% decrease in material weight within the past six years, resulting in a product with the same or better performance and durability. Alternatively, the product requires at least 10% less material than the average product of the same type.

2. Design Strategy for Prolonging the Use Phase of the Product

Description: Any product design strategy used by the manufacturer to extend the use of the product beyond the most common use phase time (i.e., mode) for the product type.

For the Gold level, determining what is a longer than the most common (i.e., mode) product use phase time: The length of the use phase for any given product may be derived from warranties, public marketing claims, quality tests that address common failure modes, or another data source (if a logical rationale for using the other data source is provided). The product use phase time must be compared to available data on the most common (i.e., mode) use phase time for the product type. The applicant must submit an appropriate source of data and an explanation of how the data were derived.

3. Designed for Product as a Service

Description: A product that is designed to be rented/leased or shared among customers of the product.

4. Designed for Modularity or Upgradability

Description: A product that is designed with parts that are replaceable, and replacement of these parts can be used toward the maintenance, upgrade, or expansion of the product.

5. Designed for Maintenance, Repair, or Refurbishment Services

Description: A product that is designed for maintenance, repair, or refurbishing services that are offered by the manufacturer at low cost (i.e., less than the cost of the product) to help maintain or prolong the use phase of the product.

6. Designed for Manufacturer Recovery and Reuse

Description: A product that is designed for a company take-back program or other company-based recovery initiative aimed at reusing the product, or specifying recycled materials generated from the take-back program to be used in the product. **Note:** Evidence of the take-back program alone is not sufficient, evidence of intentional design is required.

7. Designed for Product Compatibility

Description: A product that is designed for standardization or compatibility with other parts or products, enabling extension of the use phase of the product.

8. Designed for Remanufacturing

Description: A product that has been designed for manufacturer recovery and can have components re-used for other product applications.

9. Designed for Industrial Symbiosis

Description: A product that is designed to utilize waste material from a local and different manufacturing process (within 160 km or 100 miles). Note that industrial symbioses are commonly understood to be between different industries.

10. Designed for Extending Resource Value

Description: A product that is designed to incorporate the residual value of otherwise “wasted” materials or resources.

11. Designed for Mono-material Recycling

Description: A product that is designed with only one type of recyclable material without coatings, where multi-material design is otherwise common.

12. Designed for Other Innovation

Description: A product that is designed in a way that contributes meaningfully to its increased circularity.

Required Documentation

Gold Level

- A description and documentation of the circular design opportunity or innovation implemented for the product (per the list above in the Further Explanation box), including:
 - Partners/collaborators and their roles, if relevant.
 - A description of how the design opportunity or innovation increases product circularity and/or creates more end-of-use cycling opportunities (i.e., how is the opportunity innovative?).
- In addition to the above, documentation indicated below for the circular design opportunity or innovation implemented:
 1. Designed to Minimize Material Weight
 - A description of how the design enabled the use of less material, and data showing how the product weight changed compared to a previous design not older than six years, or compared to an average product of the same type (include references used).
 2. Design Strategy for Prolonging the Use Phase of the Product
 - The most common (i.e., mode) use phase time for the product type, including references used.

- A description of how the design has extended the use phase time of the product beyond the mode.
 - Warranties, public marketing claims, or other data sources for verification of product use phase time.
3. Designed for Product as a Service
 - No additional documentation required.
 4. Designed for Modularity or Upgradability
 - A description of the product design and any case studies. The description must address the ease of assessing the condition of components and tasks required to maintain product performance.
 5. Designed for Maintenance, Repair, or Refurbishment Services
 - A description of the service program and any case studies. The description must address the ease of assessing the condition of components and tasks required to maintain product performance.
 6. Designed for Manufacturer Recovery and Reuse
 - A description of the program and/or partnerships involved in the initiative.
 7. Designed for Product Compatibility
 - A description of how the product is designed for standardization or compatibility, including how the standardization or compatibility with other parts or products works in practice and how it is expected to extend the use phase of the product and/or create more end-of-use cycling opportunities.
 8. Designed for Remanufacturing
 - A description of the remanufacturing process and any collaborating partners involved in utilizing product components.
 9. Designed for Industrial Symbiosis
 - No additional documentation required.
 10. Designed for Extending Resource Value
 - No additional documentation required.
 11. Designed for Mono-material Recycling
 - Evidence that multi-material designs is otherwise common for this product type.
 12. Designed for Other Innovation

- A description of the product design or program and how it contributes to increased circularity in accordance with Cradle to Cradle principles.
- **For intermediate and wet-applied products**, evidence of communication to finished product manufacturers or customers, respectively.

5.6 Product Designed for Disassembly

Intended Outcome(s)

The product may be easily disassembled into discrete materials compatible for its intended cycling pathway(s) making it more likely that a large percentage of the materials in the product will be cycled.

Applicable Achievement Level(s)

Gold and Platinum

Requirement(s)

Gold level: For products with multiple materials requiring separation for cycling in the intended pathway, and for 90% of materials by weight, intentionally design the product for ease of disassembly.

Platinum level: For products with multiple materials requiring separation for cycling in the intended pathway, and for 99% of materials by weight, intentionally design the product for ease of disassembly.

For the Gold and Platinum levels, the following design and communications elements define “ease of disassembly” and are required as applicable for $\geq 90\%$ (for Gold) and $\geq 99\%$ (for Platinum) of materials by weight:

1. The product includes at least one design feature that improves the ease of disassembly compared to a commonly or previously used alternative product.
2. Processes that result in the loss of specific materials in the product in order to recover other materials (e.g., burning plastics to recover metals) must be avoided.
3. If disassembly operations are conducted by an entity other than the applicant company, comprehensive disassembly instructions must be publicly available and accessible to the party(ies) involved in disassembly.
4. If disassembly operations are conducted by the general public, components must be separable using common tools (e.g., hammer, screwdriver, pliers) with minimal technical experience and instruction.
5. For products with ≥ 30 homogeneous materials and/or if disassembly is performed by an entity other than the product user, the disassembly process:
 - a. Must be at least semi-automated (e.g., for electronics), or
 - b. Can occur in a reliably consistent manner with clear instructions (e.g., via a Standard Operating Procedure, or another standardized process for training those who are disassembling the product).

For the Platinum level, the design and communications elements above are required as applicable for $\geq$ 99% of materials by weight.

Exemption

Liquid products, intermediate products, and products that do not require separation for the intended cycling pathway, including multi-material products that are cycled either intact or into a new hybrid material, are exempt from the requirements in this section.

Further Explanation

Scope

This section of the standard applies to *products with multiple materials requiring separation for cycling in the intended pathway*. The requirements in this section do not address any need to uninstall products (e.g., from buildings) prior to cycling. De-installation is addressed in Section 5.4 Material Compatibility for Technical and/or Biological Cycles, which requires: *For products that are installed prior to use (e.g., in a building, a vehicle, or fixed within a sidewalk), it must be possible to extract the product from the installed location.*

Design Features that Improve Ease of Disassembly

Requirement #1 is that: *The product includes at least one design feature that improves the ease of disassembly compared to a commonly or previously used alternative product.*

One or more of the following design features (a non-exhaustive list) may be used toward fulfillment of this requirement:

- Does not require any disassembly to be cycled under the intended cycling pathway.
- Uses fewer fasteners.
- Decreased number of disassembly operations.
- Elimination of destructive processes.
- Minimized the tools needed to disassemble the product.
- Use of detachable/resolvable fasteners.
- Full accessibility to critical parts.
- Increased automation of disassembly and/or improved other mechanisms for material separation that minimize loss of material.

Alternatively, an example of a different design feature (not listed above) may be provided along with evidence supporting its contribution to improved ease of disassembly.

Textiles and Apparel

The listed disruptors in Section 5.4, Further Explanation: Determining Compatibility for Technical Municipal Cycling Systems, are considered compatible with municipal technical recycling, if design for disassembly enables the easy removal of the disruptor. The municipal technical recycling facility (or

similar) should be considered the implementing entity in cases where the collected textile or apparel products are first sorted for reuse before recycling. This ensures disassembly does not hinder product reuse.

For functional hard and soft parts, strategic placement of the parts to facilitate removal and reduce material loss (e.g., “cut off” or trim removal strategy) before recycling is accepted as a design for disassembly feature. For example, disruptors are visible and placed together on a placket, cuff, or collar so they can easily be removed. C2CPII will consider similar strategies that facilitate trim removal. The report [Synthesis on optical sorting and recognition technologies, sorting and disassembly of textile materials](#), Refashion and Terra, provide insights on the state of the art of trim removal.

Requirements for Disassembly Instructions

Requirement #3 is that: *If disassembly operations are conducted by an entity other than the applicant company, comprehensive disassembly instructions must be publicly available and accessible to the party(ies) involved in disassembly.*

If disassembly instructions are required, they must include the following elements:

- A description of each step in the disassembly operation.
- Identification of parts and components.
- The type of connectors involved.
- How to access components and parts.
- Tools required for each step.
- Accompanying audio or visual instructions or diagrams (e.g., disassembly precedence graph, disassembly tree, state diagram, hypergraph).

Alternative Compliance Pathways

Alternatively, implementation of one of the following Circular Design Opportunities or Innovations, as described in Section 5.5 for the Gold level, may count towards fulfillment of this requirement. In this case, the same design opportunity may receive credit in this section and in Section 5.5.

- Designed for Product as a Service/Service Product.
- Designed for Modularity or Upgradability.
- Designed for Maintenance or Repair Services.
- Designed for Manufacturer Recovery or Reuse.
- Designed for Product Compatibility.

Required Documentation

Gold Level

- An explanation of the product design optimization work that was conducted to implement the design feature(s).

- An explanation of how the product is disassembled, addressing all required points.
- If disassembly is carried out by an entity other than the applicant company and/or by the general public: Disassembly instructions.
- For products with ≥ 30 homogeneous materials and/or if disassembly is performed by an entity other than the product user: Evidence of the automated disassembly process in place and/or documented standard operating procedure (SOP) for disassembly operations.
- Evidence that the design feature(s) apply to 90% of materials in the product by weight.

Platinum Level

- Evidence that the design feature(s) apply to 99% of materials in the product by weight.

Gold and Platinum Levels (Alternative Compliance Pathway)

If using the alternative compliance pathway described in the Further Explanation box above, documentation as required per Section 5.5 Circular Design Opportunities and Innovation, instead of the documentation listed above.

5.7 Active Cycling

Intended Outcome(s)

The product's materials are actively being recovered and processed for their next use via the intended cycles and/or the product manufacturer is demonstrably invested in a program that will lead to higher product and material cycling rates and/or a higher quality of materials available for cycling.

Applicable Achievement Level(s)

Gold and Platinum

Requirement(s)

Gold level: For select single-use plastic products and single-use plastic packaging (when certified as a separate product), actively cycle $\geq 50\%$ of the product's materials and implement a program to increase the cycling rate or quality of the product for its next use.

For other short-use phase products, and for any product that is required to be cycled per leading regulations (e.g., electronics, apparel), actively cycle at least some ($> 0\%$) of the product's materials and implement a program to increase the cycling rate or quality of the product for its next use.

For long-use phase products, actively cycle at least some ($> 0\%$) of the product's materials or implement a program to increase the cycling rate or quality of the product for its next use.

Note: Per the Definitions (Section 12), a short-use phase product is a product with a use phase time that is typically less than four years.

Platinum level: For long-use phase products, actively cycle the product's materials and implement a program to increase the cycling rate or quality of the product for its next use.

Monitor cycling rates and quality over time and demonstrate an increase in either cumulative cycling rate or quality.

Actively cycle a minimum percentage of the product's materials based on the duration of the product's use phase.

Active cycling includes both recovery and processing of the product's materials for their next use.

Requirements for a material or product to be considered high quality or have high-value cycling potential are provided in Section 5.4 for the Gold level.

The "select" single-use plastic products and single-use plastic packaging required to achieve $\geq 50\%$ active cycling at the Gold level are eligible product and packaging types that are subject to extended producer responsibility regulations and/or regulatory measures intended to reduce use. Exception: If the plastic material within the product is made from responsibly sourced renewable material and it is demonstrated to readily biodegrade in all relevant environmental compartments where there is potential for release and disposition (e.g., soil, freshwater including wetlands, marine water including surface and deep water conditions), the active cycling rate for other short-use phase products may be applied ($> 0\%$).

Further Explanation

Determining the Length of a Product's Use Phase

For the Gold level, active cycling is required for short-use phase products and for products required to be cycled per leading regulations. Active cycling is optional for long-use phase products. Note the alternative for long-use phase products at the Gold level to implement a program to increase the cycling rate or quality of the product for its next use.

Short-use phase and long-use phase products are defined in the standard Definitions Section as follows:

- **Long-use phase product** – A product with a use phase time that is typically greater than four years.
- **Short-use phase product** – A product with a use phase time that is typically less than four years.

The estimated average use phase time for a product may be derived from warranties, public marketing claims, or quality tests that address common failure modes.

Products Required to be Cycled Per Leading Regulations

The European Union and some U.S. States (e.g., California, New York) are currently considered to have leading regulations that require product cycling. At the time of publishing this manual, the following product types are considered to be subject to leading regulations and therefore active cycling is required at the Gold level. Note that active cycling is required in all cases at the Gold level for these product types, including when the product(s) are sold in any other region and/or have a use phase of more than four years.

- Apparel
- Electronics
- Carpets
- Mattresses
- Batteries
- Tires/Tyres

'Select' Single-use Plastic Products and Single-use Plastic Packaging Required to Achieve $\geq 50\%$ Active Cycling at the Gold Level

The 'select' single-use plastic products and single-use plastic packaging required to achieve $\geq 50\%$ active cycling at the Gold level are eligible product and packaging types that are subject to extended producer responsibility regulations and/or regulatory measures intended to reduce use.

This is currently defined per the [European Union's single-use plastics directive](#), Part A and E in the Annex. These include:

- Cups for beverages (including their covers and lids),
- Food containers, with or without a cover, containing food intended for immediate consumption, typically consumed from the receptacle, and ready to be consumed without any further preparation (e.g., cooking, boiling or heating). This point includes food containers used for fast food or other meal ready for immediate consumption, except beverage containers (listed below), and plates and packets and wrappers containing food (listed below).
- Packets and wrappers made from flexible material containing food that is intended for immediate consumption from the packet or wrapper without any further preparation.
- Beverage containers with a capacity of up to three liters (e.g., beverage bottles including their caps and lids). Glass or metal containers that have caps and lids made from plastic are excluded.
- Lightweight plastic carrier bags (thickness below 50 microns). **Note:** Lightweight plastic carrier bags (thickness below 50 microns) are not eligible for certification except for food bags with a thickness <15 microns intended for composting.
- Wet wipes.
- Balloons, except balloons for industrial or other professional uses and applications that are not distributed to consumers.

The regulations referenced and the list of select single-use plastic products and single-use plastic packaging required to achieve $\geq 50\%$ active cycling at the Gold level will be further updated and maintained in the Certification Manual. If interested in certifying a single-use plastic item that is not listed above, please contact C2CPII regarding if it is considered subject to extended producer responsibility regulations and/or regulatory measures intended to reduce use (and therefore required to achieve $\geq 50\%$ active cycling).

Determining the Percentage of the Product that is Actively Cycled

The percentage of the product that is actively cycled must be calculated at the Gold level for 'select' single-use plastic products and single-use plastic packaging (e.g., beverage cups and bottles as indicated above in Section 5.7 and at the Platinum level for all other product types.

For product types other than the 'select' single-use plastic products and single-use plastic packaging listed above, **evidence** of active cycling (> 0%) may be provided at the Gold level. The actual cycling rate does not have to be determined. Further, it is not required to have the ability to trace the specific product through the applicable cycling system. Evidence of successful cycling of the same type of product and/or materials occurring via the relevant system and evidence demonstrating that it is highly likely that the product will enter the relevant system is accepted for the Gold level. This approach is also accepted for products new to the market that are not yet able to be cycled because none have yet reached the end of the use phase.

Evidence of active cycling must cover both *recovery* (i.e., collection and transport of material to the recycling facility) *and processing* (e.g., recycling process) *of the product's materials for their next use*.

Important note: Evidence for successful cycling (> 0%) is required for all intended cycling pathways. This means that a product with recycling and reuse as intended cycling pathways must provide evidence for both pathways.

Exemption: For paper materials that are not marketed for the biological pathway and that meet Section 5 requirements for the recycling pathway, it is not required to provide evidence of active cycling for the biological pathway. However, the paper must still be designated to a biological pathway, and testing must be conducted as per Section 5.4.

The percentage of actively cycled (%AC) of the product is calculated as follows:

$$\%AC = \frac{\text{total weight of the product or its components and materials cycled in a recent reference year}}{\text{total weight of products sold in (reference year - L)}}$$

Where:

- *Total weight of the product or its components and materials cycled* = the weight of all components and materials that are cycled pre-processing (after collecting and sorting), not the weight of recovered material. Note that weight is used instead of the number of products since components or materials are usually cycled rather than whole products.
- *Recent reference year* = the most recent full calendar or fiscal year for which data are available (e.g., the calendar year prior to the certification application), and
- *L* = the product's estimated average use phase time as described above (e.g., based on warranties, public marketing claims, or quality tests).

If possible, representative sales and recovery (i.e., pre-processing) weights should be obtained for every region in which the product is sold. At a minimum, the applicant must use representative data for

regions representing at least 60% of sales, where 'region' is defined as an individual state/region (e.g., in the United States) or an individual country.

For example, a table similar to the one below could be used to make the required calculations. In the case below (for a product with a use phase of 10 years), it would be acceptable to only obtain data for Country #3 since 67.5% of sales occurred in this country.

Table – Example Calculation to Determine the Active Cycling Rate

Location	Product sold in 2010 (kg)	% sold in 2010 (by weight)	Product cycled in 2020 (kg)	Active cycling (%)
Country 1	500	0.6%	100	20.0%
Country 2	20,000	24.5%	25	0.1%
Country 3	55,000	67.5%	5,000	9.1%
Country 4	6,000	7.4%	160	2.7%
Total	81,500		5,285	6.5%*

*Total active cycling % = Sum of product cycled in 2020 (kg) / Sum of product sold in 2010 (kg) = 5285/81500 = 6.5%. **Note:** There are 10 years between the product cycled data and product sold data because 10 years is the use phase time.

Applying Municipal Cycling Rates

For products that are cycled via municipal systems, the percentage of the product that is actively cycled may be determined using data on cycling rates for the product type in the regions where the product is sold, in combination with the product's sales weight in each region in which data are available. For example, if the product is a PET bottle sold in California, the cycling rate for PET bottles in California is 50%, and 60% of the product's manufactured weight is sold in California, the % actively cycled for the product may be assumed to be at least 30% (i.e., 50% x 60%).

Applying the Exception for Select Single-use Plastic Products and Single-use Plastic Packaging

For product types required to achieve ≥ 50% active cycling at the Gold level, the following exception applies:

If the plastic material within the product is made from responsibly sourced renewable material and it is demonstrated to readily biodegrade in all relevant environmental compartments where there is potential for release and disposition (e.g., soil, freshwater including wetlands, marine water including surface and deep water conditions), the active cycling rate for other short-use phase products may be applied (> 0%).

Note that commonly employed standardized tests do not currently exist for all environmental compartments and potential conditions. Therefore, acceptable methods for demonstrating that the requirements included in the exception have been met will be determined on a case-by-case basis.

Further Explanation

Programs to Increase Cycling Rate or Quality

For the Gold level, programs to increase cycling rate or quality are required for short-use phase products and are optional for long-use phase products (with the alternative for long-use phase products at the Gold level to actively cycle at least some of the product). See the Further Explanation box above for how to determine if a product has a short or long use phase.

Increasing Cycling Rates

The following are examples of acceptable programs to increase the cycling rate or quality of the product:

- **Circular accounting** - To receive credit, the applicant must have invested in a system that facilitates tracking of product cycling. Examples include:
 - Using RFID or similar tracking technology.
 - Targeting waste management inefficiencies in the recycling stream (e.g., [Recycle Track Systems](#)).
 - Implementing a system for tracking take-back rates of products in the company's take-back program (e.g., [retrievr.com](#), previously 'Curb my Clutter').
 - Implementing a leasing program where products are tracked by leasing ownership.
- **Circular incentives** - To receive credit, the applicant must contribute monetarily to incentivize cycling by the user of the product **or** must contribute to a program that encourages increased adoption of cycling activity of their product. Examples include:
 - Providing a monetary incentive to customers to cycle the product.
 - Developing a product-as-a-service program.
- Other programs that increase cycling rates:
 - Increasing the scale of the cycling program (e.g., through TerraCycle).
 - Initiating an additional partnership for take-back.
 - Increasing engagement with partners involved in cycling (e.g., expansion of take-back program to other communities).

Improving Cycling Quality

To receive credit, the program must lead to a measurable improvement in cycling quality with the requirements for high-value cycling per standard and guidance Section 5.4 Material Compatibility for Technical and/or Biological Cycles as the baseline. In other words, the program implemented for achieving the requirement in Section 5.8 is expected to go beyond what has already been done to achieve the high-value cycling requirements in Section 5.4. For example, this could include work to improve cycling quality for the other 10% of the product's materials that are not already in scope for achieving the Gold level in Section 5.4 or achieving more than one of the Section 5.4 Gold level requirements in #2.a.ii *Must be able to substitute for virgin material without loss of essential product*

function or material durability, contain at least 80% renewable or post-consumer recycled content, or have at least two plausible next uses. Using a material that is 100% responsibly sourced renewable (rather than 80%) also receives credit.

For the Platinum level:

1. If demonstrating an increase in cumulative cycling rate, the increase must be via one or more intended cycling pathway(s).
2. The minimum required percentage of actively cycled product is a function of the product's use phase duration or the average use phase duration for the product type (the shorter the use phase, the higher the minimum percentage required). This minimum required percentage is calculated as follows:

$$\frac{100}{2+L}$$

where L is the product use phase time (in years) or the average use phase time for the product type (in years). If using the use phase time for the product, lifetime warranties may not be used for its derivation.

Exemptions

Long-use phase products that have been on the market for a time period less than the product's average use phase are exempt from the Platinum level requirements.

The following are exempt from all requirements in this section:

1. Intermediate products.
2. Liquid formulations and formulated products intended for biological cycling pathway(s) that require no intervention for active cycling to occur.

Further Explanation

Platinum Level: Calculating the Minimum Required Percentage Actively Cycled: $100/(2+L)$

For the Platinum level, the following is required: *Actively cycle a minimum percentage of the product's materials based on the duration of the product's use phase.* As noted previously, the use phase time or average use phase time (i.e., duration) for any given product may be derived from warranties, public marketing claims, and/or quality tests that address common failure modes. Note that average use phase time in this calculation refers to the average for the specific product, not the average for all products of this type on the market.

For single-use products, $L=0$ when calculating the minimum percentage. The result is that the minimum percentage that must be actively cycled for this product type is 50% (i.e., $= 100/(2+0)$). For the Gold level, 50% is already the required percentage for select single-use plastic products and single-use plastic packaging. Therefore, the Platinum level requirements for this product type are to *Monitor cycling rates and quality over time, and demonstrate an increase in either cumulative cycling rate or quality*.

Short use phase products and products required to be cycled per leading regulations are subject to the Platinum requirements, including when they are new to the market. However, note that it is not required to have the ability to trace the specific product through the applicable cycling system. Platinum level may be achieved by demonstrating (1) the minimum required percentage of active cycling is occurring for similar product(s) with the same expected use phase duration via the relevant system, and (2) that it is highly likely for the product to enter the relevant system. Cycling rates that are available for third-party cycling systems may be employed in the calculations, similar to the approach for municipal cycling described in the Gold level Further Explanation Box.

Exemptions

The standard states that 2. *Liquid formulations and formulated products intended for biological cycling pathway(s) that require no intervention for active cycling to occur* are exempt from all Section 5.7 requirements (all achievement levels). This exemption also applies more generally to products that are designed to be biodegradable, are demonstrated to be compatible for the biodegradation pathway (per the applicable requirements in Section 5.4 Material Compatibility for Technical and/or Biological Cycles), and for which no intervention is needed to ensure active cycling occurs (e.g., passive biodegradation in water or soil). This will be true when the most likely cycling pathway aligns with the intended end-of-use pathway. For example, in addition to liquid formulations, this may also include non-liquid cosmetics and personal care consumables (e.g., solid soaps, face powder, and lipstick).

The standard also states *Long-use phase products that have been on the market for a time period less than the product's average use phase* are exempt from the Platinum level requirement. All platinum level requirements are exempt in this case. However, Gold level requirements still apply.

Note: Cycling pathways that rely on the participation of end-users, such as home composting, are not exempt from requirements in this section. The requirements in this section apply.

Required Documentation

Applicable Achievement Level by Product Type	Required Documentation
<u>Gold Level</u> All products	Documentation to verify the use phase time of the product applying for certification, including one or more of the following: Warranties, public marketing claims, quality tests that address common failure modes, or another data source. If using another data source, the applicant must provide an explanation for why that data source is accurate in estimating the use phase time.
<u>Gold Level</u> - Short-use phase products (including select single-use plastics) and products required to be cycled per leading regulations. - Long-use phase products if selecting the option to actively cycle at least some (> 0%) of the product's materials <u>Platinum Level</u> - Long-use phase products.	- Evidence for active cycling is required for all intended cycling pathway(s). Evidence is also required for home-composting where the end-user executes the cycling pathway. These should include (non-exhaustive): - Delivery notes of materials recovered from the end-user. - Verification and photo documentation of the cycling process during the site-visit. - If the product is cycled via a manufacturer or third-party take-back program, active cycling may be assumed to be occurring if the following are provided: - Evidence that active cycling is actually occurring via the relevant intended cycling pathway(s). - If it is not possible to differentiate between the applicant product and others that are collected through the program, a description of how the products collected are all of the same type and fulfill the same function as the applicant product. - A description of the partnership companies involved in the recovery and processing of materials in the product. Supporting evidence must include a statement on a website or an active contract. - If the product can be cycled via municipal systems, or systems supported by product stewardship (EPR) laws, and is sold in regions where the system is available, active cycling may be assumed to be occurring for the relevant cycling pathway(s) if the following are provided:

	○ Evidence of the municipal and/or product stewardship law program's existence in the applicable state(s)/region(s)/country(ies) in which the product is sold. ○ A description of how the product or products of the same type are cycled through the program(s).
<u>Gold Level</u> • Short-use phase products (including select single-use plastics) and products required to be cycled per leading regulations. • Long-use phase products if selecting the option to implement a program to increase the cycling rate or quality of the product for its next use <u>Platinum Level</u> • Long-use phase products	• A description of the program that has been implemented to increase cycling rates or quality, and how it will do so. If implementing a program to increase quality, the description must refer to the high-value cycling potential requirements in Section 5.4 Material Compatibility for Technical and/or Biological Cycles (Gold level).
<u>Gold Level</u> • Select single-use plastics. <u>Platinum Level</u> • All products	• Percent of product actively cycled and the required minimum percentage, including calculations and supporting sales and cycling data used to determine the percentages.
<u>Platinum Level</u> • All products	• A description of the method used for tracking the cycling rates or quality of the product. • Relevant data and calculations that demonstrate that an increase in cycling rates or quality was achieved. The source of the statistics, calculations, and rationale must also be provided.

5.8 Transparency

Intended Outcome(s)

Product and manufacturing data are available to stakeholders, demonstrating the manufacturer's commitment to accountability for their impacts and encouraging ever-improving performance.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirement(s)

Publicly disclose information and/or data consistent with the product's level of achievement in the Product Circularity category, as defined by the requirements in the Cradle to Cradle Certified Transparency Requirements reference document.

Note: At the time of publishing the Version 5.0 standard, there are required Product Circularity disclosures at all achievement levels. Please see the most recent version of the Transparency Requirements reference document for the applicable requirements, as this reference document may be updated periodically even if the standard version has not changed.

Further Explanation

For additional information and documentation requirements please refer to the [Transparency Requirements](#) reference document and Transparency Report Form. The Form is available to Cradle to Cradle Certified Conformity Assessment Bodies.

6 // Clean Air & Climate Protection Requirements

Category Intent

Product manufacturing results in a positive impact on air quality, the renewable energy supply, and the balance of climate-changing greenhouse gases.

Requirements Summary

To achieve a desired level within the category, the requirements at all lower levels must also be met.

Requirement	Bronze	Silver	Gold	Platinum
6.1: Final manufacturing facilities comply with air emissions regulations or guidelines—i.e., permits, international guidelines, or industry best practice.	●	●	●	●
6.2: Annual electricity use and greenhouse gas emissions associated with the final manufacturing stage of the product have been quantified.	●	●	●	●
6.3: 5% target(s)* for procuring or producing renewable electricity and/or addressing greenhouse gas emissions have been achieved. Applicable to final manufacturing stage electricity and emissions only.	●	●	●	●
6.2: For construction products and building materials used to construct primary building elements, the embodied emissions associated with the product from cradle-to-gate or through end-of-use have been quantified, a third-party critical review is conducted, and an Environmental Product Declaration (EPD) produced.		●	●	●
6.3: 20% target(s)* for procuring or producing renewable electricity and/or addressing greenhouse gas emissions have been achieved. Applicable to final manufacturing stage electricity and emissions only. Alternative: 25% of the embodied emissions associated with the product from cradle-to-gate or through end-of-use are offset or otherwise addressed (e.g., through projects with suppliers, product redesign, savings during the use phase). Note: This is required at the Gold level in all cases.		●	●	●

6.2: For all other product types, the embodied emissions associated with the product from cradle-to-gate or through end-of-use have been quantified and third-party verification or an internal review is conducted.			●	●
6.3: 50% target(s)* for procuring or producing renewable electricity and/or addressing greenhouse gas emissions have been achieved. Applicable to final manufacturing stage electricity and emissions only. 50% of the renewable electricity (25% of total electricity used) is either produced on site or procured through long-term power purchase agreements (PPAs) or PPAs signed pre-financing supporting new renewable electricity installations. Alternative: Renewable electricity procurement supporting new generation matches 100% of electricity used at final manufacturing facilities.			●	●
6.4: Blowing agents used in the manufacture of the product's foam materials (any foam > 1% of product by weight) have low to no global warming potential and no ozone depletion potential.			●	●
6.5: 25% of the embodied emissions associated with the product from cradle-to-gate or through end-of-use are offset or otherwise addressed (e.g., through projects with suppliers, product redesign, savings during the use phase).			●	●
6.2: For all other product types, a third-party critical review of the quantification of embodied greenhouse gas emissions associated with the product from resource extraction through end of use is conducted, and an Environmental Product Declaration (EPD) produced.				●
6.3: Fully electrify, use renewable electricity for total energy demand, and eliminate on-site greenhouse gas emissions: > 100% of electricity is renewably sourced. The electricity is produced on site or procured through				●

long-term power purchase agreements (PPAs) or PPAs signed pre-financing supporting new renewable electricity installations. Eligible sources of bioenergy receiving full credit (e.g., wastewater methane) may be used. Applicable to final manufacturing stage electricity and emissions only.				
6.5: 100% of the embodied emissions associated with the product from cradle-to-gate or through end-of-use are offset or otherwise addressed (e.g., through projects with suppliers, product redesign, savings during the use phase).				●
6.6: Publicly disclose information and/or data consistent with the product's level of achievement in Clean Air & Climate Protection. (See the Transparency Requirements reference document for details.)	●	●	●	●

*Depending on the achievement level, the “targets” may apply to renewable electricity procurement or onsite production and use, performance improvements (emissions intensity reductions), absolute emissions reductions, use of eligible bioenergy sources, purchase of carbon offsets, and/or financial donations or investments.

6.1 Air Emissions Compliance

Intended Outcome(s)

The final manufacturing stage facilities where the product is manufactured are in compliance with regulatory and/or industry best practice air emissions limitations.

Applicable Achievement Level(s)

Bronze

Requirement(s)

Final manufacturing stage facilities comply with air emissions regulations or guidelines.

Facilities must comply with the corresponding regional regulatory (if any), international, or industry best practice air emissions guidelines.

Compliance with all applicable laws and regulations, including compliance with regional regulatory air emissions limitations, is required as a baseline. For final manufacturing stage facilities meeting this requirement based on regulatory compliance, the parameters addressed in the permit must also be consistent with leading regulations, international guidelines, or industry best practice. Leading regulations

are defined as those that include a functioning mechanism through which ambient air quality-based limits are set (i.e., assessment of the existing ambient air quality is used to inform and set the permitted limits with the goal of maintaining high quality standards).

Further Explanation

At the Bronze level, facilities are required to comply with their air emissions permits. Facilities in locations without leading regulations are required to control additional parameters (beyond what is required by permits) if the parameters on their permits are not consistent with leading regulations or other guidelines.

The requirements apply to final manufacturing facilities, not only to air emissions that occur as a result of manufacturing the product(s) under review for certification. This means that in some cases, facilities will be subject to these requirements when the process to produce the certified product does not produce emissions to air. Please refer to [Final Manufacturing Stage Process Definitions](#) for guidance on how to identify the final manufacturing stage and the related facilities. In some cases, supplier facilities are part of the final manufacturing stage and are therefore subject to the Section 7.1 requirements (and all other applicable requirements pertaining to final manufacturing stage facilities).

The requirements in this section apply to facilities that are required to hold air emissions permits or that would otherwise be subject to international guidelines as described below. This includes, for example, any on-site combustion used to produce energy.

A signed explanation and declaration are required in all cases (i.e., for all facilities), even if the requirements do not otherwise apply (e.g., no emissions are produced and no permit is required). In low-risk situations, a signed explanation and declaration alone are accepted as evidence of compliance. In high-risk situations, supporting documentation must be submitted (e.g., permit, test results, etc.). Refer to the Required Documentation box below for additional information.

The following definitions apply:

Compliance: Compliance means that the manufacturing facility is adhering to the limitations required by the permit or other guideline (as relevant). This must be true currently and for one year prior to certification (for new certifications) or three years prior (for recertifications). Compliance is more specifically defined per the applicable regulations or guideline. If the permitting authority allows minor exceedances (e.g., exceedances of a certain frequency and amount may be allowed without corrective action required and/or violations may be otherwise categorized as major and minor), such exceedances are also accepted for the purposes of Cradle to Cradle Certified. If the regulations do not classify exceedances as minor vs. major (or similar), any case where a permit is suspended, withdrawn, and/or where a facility is required to shut down until the issue is corrected is considered major. In this case, the issue must be addressed and resolved prior to certification. Note that minor exceedances are common, including in locations with 'leading regulations'. To determine if a facility is in compliance, emissions test results, summarized as required by the permitting authority, must be compared to what is allowed

according to the permit.

Leading regulations: *Leading regulations are defined as those that include a functioning mechanism through which ambient air quality-based limits are set (i.e., assessment of the existing ambient air quality is used to inform and set the permitted limits with the goal of maintaining high quality standards).* This is in contrast to technology-based limits that are set based on what is economically and/or otherwise technically feasible. An exhaustive list of locations with functioning mechanisms through which ambient air quality-based limits are set has not been developed. However, it may currently be assumed that facilities in the European Union, Canada, Iceland, Japan, Liechtenstein, Norway, Switzerland, United Kingdom, and the United States are subject to leading regulations. This means that in these locations, the parameters addressed in the permits are by definition consistent with leading regulations as required. This is the default assumption. This may be assumed unless evidence to the contrary comes to light for individual permits. Please contact C2CPH to determine next steps if this occurs. Other regions may be added to this list upon consultation with and pre-approval from C2CPH. This reference provides a list of countries that have set ambient air quality standards: United Nations Environment Programme, [Regulating Air Quality](#) – The First Global Assessment of Air Pollution Legislation, 2021; however, it is noted that many are not aligned with the World Health Organization's recommendations. In addition, enforcement may be weak in some locations.

Requirements for Final Manufacturing Facilities in Locations With 'Leading Regulations'

Facilities in these locations are required to demonstrate permit compliance. A signed explanation and declaration alone are accepted as evidence, with an exception for cases where there have been major or significant non-compliances in the prior year (for initial/new certification), or prior three years (for recertification). See Definitions above and the Required Documentation box for additional information.

Requirements for Final Manufacturing Facilities in Locations Without 'Leading Regulations'

Facilities in these locations are also required to demonstrate permit compliance. A signed explanation and declaration is required in all cases. Additional supporting documentation (e.g., permit and test data) is required as well unless the site is determined to be "low risk" overall. See the Required Documentation box for additional information.

Determining Parameter Consistency with Leading Regulations:

For facilities in locations without leading regulations, *the parameters addressed in the permit must be consistent with leading regulations, international guidelines, or industry best practice.* If the parameters are not consistent, additional work is required as described below.

For any facility that does not carry out processes that fall within the categories of activities per the EU's [Industrial Emissions Directive](#) (Annex I) and any subsequent updates, it may be assumed that the parameters are consistent. In this case it is not required to directly compare the parameters controlled by the facility's permit with leading regulations or other guidelines. This may occur for assembly operations and other minor emitters.

Otherwise, to determine if the parameters included in existing air emissions permits* are consistent with leading regulations, international guidelines, or industry best practice:

- Select a set of guidelines from the references listed below that are relevant to the industry and processes occurring at the facility.
- If guidelines specific to the industry are not available, reference guidelines for an industry sector with analogous processes (this aligns with the International Finance Corporation's (IFC) approach).
- Compare the existing permits to these guidelines. The permits must include limitations on all parameters and specific chemical substances that are included in the selected set of comparative guidelines in order to be considered consistent. **Note:** At this stage, the limits themselves are not required to be compared, only the parameters.
- If any parameters or substances are missing from the permits, the applicant must identify appropriate limits for the additional parameters and/or substances per the international or industry best practice guidelines and demonstrate adherence to these limits as described in the applicable reference below.

*If permits do not exist, and processes that are typically controlled per international guidelines are occurring regularly at the facility (per the IFC reference below at a minimum), the same steps apply.

International and Industry Best Practice Guidelines:

International and industry best practice guidelines include:

- International Finance Corporation (IFC) - [Environmental Health and Safety Guidelines](#)
- European Union - Best Available Techniques Reference document ([BREFs](#))
- United States – U. S. Environmental Protection Agency, [Clean Air Act Standards and Guidelines](#) and National Emissions Standards for Hazardous Air Pollutants

Note: This list does not currently include 'industry best practice' guidelines (only international guidelines). The term is included so that the list can be expanded in the event that such guidelines become available (e.g., the similar Water & Soil Stewardship requirements refer to the ZDHC Wastewater Guidelines)

Confirming that Emissions Control Capacity is Sufficient for Compliance

For manufacturing facilities in locations without leading regulations that also carry out air pollutant intense processes, **the capacity of the on-site emissions control equipment must be compared to throughput as a check on whether the facility is able to consistently control its emissions as required.** If equipment capacity is insufficient, then the issue must be resolved prior to certification. Exception: This analysis is not required if continuous emissions monitoring data are available which may more accurately demonstrate consistent compliance with emissions limits over time.

Air pollutant-intense processes: Processes that fall within the categories of activities listed in the [Industrial Emissions Directive](#) (2010/75/EU) Annex I and any subsequent updates are considered air

pollutant intense. Facilities that conduct assembly of pre-formed parts only are not considered to have air pollutant intense processes. Otherwise, please refer to the directive.

The specific information necessary for making this determination will vary by pollutant and installed equipment. Examples of relevant information include:

- Process throughput: Quantity of material processed per unit time (e.g., liters/hour, kg/hour, meters/hour).
- Substance concentration: Amount of volatile or hazardous substances present in the material, typically found in safety data sheets (SDSs).
- Emission potential: Estimated or measured rate at which the substance is released into the air (e.g., evaporation rate, dust generation rate).
- Control equipment specifications: Airflow capacity (e.g., m³/h), removal efficiency (%), and source of data (e.g., vendor datasheets, engineering reports).
- Permitted emissions limit: Regulatory or certification threshold for emissions concentration (e.g., mg/m³).
- Monitoring data: Availability of emissions monitoring reports or continuous emissions monitoring (CEM) systems, which may provide more accurate evidence of compliance.
- Engineering assessments: Any calculations or evaluations comparing expected emissions with control capacity. Note that such calculations will typically have been made when equipment was first installed at a minimum. Plant engineers, managers, or similar are expected to have access to such assessments.
- Corrective actions: Steps taken or planned if the equipment is found to be inadequate (e.g., upgrades, process changes).

Note that if the estimated post-control concentration exceeds the permitted limit, the facility is expected to either refine the assumptions using more accurate data or implement corrective measures to ensure compliance.

Statements regarding this determination may be provided by the facility as part of the required of compliance statement. Examples of statements are provided after the Required Documentation box at the end of this section.

Example: A facility operates a VOC-based paint line with VOC emissions control equipment. The equipment specifications indicate the exhaust fan has a flow rate of 10,000 m³/h and 90% VOC removal efficiency. The facility applies 50 liters of paint per hour. The SDS indicates the paint contains 450 g/L of VOCs. VOC evaporation is assumed to be 100%. The permitted VOC limit is 50 mg/m³. Equipment flow rate and removal rate were obtained from the original vendor specification sheets (provided with the equipment when purchased). These spec sheets are also provided with the application for certification.

- Step 1 – Calculate total VOCs entering exhaust air: 450 g/l * 50 l/hour = 22,500 g/hour

- Step 2 – Calculate VOC concentration before control: $22,500\text{g/hour} \div 10,000\text{ m}^3/\text{h} = 2.25\text{ g/m}^3 = 2,250\text{ mg/m}^3$
- Step 3 – Calculate VOC emissions after 90% control efficiency: $22,500\text{ g/hour} * (1 - 0.90) = 2,250\text{ g/hour}$
- Step 4 – Calculate VOC concentration after control: $2,250\text{ g/hour} \div 10,000\text{ m}^3/\text{h} = 0.225\text{g/m}^3 = 225\text{ mg/m}^3$
- Step 5 – Compare (estimated) concentration after control to permitted limit: The resulting concentration after control (225 mg/m³) exceeds the permitted limit (50 mg/m³) significantly, indicating that the equipment is potentially inadequate. However, the assumption that 100% of VOCs evaporate may be high. If more accurate information on evaporation is available this should be taken into consideration.

When Final Manufacturing Facilities are Not in Compliance

Products manufactured in facilities that are not in compliance as defined in the guidance above are not eligible for certification unless it can be demonstrated that the issues resulting in non-compliance have been corrected. If this is demonstrated, non-compliances that have occurred in the prior year (for new certification) or prior three years (for recertification) are acceptable.

Analytical Testing

In general, additional analytical testing (beyond the testing already required by existing permits) is not required for the purposes of Cradle to Cradle certification unless:

- It is necessary to demonstrate that permit non-compliances have been corrected, or
- For locations without leading regulations, it is necessary to demonstrate compliance with additional parameters and limits that are not already controlled by the permits to align with best practice guidelines. Note that in this case, only those substances that are not already tested as required for permit compliance must be (newly) tested.

Per the International Finance Corporation, General Environmental, Health, and Safety Guidelines, [Air Emissions and Ambient Air Quality](#), "Monitoring programs should apply national or international methods for sample collection and analysis, such as those published by the International Organization for Standardization, the European Committee for Standardization, or the U.S. Environmental Protection Agency."

The following references may be helpful in identifying appropriate analytical test methods:

- [Air Emissions Measurement Center](#), United States Environmental Protection Agency (see section titled 'Test Methods')
- [JRC Reference Report on Monitoring of Emissions to Air and Water from IED Installations](#), Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control), European Commission, 2018. (see Chapter 7 Annexes)

Required Documentation

Documentation requirements vary by risk level. The following definitions apply:

Low risk: Facilities in locations considered to have leading regulations and effective enforcement. At the time of publishing this document, all locations with leading regulations are also considered to have effective enforcement. This includes: All European Union member states, Canada, Iceland, Japan, Liechtenstein, Norway, Switzerland, United Kingdom, and the United States. This list of low-risk locations is subject to update in future. Exception: Facilities that have had major or significant non-compliances in the prior year (for initial/new certification), or prior three years (for recertification) are not low risk. Additional documentation is required as indicated below.

High risk: Facilities in locations without leading regulations and/or effective enforcement. Currently, this includes all locations that are not designated as low risk above. Exception: Facilities that are not required to hold a permit and also do not conduct air pollutant intense processes are not considered high risk for the purposes of this requirement.

Air pollutant-intense processes: Processes that fall within the categories of activities listed in the [Industrial Emissions Directive](#) (2010/75/EU) Annex I and any subsequent updates. Facilities that conduct assembly processes of pre-formed parts only are not considered to have air pollutant intense processes. Otherwise, please refer to the directive to make this determination.

Required documentation for all facilities:

A signed explanation and declaration from the applicant or final manufacturer (as applicable based on site ownership) stating that the facility or facilities at which the product is manufactured (1) is/are not required to hold air emissions permits, or (2) is/are in compliance with the permit(s) and has/have been in compliance for the prior year (for initial/new certification), or for the prior three years (for recertification). The statement must have been signed within the year prior to C2CPH receiving all documentation to apply for certification. Statements must be signed by a representative of the facility with sufficient knowledge of the facility's compliance status. Example declarations are provided in the Further Explanation box that follows.

Additional required documentation for high-risk situations:

In addition to a signed declaration (described above), the following list of supporting documentation is required for:

1. Facilities that have had major or significant non-compliances in the prior year (for initial/new certification), or prior three years (for recertification), and
2. Facilities in locations without leading regulations and/or effective enforcement that (a) are required to hold a permit or, (b) conduct air pollutant intense processes. (**Note**: If one of these is true the other is not required to be considered).
 - A copy of the permit(s) including all controlled parameters and limitations, and/or other air

emissions guidelines employed (either in place of permits or used to determine consistency) as relevant.

- Test results as and if required by the permits or other guidelines.
- Test results are to be summarized as required by the permitting authority or other guideline, as relevant.
- At a minimum, biannual testing is required (i.e., two times per year) unless otherwise specified by the permit or guideline.
- When testing is required: For the initial certification provide two sets of test data from the prior year at a minimum. For recertification, provide six sets of test data (i.e., two per year for the prior three-year certification cycle).
- Alternatively, if compliance information is publicly available, a printout or screenshot of the data demonstrating regulatory compliance.
- Alternatively, a statement signed by the relevant regulatory authority stating that the manufacturing facility has been in compliance over the prior year (for new certifications), or prior three years (for recertifications) is accepted.
- For facilities conducting air pollutant-intense processes: Evidence of sufficient emissions control equipment capacity. This may include a description of system design, technical manuals and specifications, and calculations or estimates comparing actual or expected pollutant load after control to the permitted limits or to other relevant thresholds. This evidence is required for parameters that are covered by local permits and for any additional parameters that are being assessed for certification beyond legal requirements.
- If guidelines other than those indicated by permits are used, and guidelines specific to the industry are not available, provide the rationale for selecting the comparative guidelines, including a description of how the processes occurring at the facility are analogous to the relevant industry.
- If a facility has minor or non-significant exceedances that are acceptable per local authorities, evidence that this is the case (e.g., a letter from the local authority indicating the exceedance has been accepted without penalty or reference to the regulation that defines this tolerance).

Further Explanation

Required Documentation Example Statements

A written statement is required in all cases to demonstrate conformance with Section 6.1 Air Emissions Compliance. The content of the statement will vary depending on whether (1) an air permit is required or not, (2) the facility is in a location with leading regulations (these locations are also considered to have effective enforcement currently but in future a location could be removed from the list due to enforcement issues), (3) air pollutant-intense process occur, (4) there have been significant or major non-compliances during the specific time frame under consideration (one year for initial certifications, three for recertifications), (5) the application is for initial certification or recertification to Version 5, and

(6) whether the parameters on the permit are consistent with leading regulations (if required to be checked).

The table below provides example statements for some common scenarios (considering this range of variables). These are examples only. Applicants must tailor their own statements accordingly based on their facility's specific circumstances. It is preferred if statements are provided on company letterhead. All statements must be signed by a company representative who is knowledgeable about the environmental permit requirements and status applicable to the facility. Acceptable signatories may include, as examples, Environmental Compliance Manager, Environmental Engineer, or Plant Manager. Include typed name, title, signature, and date. Note that signatures are not included in the examples. Signatures may be physical/handwritten or digital. In addition to the signed statement, supporting documents are required in some cases. These documents may be referenced in the statement (i.e., it is recommended and helpful but not required to mention them in the statement itself) and included as attachments. Examples of supporting documents include copies of permits and emissions test reports.

Table – Air Emissions Compliance Example Statements

Scenario	Example Statement
	Note: Example signatures are not included. Note: The attachments listed in the statements are not provided, they are example file names only. Supporting documentation is required where example file names are listed.
No permit required	
Location with leading regulations and effective enforcement.	We, Company XYZ, hereby declare that Facility ABC, located at Mainzer Landstraße 210, 60327 Frankfurt am Main, Germany, is not required to hold an air emissions permit. The activities conducted at this facility are limited to the assembly of pre-formed parts. Based on the nature of these operations, and in accordance with guidance from local environmental authorities and applicable EU-wide regulations, these activities are not subject to air emissions permitting requirements.
Location without leading regulations and without air pollutant intense processes.	We, Company XYZ, hereby declare that Facility ABC, located at Plot #42, Export Processing Zone (EPZ) Road South Haliashahar, Chittagong 4100 Bangladesh, is not required to hold an air emissions permit. The processes conducted at this facility are assembly of pre-formed parts only. These processes are not considered to produce significant emissions to air by local regulatory authorities or the leading European Union regulation controlling industrial emissions (i.e., the Industrial Emissions Directive).
Permit required	

Not previously certified to Versions 4.0, 4.1, or 5.0

Location with leading regulations and effective enforcement. In compliance with the permit for at least one year.	We, Company XYZ, hereby declare that Facility ABC, located at Nieuwe Ginnekenstraat 45, 4811 NM, Breda, Netherlands, is required to hold an air emissions permit for the control of volatile organic compounds (VOCs). We confirm that this facility is currently in compliance with its permit and has maintained compliance throughout the past year. Analytical tests are regularly conducted as required per the permit. The test reports demonstrate ongoing compliance.
Location with leading regulations and effective enforcement. Major or significant non-compliances have occurred in the past year, but the issue has been corrected.	We, Company XYZ, hereby declare that Facility ABC, located at 12 Rue des Marronniers, 69002 Lyon, France, is required to hold an air emissions permit for the control of volatile organic compounds (VOCs) and nitrogen oxides (NO_x). We confirm that this facility is currently in compliance with its permit. A major non-compliance (resulting in a fine) occurred in the past year due to equipment failure. The equipment has since been repaired and the facility has maintained compliance since the repair was completed. Please see the attached repair contract, equipment technical specifications and capacity documentation, and analytical test report 2 (dated after the repair occurred) as evidence. Attachments: Permit.pdf, TestData1.pdf, TestData2.pdf, Repair_Contract_010125.pdf, Emissions_controlequip_manual.pdf, control capacity calculation_061525.xls
Location without leading regulations. In compliance with the permit for at least one year. Parameters on the permit are consistent with leading regulations.	We, Company XYZ, hereby declare that Facility ABC, located at 1288 Keji South Road, Nanshan District, Shenzhen, Guangdong 518057, China is required to hold an air emissions permit for the control of volatile organic compounds (VOCs). We confirm that this facility is currently in compliance with its permit and has maintained compliance throughout the past year. Air emissions control equipment capacity is sufficient to consistently achieve the permitted limits. Processes conducted at the facility are assembly and (solvent based) painting. The parameters on the permit are the same as required per a leading regulation (Directive 2010/75/EU including 2024 updates) for facilities conducting these processes. Attachments: Permit.pdf, test data1_011525.pdf, test data 2_061525.pdf, Emissions_controlequip_manual.pdf, control capacity calculation_061525.xls, Directive 2010/75/EU.pdf

Location without leading regulations. In compliance with the permit for at least one year. Parameters on the permit are not consistent with leading regulations, but the facility is controlling additional parameters per an international guideline.	We, Company XYZ, hereby declare that Facility ABC, located at 1288 Keji South Road, Nanshan District, Shenzhen, Guangdong 518057, China is required to hold an air emissions permit for the control of volatile organic compounds (VOCs). We confirm that this facility is currently in compliance with its permit and has maintained compliance throughout the past year. Air emissions control equipment capacity is sufficient to consistently achieve the permitted limits. Facility ABC conducts a variety of printing processes. While the parameters outlined in the facility's air emissions permit differ from those specified in the International Finance Corporation's (IFC) Environmental, Health, and Safety Guidelines for Printing (an international guideline applicable to the facility), the facility is actively monitoring and controlling the additional parameters required by the IFC guidelines. Specifically, the facility additionally tracks and manages emissions of: Particulates, Nitrogen Oxides (NO_x), and Isocyanates. These measures are in place to ensure alignment with applicable international environmental standards. Please refer to the attached documentation for further details and supporting information. Attachments: Permit.pdf, two sets of test data (data1_011525.pdf, test data 2_061525.pdf), Control equipment technical specifications.pdf, air emissions control capacity calculations and explanation_061525, IFC_EHS_Printing_2007.
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Permit required Product previously certified to Versions 4.0, 4.1, or 5.0 (and now recertifying)	
Location with leading regulations and effective enforcement. In compliance with the permit for at least three* years.	We, Company XYZ, hereby declare that Facility ABC, located in Breda, Netherlands, is required to hold an air emissions permit for the control of volatile organic compounds (VOCs). We confirm that this facility is currently in compliance with its permit and has maintained compliance throughout the past three years.

***Note:** In general, example statements for recertification are the same as those for initial certification except that one year is replaced with three years and two sets of test data are replaced with six sets if provision of test data is required. Note also that if there are major or significant non-compliances that occur during the course of the certification, Section 3.1 Compliance Assurance requires that C2CPII

and/or the Conformity Assessment Body be notified given this impacts achievement of the Section 6.1 requirements

6.2 Quantifying Electricity Use and Greenhouse Gas Emissions

Intended Outcome(s)

Electricity use and greenhouse gas emissions associated with final manufacturing and the product's embodied greenhouse gas emissions have been quantified and verified, creating a baseline against which reductions can be measured, and helping to identify areas for improvement.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirement(s)

Bronze level: Quantify annual electricity use and greenhouse gas emissions associated with the final manufacturing stage of the product.

Silver level: For construction products and building materials used to construct primary building elements (i.e., products for which life cycle assessment is common practice), quantify the embodied greenhouse gas emissions associated with the product from resource extraction through final manufacturing or end-of-use, and produce an Environmental Product Declaration (EPD) that has been critically reviewed by a third-party.

Gold level: For other product types, quantify the embodied greenhouse gas emissions associated with the product from resource extraction through final manufacturing or end-of-use and, if self-reported, conduct an internal review.

Platinum level: For all product types, conduct a third-party critical review of the quantification of embodied greenhouse gas emissions associated with the product from resource extraction through end-of-use and produce an Environmental Product Declaration (EPD).

For the Bronze level:

1. Report electricity in terms of kWh or equivalent and the resulting greenhouse gas emissions in terms of CO₂e.
2. Report greenhouse gas emissions from all other sources (e.g., direct emissions from burning fuels, including biofuels) in terms of CO₂e.

The methods employed must follow a recognized greenhouse gas accounting methodology (i.e., the Greenhouse Gas Protocol or others listed by CDP).

For the Silver, Gold, and Platinum levels, the methods employed to quantify embodied emissions must follow ISO 14040 and ISO 14044 (Environmental management – Life cycle assessment – Principles and framework; and Environmental management – Life cycle assessment – Requirements and guidelines) or

other standards or guidance based on ISO 14040 and ISO 14044 (e.g., the Greenhouse Gas Protocol Product Life Cycle and Accounting Standard). If available, product category rules must be followed.

Environmental Product Declarations (EPDs) must conform to ISO 14025 and EN 15804 or ISO 21930. C2CPII-recognized equivalent alternatives to EPDs may also be used.

Primary building elements are defined as:

1. The structural frame, including beams, columns, and slabs,
2. External walls, cladding, and insulation,
3. Floors and ceilings,
4. External walls,
5. Internal walls,
6. Windows,
7. Roofs, and
8. Foundations and substructures.

For product types where a third-party critical review is not required at the Gold level (i.e., all products except construction products and building materials), if embodied emissions were quantified by a qualified third party, an internal review is not required. If embodied emissions were quantified by the applicant company (i.e., self-reported), third-party verification may be requested by C2CPII should the application audit surface concerns about whether the data are complete or accurate.

Further Explanation

Bronze Level

Quantifying Electricity Use and Greenhouse Gas Emissions for the Final Manufacturing Stage

The Bronze level requirement is to *Quantify annual electricity use and greenhouse gas emissions associated with the final manufacturing stage of the product.*

Annual electricity use and greenhouse gas emissions must be quantified. For new certifications and for recertifications transitioning from Version 3.1 to Version 5.0, at least one year of data is required. Typically, this will cover the full year prior to certification. Two or more years of data are recommended.

For recertifications to Version 5.0, (including transitions from Version 4.0 or Version 4.1 to Version 5.0) data for the prior certification period, including extensions of the prior certificate (if any), is required.

Updated data from the entire previous fiscal or calendar year is required if six months have passed since the calendar or fiscal year's end. If an application is submitted after this six-month period, comprehensive data from the entire previous year must be provided. For example, if the fiscal or calendar year ends on December 31, 2024, and an application is submitted after June 30, 2025, complete data from 2024 must be included in the submission. This applies to the latest year of data; note that more than one year of data is required for recertifications.

If Energy Attribute Certificates (EACs) and/or carbon offsets will be employed for achieving the targets

(per Section 6.4), the amounts that must be procured are determined based on historical data. However, it is the electricity use and emissions occurring during the active certification period that are required to be addressed. This means that adjustments to align actual use and emissions with the amount of EACs and offsets procured will be necessary. Alignment should occur annually during the active certification period at a minimum. Applicants are required to track this information themselves and make adjustment as needed during the course of the certification, as agreed to in the Certification Agreement and the Compliance Assurance section of the standard (Section 3.1). This will be checked and verified at recertification. Collecting more than one year of data initially is therefore recommended to capture the variability. This variability can then be built into EAC and offset procurement schedules to improve alignment. See Section 6.4 for additional requirements pertaining to EACs and offsets.

For products that are new to the market, product specific historical data are not available. In this case, annual electricity use and emissions may be estimated from data for similar product(s) for the purposes of the initial certification.

At a minimum, electricity use and greenhouse gas emissions for all final manufacturing stage processes must be included. The processes that constitute the final manufacturing stage are defined by industry category in the Cradle to Cradle Certified® [Final Manufacturing Stage Process Definitions](#). Note that if the product (or parts thereof) is/are transported between final manufacturing stage facilities or within one or more final manufacturing stage facilities (e.g., via forklift), the related transport energy use and emissions are in scope along with the energy used and emissions attributable to carrying out the final manufacturing stage processes themselves. The final manufacturing stage will typically align with the “production” phase in the Greenhouse Gas Protocol Product Life Cycle Accounting and Reporting Standard (i.e., scope 1 and scope 2* emissions attributable to the product). Unless product-specific inline metering is in place, this will typically require first quantifying electricity and greenhouse gas emissions for the entire facility and then allocating a certain amount of electricity and emissions to manufacture of the certified product. **If allocation from facility level data to the product is necessary, allocate using the most appropriate method and units** (e.g., as recommended by the most recent version of the Greenhouse Gas Protocol Product Life Cycle Accounting and Reporting Standard or other guidance based on ISO 14040) and relevant Product Category Rules, if available. Transport emissions can be present in scope 1 and scope 3, depending on which stage of the life cycle they occur. Note that regardless of scope, they are expected to be included when transport is occurring between final manufacturing stage facilities given they are part of the final manufacturing stage. Emissions from on-site combustion for energy are included if the energy use is allocated to the product.

Allocation is commonly done by weight, volume, number of units, or sales value. Non-attributable processes (e.g., facility overhead energy use) may be excluded if it is possible to do so given how energy use is measured and tracked. **All greenhouse gases (i.e., not only CO₂) and all product-attributable electricity use and greenhouse gas emissions must be quantified.** This includes emissions from non-energy sources (e.g., methane from wastewater treatment ponds, carbon dioxide emissions from cement production, and fugitive refrigerant emissions). For guidance on estimating emissions from wastewater treatment, please see [Chapter 6, Wastewater Treatment and Discharge](#), 2019 Refinement to

the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. See Table 6.1 for types of treatment and disposal that may be a significant source of methane and nitrous oxide emissions. Types of treatment and disposal that are listed as potentially significant sources of emissions must be included in the emissions estimates if within the scope of the final manufacturing stage.

*Per the Definitions section of the standard:

Scope 1 emissions – Emissions from operations that are owned or controlled by the reporting (i.e., applicant) company.

Scope 2 emissions – Indirect emissions from the generation of purchased or acquired electricity, steam, heat, or cooling consumed by the reporting (i.e., applicant) company.

Note: The terms “scope 1” and “scope 2” are used in the GHG Protocol’s [Corporate Accounting and Reporting Standard](#). They are not used in the context of product-allocated production phase emissions in the GHG Protocol’s [Product Life Cycle Accounting and Reporting Standard](#).

An alternative that removes the need to allocate (which can be imprecise) is to quantify annual electricity use and greenhouse gas emissions associated with entire final manufacturing stage facility(ies) and apply the targets applicable to final manufacturing (per Section 6.4 Using Renewable Electricity and Addressing Greenhouse Gas Emissions in Final Manufacturing) to entire facilities as well. This approach is recommended when inline metering is not available and as a best practice for more comprehensively addressing emissions.

To calculate greenhouse gas emissions, usage data (e.g., the amount of electricity or natural gas consumed) must be multiplied by greenhouse gas emissions factors. The most recent 100-year Global Warming Potentials (GWPs) as provided by the Intergovernmental Panel on Climate Change (IPCC) must be employed. Greenhouse gas emissions factors applicable to some electric grid regions (the European Union and United States) and for commonly used fuel types are provided in the C2C Certified Clean Air & Climate Protection Form. Note that it will be necessary to purchase emissions factors for some electric grids from the International Energy Agency directly.

In general, the standard requires that *the methods employed must follow a recognized greenhouse gas accounting methodology (i.e., the Greenhouse Gas Protocol or others listed by CDP)*. This is necessary, for example, to ensure appropriate allocation methods are used (if allocation is necessary) and to identify non-attributable processes (where relevant).

Reporting Electricity Use and Greenhouse Gas Emissions for the Final Manufacturing Stage

The standard requires the following:

1. Report electricity in terms of kWh or equivalent and the resulting greenhouse gas emissions in terms of CO₂e.
2. Report greenhouse gas emissions from all other sources (e.g., direct emissions from burning fuels, including biofuels) in terms of CO₂

Electricity use and the resulting (scope 2) greenhouse gas emissions are reported separately from all

other emissions combined (i.e., both scope 1 and 2) to facilitate achieving the targets in Section 6.4 via the use of energy attribute certificates (e.g., Renewable Energy Certificates (RECs) and/or Guarantees of Origin (GOs)), which are in terms of units of energy rather than emissions (i.e., one REC or GO represents 1 MWh of electricity). Greenhouse gas emissions attributable to the electricity must still be reported when attribute certificates will be employed but should not be added to emissions from other sources (per #2 above). If using carbon offsets to address emissions attributable to purchased electricity and achieve the targets in Section 6.4, greenhouse gas emissions from all scope 1 and 2 sources may be combined for the purposes of meeting the targets. In addition, residual emissions factors, if available, must be employed. Otherwise, average emissions factors for the relevant grid, if available, or country if not, may be applied.

For facilities with on-site cogeneration: If using fossil fuels, report the resulting greenhouse gas emissions as part of 'emissions from all other sources' (#2 above). If using bio-based fuels, refer to the sub-section of this document titled "Accounting for Bioenergy and Applying the Bioenergy Credit" (in Section 6.2) for how to account for this.

Data summarized through energy tracking or environmental accounting software may be provided. Please see the documentation section for the documentation requirements in these cases. The documentation requirements depend on if a qualified third-party has verified the data aggregation and calculation. A qualified third-party is impartial and has demonstrated expertise in energy use, greenhouse gas accounting, and environmental data systems. Impartiality may be demonstrated by ISO 17029 accreditation.

References

- World Resources Institute and World Business Council for Sustainable Development, [Greenhouse Gas Protocol Product Life Cycle Accounting and Reporting Standard](#), 2013
- [Greenhouse Gas Protocol Calculation Tools](#) (e.g., GHG Emissions from Stationary Combustion)
- Intergovernmental Panel on Climate Change (IPCC) - (this is the United Nations body for assessing the science related to climate change and is an authoritative reference on climate change science including the cause, impacts, mitigation, and adaptation as well as a reference for global warming potentials)
- The International Energy Agency (IEA) - source of country level emissions factors for purchased electricity (fee based)
- Association of Issuing Bodies, [European Residual Mix](#)
- United States Environmental Protection Agency, [eGRID](#) - source of emissions factors for purchased electricity by grid region for the United States

Further Explanation

Silver, Gold, and Platinum Levels

Cradle to Cradle requires that embodied greenhouse gas emissions be quantified either at the Silver level or the Gold level depending on the product type. The achievement level at which an Environmental Product Declaration (EPD) and critical review are required also varies by product type. See the table below for a summary of requirements in this section.

Identifying Construction Products and Building Materials Used to Construct Primary Building Elements

The requirements to quantify embodied emissions and produce an EPD apply at lower achievement levels for *construction products and building materials used to construct primary building elements*. Quantifying embodied emissions and producing EPDs is required at lower achievement levels for these product types to support whole building life cycle assessment (LCA) initiatives and regulations aimed at reducing the greenhouse gas emissions associated with buildings.

Per the standard, the primary building elements are: *The structural frame, including beams, columns, and slabs, external walls, cladding, and insulation, floors and ceilings, external walls, internal walls, windows, roofs, and foundations and substructures*. This list was taken from [Green Public Procurement Criteria for Office Building Design, Construction and Management](#), European Commission, Technical Background Report and Final Criteria, 2016.

“Primary building elements” include structural elements and critical components of the building envelope that separate conditioned or semi-heated spaces from the exterior. Interior design elements, finishes, and furnishings (e.g., carpet, paint, office partitions) currently are not included in the definition. Exterior decorative elements also are not included in the definition.

In general, materials that are required to be included in the baseline building as defined by leading whole building LCA methodologies are considered “primary building elements”. See the most recent version of the LEED Building Life-Cycle Impact Reduction credits (which references ASHRAE 90.1–2010 to define a baseline building), Athena Sustainable Materials Institute, and EN 15978:2011 for additional information on whole building LCA.

In some cases, it may be necessary to review how a product is marketed to determine if it is a primary building element. For example, a wall tile could be used as cladding depending on its durability, but unless it is marketed as such it may be considered an interior finish (and therefore not a primary building element).

Quantifying Embodied Greenhouse Gas Emissions

The total embodied greenhouse gas emissions associated with a product are the emissions resulting from raw material production or extraction, manufacturing, use, and end-of-use. **The scope** of quantification for the Silver and Gold levels is *from resource extraction through final manufacturing or end-of-use*, and at Platinum the scope is *from resource extraction through end-of-use*. In other words, the

scope must be cradle-to-gate at a minimum though the Gold level and **must cover the entire life cycle at Platinum**. Cycling of the product should be included in the analysis to the degree feasible. For Silver or Gold level (depending on product type), only greenhouse gas emissions are required to be quantified as part of the assessment; however, once an EPD is required, other impacts must also be included (see section below regarding EPDs).

Per the standard, *the methods employed to quantify embodied emissions must follow ISO 14040 and ISO 14044 (Environmental management – Life cycle assessment – Principles and framework and – Requirements and guidelines) or other standards or guidance based on ISO 14040 and ISO 14044 (e.g., the Greenhouse Gas Protocol Product Life Cycle and Accounting Standard). If available, Product Category Rules must be followed*. Note that if an EPD conforming with ISO 14025 is available, it may be assumed that the underlying life cycle assessment conforms with ISO 14040 and 14044.

Note on packaging: Refer to the latest Product Category Rules for the product to determine if packaging is in scope. Product Category Rules set standards for conducting life cycle assessments within a product category, such as for EPDs, including which processes and stages of the product's life cycle must be in scope. One possible source for Product Category Rules is the [International EPD System \(IES\)](#), EPD International AB.

Carbon offsets/credits or similar carbon trading instruments may not be considered when quantifying embodied greenhouse gas emissions. They are used to address the quantified emissions and thus must not be included in the calculations.

Who May Quantify and Verify Embodied Greenhouse Gas Emissions

For construction products and building materials used to construct primary building elements, an EPD that has been critically reviewed by a third-party is required at the Silver level. C2CPH-recognized equivalents to EPDs may be accepted, but none are recognized at the time of publication. If required, please contact C2CPH to request a review and recognition of EPD alternatives.

For other product types, quantifying embodied emissions is not required until the Gold level. For these other product types, applicants may quantify the product's embodied emissions themselves at the Gold level. An internal review is required to be conducted when applicants quantify this information themselves. Steps for conducting an internal review are covered in the Greenhouse Gas Protocol's Product Life Cycle Accounting and Reporting Standard, Chapter 12 (Assurance). Third-party assurance is accepted and recommended as an alternative to internal assurance. As noted in the Cradle to Cradle Certified standard: *If embodied emissions were quantified by the applicant company (i.e., self-reported), third-party verification may be requested by C2CPH should the application audit surface concerns about whether the data are complete or accurate.*

Critical Review Requirements

A critical review of the life cycle assessment (LCA) conducted to quantify embodied emissions per ISO 14044 is required at the Silver level for construction products and building materials and at the Platinum level for other product types. Critical reviews must be conducted by qualified third parties. These are

defined as life cycle assessment (LCA) practitioners with demonstrated experience conducting LCAs and critical reviews per ISO 14040. Third party in this context means the reviewer(s) are independent of the process to quantify the embodied emissions. In addition, third parties must have no conflicts of interest, such that they can exercise objective and impartial judgment.

Environmental Product Declarations (EPDs)

As noted in the standard, *Environmental Product Declarations (EPDs) must conform to ISO 14025 and EN 15804 or ISO 21930*. All EPDs must conform with a product category rule (PCR). The impact categories specified by the PCR must be reported via the EPD. This means that additional information beyond embodied greenhouse gas emissions (i.e., beyond Global Warming Potential in terms of CO₂e) is required to be reported. Typically, this will also include acidification, eutrophication, tropospheric ozone formation, ozone depletion, and abiotic depletion.

To receive credit, the EPD must be valid (per the validity date on the EPD) and specific to the certified product and manufacturer (i.e., EPDs for similar products or industrial-average EPDs do not receive credit). Multiple EPDs may be used to meet requirements for a product group.

When not used to meet targets (e.g., embodied emissions targets) in Section 6.4 and Section 6.8 requirements: A manufacturer-specific EPD created for a product group, including but not limited to the products and manufacturing regions in the certification scope, is accepted (including for Section 6.6 Transparency) provided that any data aggregation implemented is transparent.

When used to meet targets in Section 6.4 and to meet Section 6.8 requirements from the Gold level onwards: A manufacturer-specific EPD created for a product group including products or manufacturing regions out of the certification scope, without results for individual products or regions, are accepted if they represent the worst case of those included in the certification scope. Alternatively, a qualified third-party ensures that the targets and requirements are met for the certification scope. Please see Section 6.8 for more details on verification through a qualified third-party. Note that Section 6.6 Transparency requirements include disclosing how the Cradle to Cradle Certified targets for using renewable electricity and addressing greenhouse gas emissions (per Sections 6.4 and 6.8) were achieved.

Table – Summary of Silver through Platinum Level Requirements to Quantify Embodied Emissions by Product Type

Requirement	Construction Products and Building Materials (per the list specified in the standard)	Other Products
Quantify embodied emissions (i.e., conduct a product life cycle assessment that includes greenhouse gas emissions at a minimum) per ISO 14040 and 14044	Silver	Gold

Scope: Through final production at a minimum ('cradle-to-gate')*	Silver	Gold
Scope: Through end-of-use*	Platinum	Platinum
Internal assurance/internal review (at a minimum)	Not applicable	Gold
Critical review of LCA by a qualified third party	Silver	Platinum
Environmental Product Declaration (EPD) per ISO 14025 (and EN 15804 or ISO 21930 for construction products and building materials)*	Silver	Platinum

***Note:** Once an EPD has been produced, the required scope is per the relevant product category rules. This overrides any scope requirements as defined in the standard.

References

- Greenhouse Gas Protocol [Product Life Cycle Accounting and Reporting Standard](#)
- International EPD system [list of verifiers](#)
- American Center for Life Cycle Assessment (ACLCA) - [directory of LCA certified professionals](#)

Required Documentation

Bronze Level

- C2C Certified Clean Air & Climate Protection (CA&CP) Form or equivalent with tables 1a and 2a completed at a minimum.
Note: Additional tables must be completed depending on how the requirements in Section 6.4 Using Renewable Electricity and Addressing Greenhouse Gas Emissions will be met. See Section 6.4 for further information.
 - When applications are submitted for several different product groups (for the same applicant) at the same time, and these product groups share final manufacturing stage facilities and carbon credits, attribute certificates, or similar, it is required to provide a summary table that consolidates the information in the various CA&CP forms. The table must give an overview of total energy use and emissions and how carbon credits, attribute certificates, or similar, are allocated across the different product groups.
 - Updated data required: Data from the entire previous fiscal or calendar year is required if six months have passed since the calendar or fiscal year's end. For recertification to Version 5.0, data for the prior certification period is required (see below).
- Utility bills, fuel purchase receipts, meter readouts, or other supporting documentation for values entered in the CA&CP Form that are accepted in accordance with the GHG Protocol, as

relevant.

- For new certifications and transitions from Version 3.1 to Version 5.0, one year of data at a minimum (additional years recommended).
- For recertifications (including for transitions from Version 4.0 or Version 4.1), data for the prior certification period, including any certificate extensions, must be provided. The data submission must begin immediately after the end date of the data that was submitted and verified for the previous certification.
- Please see below for cases where data was summarized through software and/or verified by a qualified third party.
- Allocation methods, assumptions, calculations, and supporting documentation (e.g., sales data, production records).
- List of references for emissions factors and Global Warming Potentials (GWPs) employed (if other than those provided in the Clean Air & Climate Protection Form).

Supporting documentation for data summarized through energy tracking or environmental accounting software and/or verified by a qualified third party

- If the compiled data was verified by a qualified third party:
 - Evidence of technical qualifications and impartiality (e.g., ISO 17029 accreditation)
 - Evidence of the third-party data quality management system, including a data verification procedure. The procedure must show how data is uploaded and controlled for accuracy.
 - An explanation of how the calculation methods and the types of supporting documentation provided for third-party verification align with requirements in this section (e.g., are utility bills, fuel receipts, and similar reviewed by the third party? Is the scope the same?).
 - Submission of supporting documentation (e.g., utility bills, fuel purchase receipts, meter readouts) is not required if the above points are met.
- If the compiled data was not verified by a qualified third party:
 - Data quality management system/assurance procedures for the applicable data (i.e., procedures for ensuring data accuracy and completeness).
 - Utility bills, fuel purchase receipts, meter readouts, and/or other similar supporting documentation. A minimum of four months of documentation, randomly selected by the Conformity Assessment Body, must be provided. **Note:** Sample size is determined as $\sqrt{\text{# months}} + 1$.

Note: The Conformity Assessment Body must verify that the software has accurately calculated the monthly totals by reviewing the selected four months of data, in accordance with the requirements in this section.

Silver Level (Construction Products and Building Materials)

- Environmental Product Declaration per ISO 14025. **Note:** The existence of a life cycle assessment report and critical review report may be assumed when an EPD per ISO 14025 is available.

Gold Level (Other Products):

- Life Cycle Assessment report. The report must include all reporting elements required per the Greenhouse Gas Protocol Life Cycle Accounting and Reporting Standard or equivalent.
- Assurance statement (internal/first party). Per the GHG Protocol Product Life Cycle Accounting and Reporting Standard (2013, page 94), the statement must include:
 - Whether the assurance was performed by the applicant (first party) or a third party
 - Level of assurance achieved (limited or reasonable)
 - Summary of assurance process
 - Relevant competencies of the assurers
 - How any potential conflicts of interest were avoided (if the applicant has carried out its own assurance)

OR,

Environmental Product Declaration per ISO 14025.

Platinum Level (Other Products):

- Environmental Product Declaration per ISO 14025.

6.3 Using Renewable Electricity and Addressing Greenhouse Gas Emissions in Final Manufacturing

Intended Outcome(s)

Depending on achievement level and methods used, applicants are:

- Employing efficiency and conservation measures to reduce energy use and greenhouse gas emissions,
- Signaling demand for renewable energy,
- Supporting carbon credit projects that go beyond business as usual,
- Avoiding the use of fuels that may contribute to reduced food security, conversion of forested and other natural areas to cropland, and/or cause a near-term increase in atmospheric carbon dioxide,
- Producing renewable electricity in excess and releasing it to the grid for all to use, and/or
- Positively impacting the balance of climate-changing greenhouse gases attributable to the final manufacturing stage of the product (i.e., more are offset than are generated).

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirements

Bronze level: For the final manufacturing stage of the product, procure or produce renewable electricity and/or address greenhouse gas emissions, achieving 5% target(s)* for electricity and other greenhouse gas emissions sources.

Silver level: For the final manufacturing stage of the product, procure or produce renewable electricity and/or address greenhouse gas emissions, achieving 20% target(s)* for electricity and other greenhouse gas emissions sources. Alternatively, meet the embodied emissions target (25%) required for all products at the Gold level.

Gold level: For the final manufacturing stage of the product, procure or produce renewable electricity and/or address greenhouse gas emissions, achieving 50% target(s)* for electricity and other greenhouse gas emissions sources.

Platinum level: For the final manufacturing stage of the product, procure or produce renewable electricity and/or address greenhouse gas emissions, achieving > 100% target(s)* for electricity and other greenhouse gas emissions sources.

*The target(s) may be met via a variety of methods. Depending on the achievement level, these include renewable electricity procurement, on-site renewable electricity production and use, performance improvements (i.e., greenhouse gas intensity reduction), absolute emissions reductions, use of eligible bioenergy sources, purchase of carbon offsets, and/or financial donations and investments. See the Renewable Electricity and Greenhouse Gas Emissions Targets section below for more information.

Renewable Electricity and Greenhouse Gas Emissions Targets

There are separate targets applicable to (1) electricity, including purchased electricity and on-site renewable electricity, and (2) greenhouse gas emissions from other scope 1 and 2 sources. One or more of the methods listed below may be applied toward achieving the targets. For example, if the renewable electricity target for a given achievement level has been partially met, then one or more of the other listed methods may be used to achieve the remainder of the target. See the supplementary sub-sections below for additional requirements pertaining to the accepted methods. The targets below apply to the final manufacturing stage of the product unless otherwise noted.

For the Bronze level:

1. For electricity (including purchased electricity resulting in scope 2 emissions and on-site renewable electricity):
 - a. Procure or produce renewable electricity to match 5% of the electricity used (**Note:** Renewable electricity that is part of a utility's default offer receives credit only if there is no voluntary renewable electricity market in the applicable market region),
 - b. Provide financial support to a climate-relevant public policy initiative (must be valued at 2x the cost of purchasing renewable electricity attribute certificates or other voluntary purchase matching 5% of the electricity used),
 - c. Purchase carbon offsets to compensate for 5% of the resulting greenhouse gas emissions (Exception: This is not an option in locations where the nuclear power share is > 10% and there is also an established renewable electricity market and related attribute tracking system),

- d. Invest in new on-site renewable electricity to match 5% of the electricity used,
 - e. Improve performance by 5% (i.e., reduce electricity use intensity and/or the associated greenhouse gas emissions intensity by 5%), or
 - f. Certify to the ENERGY STAR buildings and plants program or equivalent.
2. For all other greenhouse gas emissions sources (including all scope 1/direct and other scope 2/indirect emissions):
- a. Use eligible sources of bioenergy, achieving the bioenergy credit for 5% of total greenhouse gas emissions,
 - b. Purchase carbon offsets to compensate for 5% of the resulting greenhouse gas emissions,
 - c. Invest in on-site emissions reductions projects (must be of an equivalent value to carbon offsets compensating for 5% of emissions),
 - d. Improve performance by 5% (i.e., reduce greenhouse gas emissions intensity by 5%), or
 - e. Certify to the ENERGY STAR buildings and plants program or equivalent.

For the Silver level:

1. For electricity (including purchased electricity resulting in scope 2 emissions and on-site renewable electricity):
- a. Procure or produce renewable electricity to match 20% of the electricity used (**Note:** Renewable electricity that is part of a utility's default offer receives credit only if there is no voluntary renewable electricity market in the applicable market region),
 - b. Purchase carbon offsets to compensate for 20% of the resulting greenhouse gas emissions. (Exception: This is not an option in locations where the nuclear share is > 10% and there is also an established renewable electricity market and related attribute tracking system),
 - c. Invest in new on-site renewable electricity to match 20% of the electricity used,
 - d. Provide financial support (valued at 2x the cost of renewable electricity attribute certificates or other voluntary purchase option matching 20% of the electricity used) to a climate-relevant public policy initiative,
 - e. Improve performance by 20% (i.e., reduce electricity use intensity and/or greenhouse gas emissions intensity by 20%) or certify to the ENERGY STAR buildings and plants program or equivalent. In addition, reduce absolute emissions per science-based targets, or
 - f. Improve performance by up to 10% or certify to the ENERGY STAR buildings and plants program or equivalent. In addition, meet the remainder of the 20% target via the other accepted method(s).
2. For all other greenhouse gas emissions sources (including all scope 1/direct and other scope 2/indirect emissions):
- a. Use eligible sources of bioenergy, achieving the bioenergy credit for 20% of total greenhouse gas emissions,
 - b. Purchase carbon offsets to compensate for 20% of greenhouse gas emissions,
 - c. Invest in on-site emissions reductions projects, for example, purchase more energy efficient equipment (must be of an equivalent value to carbon offsets compensating for 20% of emissions),

- d. Improve performance by 20% (i.e., reduce greenhouse gas emissions intensity by 20%) or certify to the ENERGY STAR buildings and plants program or equivalent. In addition, reduce absolute emissions per science-based targets, or
- e. Improve performance by up to 10% or certify to the ENERGY STAR buildings and plants program or equivalent. In addition, meet the remainder of the 20% target via the other accepted method(s).

Alternative to #1 and #2: Achieve the embodied emissions target required at the Gold level (see Section 6.5 Addressing Embodied Greenhouse Gas Emissions for further detail).

For the Gold level:

1. For electricity (including purchased electricity resulting in scope 2 emissions and on-site renewable electricity):
 - a. Procure or produce renewable electricity to match 50% of the electricity used, producing at least half of the 50% (i.e., 25% of the total electricity used) on site and/or procuring half through pre-finance or long-term power purchase agreements (PPAs) that support new renewable electricity installations. (**Note:** Renewable electricity that is part of a utility's default offer receives credit for the other 25% only if there is no voluntary renewable electricity market in the applicable market region),
 - b. Procure renewable electricity supporting new renewable electricity installations to match 100% of the electricity used at all final manufacturing stage facilities (**Note:** This is a facility level requirement rather than a final manufacturing stage requirement),
 - c. Purchase carbon offsets to compensate for 50% of the resulting greenhouse gas emissions (Exception: This is not an option in regions with established renewable electricity markets and related attribute tracking systems),
 - d. Invest in new on-site renewable electricity to match 25% of the electricity used and meet the remainder of the 50% target (25%) via the other accepted method(s). (**Note:** This option may not be used as an alternative to achieving the on-site or PPA requirements),
 - e. Provide financial support (valued at 2x the cost of renewable electricity attribute certificates or other voluntary purchase option matching 25% of the electricity used) to a climate-relevant public policy initiative and meet the remainder of the 50% target (25%) via the other accepted method(s) (**Note:** This option may not be used as an alternative to achieving the on-site or PPA requirements), or
 - f. Improve performance by up to 12.5% (i.e., reduce electricity use intensity and/or the associated greenhouse gas emissions intensity by 12.5%), and meet the remainder of the 50% target via the other accepted method(s).
2. For all other greenhouse gas emissions sources (including all scope 1/direct and other scope 2/indirect emissions):
 - a. Use eligible sources of bioenergy, achieving the bioenergy credit for 50% of total greenhouse gas emissions,
 - b. Purchase carbon offsets to compensate for 50% of greenhouse gas emissions,

- c. Invest in on-site emissions reductions projects, for example, purchase more energy efficient equipment (must be of an equivalent value to carbon offsets compensating for 50% of emissions), or
- d. Improve performance by up to 12.5% (i.e., reduce greenhouse gas emissions intensity by 12.5%) and meet the remainder of the 50% target via other accepted method(s).

For the Platinum level:

1. Procure or produce > 100% of the electricity used, producing the electricity on site and/or procuring through pre-finance or long-term power purchase agreements supporting new renewable electricity installations, and
2. Use eligible sources of bioenergy that receive full credit (e.g., biogas) for other on-site energy demands (if any). **Note:** Other energy sources (e.g., hydrogen) will be considered on a case-by-case basis).

Note: The Platinum level goal is to fully electrify, use renewable electricity for total energy demand, and to have eliminated emissions from non-energy sources (if any). However, if the physical infrastructure and/or the political situation do not allow for this, exceptions may be made on a case-by-case basis.

Further Explanation

The targets in this section of the standard apply to using renewable electricity and addressing greenhouse gas emissions for the final manufacturing stage of the certified product at a minimum (with several exceptions as noted in the standard above). The final manufacturing stage includes the processes listed in the [Final Manufacturing Stage Process Definitions](#) document that occur at all final manufacturing facilities. A recommended alternative to applying the targets to the final manufacturing stage is to apply the targets to final manufacturing facility(ies). The targets are: 5% for Bronze, 20% for Silver, 50% for Gold, and >100% for Platinum.

There are a range of actions and outcomes that the targets may be applied to as follows:

- Renewable electricity procurement
- On-site renewable electricity production and use
- Performance improvements (i.e., greenhouse gas intensity reduction)
- Absolute emissions reductions
- Use of eligible sources of bioenergy
- Purchase of carbon offsets (i.e., carbon credits)
- Financial donations to climate-relevant public policy initiatives
- Investment in on-site emissions reductions projects (e.g., purchase of more efficient equipment) and new renewable energy installations.

In general, the accepted methods of achieving the targets are increasingly limited as the achievement level increases. For the Platinum level, long-term renewable electricity procurement and on-site renewable electricity production receive credit. Carbon offsets are not accepted at the Platinum level. As noted above, the Platinum level goal is to fully electrify and use renewable electricity for total energy

demand in final manufacturing.

There are separate targets applicable to (1) electricity, including purchased electricity and on-site renewable electricity, and (2) greenhouse gas emissions from other sources. One or more of the methods listed in the standard for each target may be applied toward achieving the targets. For example, if the renewable electricity target for a given achievement level has been partially met, then one or more of the other accepted methods may be used to achieve the remainder of the target.

Example: A product is manufactured using both electricity and natural gas and the goal is to certify at the Silver level. On-site solar panels provide 15% of the electricity used and the remainder is purchased from a utility. Carbon offsets are purchased in an amount equivalent to the greenhouse gas emissions attributable to 5% of total electricity used and to match 20% of the greenhouse gas emissions that result from burning the natural gas. This allows for achieving the Silver level.

The sub-sections that follow provide additional information on achieving the targets. Note that there is not a separate sub-section for the options to provide financial support to a climate-relevant public policy initiative, invest in new on-site renewable electricity, or invest in emissions reductions equipment (available at the Bronze, Silver, and Gold levels). See the Required Documentation sections in the 'Meeting the Renewable Electricity Targets' and 'Meeting the Carbon Offset Targets' sub-sections respectively for information on these options.

Note: The Section 6.4 targets must be verified through documentation provided in-line with the Section 6.2 data requirements. For new certifications, targets for the desired achievement level must be met and documented for the entire previous fiscal or calendar year (with commitment to continue to do so during the course of the certification period), or for the first year of certification based on estimates using data from the previous fiscal or calendar year. For recertifications, targets of the current certification level must be met and documented for the prior certification period (i.e., three years including any extensions of the prior certificate). Targets of the recertification achievement level (if higher) must be also met for the entire previous fiscal or calendar year, or for the first year of recertification based on estimate using data from the previous fiscal or calendar year.

Reminder: Section 3.1 Certification Compliance Assurance commits applicants to monitoring their compliance over the course of the certification period. As part of this, applicants must schedule an internal audit at least once every three years to review all data, documentation, and processes applicable to the Cradle to Cradle Certified certification application. The internal audit must include a check on the achievement status of the Clean Air & Climate Protection targets and adjustments must be made if necessary.

Meeting the Renewable Electricity Targets

For the Bronze and Silver levels and for half (i.e., 50%) of the Gold level target (or for 100% of the Gold target if using the 100% renewable electricity procurement alternative per the sub-section titled 'Renewable Electricity and Greenhouse Gas Emissions Targets' above):

1. Renewable electricity may be:
 - a. Produced on site,
 - b. Procured from a utility or other provider (e.g., through a utility's optional green power offering, or through direct power purchase agreements), and/or
 - c. Procured via unbundled renewable energy attribute certificates (e.g., Renewable Energy Certificates (RECs) or Guarantees of Origin (GOs)). **Note:** "Unbundled" refers to renewable energy attributes that are sold separately from the renewable electricity itself. At the Gold level, certificates must support new (≤ 15 years) renewable electricity installations. The ≤ 15 -year requirement applies only when attribute certificates are procured directly as described in #1c rather than from a utility via the same contract as the electricity as per #1b.
2. The electricity must be from one or more of the following sources:
 - a. Solar,
 - b. Wind,
 - c. Geothermal,
 - d. Non-impoundment hydropower, or hydropower certified to a C2CPII-recognized sustainable (hydro) electricity standard or equivalent, or
 - e. Eligible biofuels (see Accounting for Bioenergy and Applying the Bioenergy Credit section below). Other renewable sources (e.g., wave and tidal energy) will be evaluated on a case-by-case basis.
3. Renewable electricity (as defined in #2a-e) that is part of a utility's default offer, or the default grid mix may receive credit toward achieving the renewable electricity targets only if there is no voluntary renewable electricity market in the applicable market region. (**Note:** An alternative option, including for cases where there is a voluntary renewable electricity market, is to convert the amount of purchased electricity to greenhouse gas emissions and to meet the offset target instead—which does give credit for using renewable electricity present on the grid through that electricity's effect on the emissions rate. See the section titled 'Meeting the Carbon Offset Targets' below for further information).
4. Double counting of renewable energy attributes must not occur.
 - a. Renewable energy attribute certificates must be retained by the applicant or canceled on the applicant's behalf in all cases.
 - b. If procuring unbundled renewable energy attribute certificates outside of a regulated tracking system that controls for double counting, a qualified third party must verify that double counting has not occurred.
5. The generation or consumption of the renewable electricity may not be used to meet any regulatory requirements. **Note:** In regions with a cap and trade program and where a legal framework and process exists for reducing the cap to support emissions reductions claims associated with voluntary renewable electricity purchases, participation in the process to reduce the cap is required (e.g., for voluntary renewable energy attribute certificates generated in U.S. states with a cap and trade program and voluntary renewable energy set aside accounts, an appropriate amount of allowances must also be retired).

Further Explanation

This section of the standard is applicable to meeting the renewable electricity targets described in requirements #1a (for the Bronze and Silver levels) and #1a and #1b (for the Gold level) in the subsection titled 'Renewable Electricity and Greenhouse Gas Emissions Targets' above. Note that a wider range of renewable electricity purchasing options are available for achieving the targets at the Bronze and Silver levels and for half of the Gold target compared to the options available for achieving the other half of the target for Gold level and Platinum level. This includes credit for purchase of renewable electricity attributes certificates and purchase of renewable electricity from utilities or through other short-term purchase agreements. This Further Explanation box also includes a brief section on receiving credit for investing in installing renewable electricity on site (#1d for Bronze and Gold levels, #2c for Silver level).

Eligible Sources

To count as renewable, electricity must be from one or more of the following sources: solar, wind, geothermal, non-impoundment hydropower, hydropower certified to a C2CPH-recognized renewable (hydro) electricity standard, or eligible biofuels.

For Association of Issuing Bodies (AIB) member countries (applicable to countries in the European Economic Area), the energy source can be identified by obtaining a Guarantee of Origin cancellation statement. Such statements should indicate the identity of the specific generator, energy source, and technology codes. Energy source and technology codes and definitions are available through the AIB. See the most recent version of the relevant European Energy Certificate System (EECS) fact sheet for additional information. At the time of publishing this manual, this was: Rules Fact Sheet 5, Types of Energy Inputs and Technologies ([AIB-EECS-FS05](#), Release 7.9, December 2, 2024).

Installations defined per the AIB for the EECS as run-of-river (AIB code T030100) may be considered non-impoundment hydropower. Note that impoundment hydropower is generally defined as power produced via a system that includes a dam and a storage reservoir (including AIB codes T030200, T030300, T030400, and also unspecified code T030000). For the purposes of Cradle to Cradle Certified, a dam that fully spans a river is considered an impoundment unless it is demonstrated that the dam creates only minor ponding, does not cause the river to go dry at any point in time, and allows for safe fish passage. Diversion dams (used to divert river water into canals or side channels for power generation) are dams for the purposes of these requirements. As it may be difficult to verify that diversion dams are not impoundments per this definition, it is recommended to avoid procuring non-certified hydropower from any installation that includes a dam. See the section within this Further Explanation box titled "Receiving Credit for Impoundment Hydroelectricity" for additional information.

Procuring Unbundled Renewable Energy Attribute Certificates

Renewable energy attribute certificates (EACs) (e.g., Renewable Energy Certificates (RECs) or Guarantees of Origin (GOs)) are contractual instruments used in the energy sector to convey information about energy generation (including the source) to other entities involved in the sale, distribution,

consumption, or regulation of electricity. When these certificates are sold separately from the energy itself, the attributes and the energy are 'unbundled'. This results in situations where those who are actually using renewable energy are not able to claim use because the renewable attributes have been sold to others. In regions where attribute certificates are employed, care must be taken to ensure that inaccurate claims of renewable electricity use are not made.

When purchasing EACs (e.g., RECs or GOs), the quality criteria for contractual instruments defined by the Greenhouse Gas Protocol Scope 2 Guidance must be followed (see Table 7.1 page 60 of the [Scope 2 Guidance](#)). This includes a requirement that contractual instruments **"Be sourced from the same market in which the reporting entity's electricity-consuming operations are located and to which the instrument is applied."** For example, this means that RECs generated in the United States may not be employed to achieve the renewable electricity targets for a manufacturing facility located in Asia.

- In Europe, the market region is defined by the Association of Issuing Bodies (AIB). The AIB develops, uses, and promotes a European, harmonized, and standardized system of energy certification for all energy carriers: the European Energy Certificate System - "EECS". AIB Member countries are considered part of the same market region. **Note:** At the time of publishing this manual, Poland and Romania were not AIB members.
- The United States and Canada are considered part of the same market region. See [green-e.org](#) for additional information about this market region.
- For other countries with voluntary renewable electricity markets, each country is considered a single market region (e.g., China).

As noted in the standard, to receive credit towards achieving the renewable electricity targets, unbundled renewable energy attribute certificates must be one or more of the accepted types of renewable electricity (per requirements #2a-e). Note that hydroelectricity typically must be certified to a C2CPH-recognized standard or be non-impoundment to receive credit as renewable. Starting at the Gold level, renewable energy attribute certificates must support new (≤ 15 years) renewable electricity installations with exceptions as noted in the section 'Power Purchase Agreements' below.

Renewable electricity attribute certificates typically have a validity period (i.e., Guarantees of Origin are valid for one year). Any certificate that does not indicate a period of validity will be considered valid for one year. Therefore, to the degree possible, consumption of non-renewable energy in a specific calendar year should be matched with production via the renewable energy attribute certificates in the same calendar year. **Any excess energy attribute certificates that are purchased for the purposes of achieving the renewable electricity targets may be banked for up to one year** to compensate for non-renewable electricity use. This means that it will be necessary to verify adequate coverage of attribute certificates for the prior year at recertification. This is in alignment with best practice.

Note that evidence suggests that purchase of voluntary energy attribute certificates on a short term or single purchase basis does not help to increase the demand for renewable electricity, as is the goal (see for example [Brander et al., 2018](#) and [Bjørn et al., 2022](#)). Therefore, recommended best practice is to

strive to eventually meet the renewable electricity targets completely through onsite renewable electricity production, or if that is not possible, then through long-term power purchase agreements with local, new, generators (as required for the Gold and Platinum levels).

Table – Unbundled Energy Attribute Certificates (EACs) – Summary of Common Procurement Options.

Region or Country*	Procurement option
European Union (including all Association of Issuing Bodies member countries)	Guarantees of Origin (GOs) for solar, wind, non-impoundment/run of river hydroelectricity, or geothermal. (Request generators $\leq$ 15 years old for Gold level**.) EKOenergy Certified GOs for solar, wind, geothermal, or hydroelectricity. (Request generators $\leq$ 15 years old for Gold level**.)
United States & Canada	Green-e® Certified Renewable Energy Certificates (RECs).
China	Green Electricity Certificates (GECs) and I-RECs for solar, wind, or geothermal. (Request generators $\leq$ 15 years old for Gold level**.)
Various	I-RECs for solar, wind, or geothermal. Must be produced in the same country as the final manufacturing stage facility.

*In addition to the specific regions and countries listed above, the following also have voluntary renewable electricity markets: Australia, India, Japan, New Zealand, South Korea, Taiwan, United Kingdom.

****Note:** It may be necessary to request that the generator(s) identity be specifically listed on the cancellation statement(s) at the time of procurement to enable verification of generator age and source. Generator identity is not always automatically provided by EAC vendors.

Alternative to Purchasing Renewable Energy Attribute Certificates (RECs, GOs): Financial Support of a Climate-relevant Public Policy Initiative

As noted in the sub-section titled 'Renewable Electricity and Greenhouse Gas Emissions Targets', financial support of a climate-relevant public policy initiative receives credit as an alternative to procuring renewable energy attribute certificates for achieving the Bronze, Silver, and half of the Gold level renewable electricity targets. Climate-relevant public policy initiatives that receive credit are those that aim to have a positive impact on climate by influencing international, national, or local public policy (i.e., governmental policy). For example, initiatives that encourage implementation of policies that aim to reduce greenhouse gas emissions or increase the use of renewable electricity would receive credit. Examples of organizations that advocate for climate policy include Climate Action Network, the Environmental Defense Fund, and the We Mean Business Coalition. The financial support must be twice

(i.e., 2x) the cost of procuring renewable energy attribute certificates for achieving the applicable target. This estimate must be based on procurement of certificates that meet the requirements for unbundled EACs. Please refer to the standard text and the Required Documentation section below for additional information.

Procuring Renewable Electricity from a Utility

As noted in the standard, *Renewable electricity (as defined in #2a-e) that is part of a utility's default offer may receive credit toward achieving the renewable electricity targets only if there is no voluntary renewable electricity market in the applicable market region.* This means, for example, that **in Europe and the United States (where voluntary markets do exist), it may not be possible to claim the percentage of renewable electricity noted on a utility bill.** To ensure that the proper amount is claimed, the utility must provide an energy attribute certificate cancellation statement or other official documentation indicating the amount of renewable energy attribute certificates that were cancelled on the applicant's behalf in support of a renewable electricity use claim. Note also that the sources of renewable electricity that receive credit are per requirements #2a-e.

When electricity and attributes are purchased via the same contract (for example, as part of a green power offering provided by the utility), they are considered "bundled" for the purposes of these requirements. Conversely, *"unbundled" refers to renewable energy attributes that are sold separately from the renewable electricity itself.* Note that the requirement for energy attribute certificates to support new (≤ 15 -year) renewable electricity installations (that applies starting at the Gold level) does not apply to the "bundled" scenario.

This type of renewable electricity procurement receives credit for achieving the Bronze and Silver level targets and for half of the Gold level target. It does not receive credit for the other half of the Gold target or at the Platinum level where higher quality renewable electricity procurement and use is required. For background, note that utilities may re-sell attribute certificates procured on the open market, so although the electricity may be "bundled" as sold by the utility, it may not be produced by the utility providing the power, or on the same grid as the manufacturing facility. Further, utilities may aggregate attribute certificates from a variety of generators for sale to their customers and may not be able to provide specific information regarding the exact source to the customer, given their method of tracking the information. This means that it may not be straightforward (or even possible) to specify that certain types of renewable energy be supported when procuring renewable electricity via a utility. Because this is a potential issue, **it is recommended to check with the utility prior to making a renewable electricity purchase to ensure that the type/source of renewable electricity can be identified and verified**, as required.

In regions that do not have voluntary renewable electricity markets, applicants may claim the average percentage of renewable electricity consumed from their grid, or if grid average data are not available, the country. When determining what amount may be claimed, note that the percentage of renewable electricity generated by a utility or in a certain region is likely different from what is actually delivered to customers (e.g., if there is trading and transfer of electricity between regions). When voluntary electricity

markets and associated energy attribute certificate trading systems do not exist, it is recommended to select other methods of achieving the targets (i.e., other than taking credit for renewables on the grid), such as investment in on-site renewables and/or purchase of carbon offsets.

Data on renewable electricity consumption by country are available from the International Renewable Energy Agency (IRENA) in its [Renewable Energy Statistics reports](#). The percentage that may be claimed (when there is no voluntary market) can be determined from the data in the Renewable Energy Balances tables of this IRENA publication. When calculating the percentage, electricity sources that are not recognized as renewable for Cradle to Cradle Certified (unless additional information is provided e.g., on responsible sourcing of hydroelectricity) must be excluded. This means that hydroelectricity, bioenergy (including liquid, pellets, charcoal), and other unspecified renewables must be excluded. Heat is also not included. An example of this calculation using data from 2022 for Afghanistan (the most recent data available at the time of updating this manual as reported in the 2024 IRENA statistics report): Consumption of wind and solar = 2 TJ + 1,431 TJ = 1,432 TJ. This number must then be divided by total electricity consumption (TJ) in Afghanistan in the same year to obtain the % renewable that may be claimed. Consumption data by country are unfortunately not available from IRENA but may be obtained from the [U.S. Energy Information Administration](#). In 2022, Afghanistan consumed 6.12 billion kWh (22,049 TJ). % renewable consumed is therefore $(1,432/22,049) \times 100 = 6.5\%$.

If available, it is recommended to use more granular data than what is provided by IRENA such as sub-grid or utility specific data. If renewable and total consumption data are available from the same data source this is also preferable.

As noted earlier, the following countries and regions have voluntary renewable electricity markets; therefore, the default grid mix does not receive credit in these regions: Australia, Canada, China, European countries that are Association of Issuing Bodies members, India, Japan, New Zealand, South Korea, Taiwan, United Kingdom, United States. The default grid mix also may not be claimed in any country where I-RECs are produced and available.

Note: If claiming the average amount of renewable electricity as allowed outside of regions with voluntary markets (as explained above), only the percentage of the total may be claimed (i.e., the total kWh of renewable electricity received may not be allocated only to a certified product group because this would result in falsely high renewable claims for the product group compared to the reality at the facility overall). For example, if 20% of the default electricity mix is renewable and 1000 kWh are used to manufacture the certified product, then 200 kWh may be counted as renewable.

Other Procurement Options

In addition to purchase of unbundled renewable energy attribute certificates and procurement of renewable energy from a utility as discussed above, all of the following scenarios are relevant to this section and must meet the requirements as stated to receive credit at the Bronze level, Silver level, and for half of the Gold level target:

- Purchasing from a competitive supplier in deregulated markets,

- Purchasing through a certified Community Choice Aggregation (CCA) or other certified community renewables programs,
- Direct purchases such as Power Purchase Agreements (PPAs), and
- Virtual Power Purchase Agreements (VPPAs).

PPAs receive credit at all levels; however, the requirements applicable to contract term are only relevant to Gold and Platinum levels.

Note that additional information on claiming on-site generated renewable electricity and electricity procured via direct and virtual power purchase agreements is included in the next Further Explanation box.

Receiving Credit for Impoundment Hydroelectricity (Requirement #2)

Impoundment hydropower must be certified to a C2CPH-recognized renewable (hydro) electricity standard to be counted towards the renewable electricity targets, or an equivalent alternative to certification must be in place (please see Appendix 2 for additional information on alternatives). C2CPH-recognized electricity standards require that hydroelectricity installations/generators be managed in accordance with the principles of sustainable development. This means that the requirements aim to address the potential negative social and environmental impacts of impoundment hydroelectricity production, including negative impacts to biodiversity. Currently recognized renewable electricity certification programs that also certify some hydroelectricity are: EKOenergy in the European Union and Green-e® certified in the United States and Canada. Please see [C2CPH-Recognized Certification Programs and Standards](#) for the most recent list and status of recognized programs. Additional programs may be recognized and subsequently added to this list. Refer to Appendix 2 in this Certification Manual for requirements and the application process for recognition.

Avoiding Double Counting: Retaining and/or Cancelling Energy Attribute Certificates (Requirements #4)

Regardless of how energy is produced and/or procured (including for on-site generation), the standard requires that double counting be avoided as follows:

- *Renewable energy attribute certificates must be retained by the applicant or cancelled on the applicant's behalf in all cases.*
- *If procuring unbundled renewable energy attribute certificates outside of a regulated tracking system that controls for double counting, a qualified third party must verify that double counting has not occurred.*

Third-party certified renewable electricity (e.g., Green-e® certified in the United States and Canada or EKOenergy in the European Union) is highly recommended as a means of ensuring that double counting is avoided.

Double claiming of the environmental attributes associated with the renewable electricity is a type of double counting. For example, if carbon offsets and energy attribute certificates are produced from the same renewable electricity, this is double counting.

The EU Guarantee of Origin (GO) system is specifically designed to prevent double counting of renewable energy attributes. When procuring GOs within the EU, third-party verification of the system itself is not necessary. However, it must still be ensured that the certificates are retained by the applicant and cancelled on their behalf. Additionally, the applicant must not claim the same GOs more than once towards multiple sustainability claims. Third-party verification of the EACs themselves also is not necessary for I-RECs or GECs. For I-RECs this is also true when the RECs are produced and claimed in a country without a regulated tracking system.

In some cases (e.g., in some EU member states), attribute certificates are not issued for renewable electricity generated on site. If this is the case, the amount of on-site renewable electricity that may be claimed is equal to the measured total amount of on-site generated electricity minus the measured amount that is injected back to the grid. At the time of publishing this Certification Manual, this is known to apply to the Netherlands per CertiQ/VertiCer. This amount may always be claimed for Bronze, Silver, and half of the Gold level targets. Please also note the requirements in the section that follows to produce and consume the electricity on site to the extent feasible, which applies to the other half of the Gold target and for the Platinum level.

Qualified third parties are defined as auditing firms with a history of providing energy verification and auditing services and with expertise in electricity markets, energy attribute tracking, and accounting.

Regulatory Requirements (Requirement #5)

Regarding the requirement that: *The generation or consumption of the renewable electricity may not be used to meet any regulatory requirements.* In general, this means that if it is required by law to produce the renewable electricity then it may not be counted towards achieving the targets. The reasons for this are that Cradle to Cradle Certified aims to go beyond regulations—starting where regulations leave off, and this will likely lead to double counting (defined to include double claiming), with both the applicant and the government claiming the same renewable electricity.

Regarding the requirement, in regions with a cap and trade program and where a legal framework and process exists for reducing the cap to support emissions reductions claims associated with voluntary renewable electricity purchases, participation in the process to reduce the cap is required (e.g., for voluntary renewable energy attribute certificates generated in U.S. states with a cap and trade program and voluntary renewable energy set aside accounts, an appropriate amount of allowances must also be retired). The purpose of such a mechanism is to improve the potential for renewable energy attribute certificate purchases to reduce greenhouse gas emissions (via reducing the existing cap on carbon emissions). In the United States, the use of Green-e® certified RECs will ensure this requirement has been met. In the European Union, this requirement does not apply (i.e., such a mechanism is not in place).

Alternative to Renewable Electricity Procurement: Investing in New On-Site Renewable Electricity

Investment in new on-site renewable electricity generation may be used to meet the Bronze, Silver, and one-half of the Gold level target. To receive full credit, the newly installed renewables must be estimated

to produce an amount of electricity equivalent to that required to achieve the target at the desired level (5% at Bronze, 20% at Silver, and at least one-half of the 50% target at Gold, i.e., 25%). Note that for the Gold level, the remaining one-half of the 50% target (i.e., the other 25%) must be met via actual on-site generation, power purchase agreements (PPAs) meeting Gold requirements, renewable electricity procurement to cover 100% of consumption in final manufacturing facility(ies), or performance improvement. The standard notes that *this option may not be used as an alternative to achieving the on-site or PPA requirements*. This means that this option is considered lower impact and may not be combined with other lower impact procurement such as RECs and financial support to a climate-relevant public policy initiative at the Gold level. See the Further Explanation boxes below the next standard section for additional information on how to achieve the Gold level renewable electricity targets. Note that carbon offsets/credits are also accepted for addressing emissions attributable to purchased electricity at the Gold level and these are further described in the Further Explanation box for the standard sub-section titled 'Meeting the Carbon Offset Targets'.

For the remaining half (i.e., 50%) of the Gold target (unless using the 100% renewable electricity procurement alternative per the sub-section above titled 'Renewable Electricity and Offset Targets') and for the Platinum level target:

1. The renewable electricity must be:
 - a. Produced and consumed on site to the extent feasible, and/or
 - b. Procured through power purchase agreements signed pre-financing, or long-term (≥ 10 years) power purchase agreements that support new (≤ 15 years) renewable electricity installations.
Note: Virtual power purchase agreements are accepted. Other procurement options meeting the intent of the requirement will be considered on a case-by-case basis.
 Exceptions: In accordance with the most recent version of the RE100 Technical Criteria, some exceptions to the new installation requirement apply.
2. The electricity must be from one or more of the following sources:
 - a. Solar,
 - b. Wind,
 - c. Geothermal,
 - d. Non-impoundment hydropower, or hydropower certified to a C2CPII-recognized sustainable (hydro) electricity standard or equivalent, or
 - e. Eligible biofuels (see Accounting for Bioenergy and Applying the Bioenergy Credit section below). Other renewable sources (e.g., wave and tidal energy) will be evaluated on a case-by-case basis.
3. Power purchase agreements must support renewable electricity generation that occurs:
 - a. In the same grid region as the applicant's facility(ies), or
 - b. In a grid region with higher emissions rates than the region where the applicant's facility(ies) are located.
4. Double counting of renewable energy attributes and/or use for regulatory compliance must not occur (per #4 and #5 of the preceding section).

Further Explanation

This section of the standard is applicable to meeting the renewable electricity targets described in requirements #1a (for the Gold level) and #1 (for the Platinum level) in the sub-section titled 'Renewable Electricity and Greenhouse Gas Emissions Targets' above. The methods in this section may also be applied towards achieving the renewable electricity targets for the Bronze level, Silver level, and the other half of the Gold level target. For example, the methods may be applied in cases when the entire Gold level target has not yet been achieved (e.g., a site with 5% on-site renewable electricity has achieved the Bronze level target.)

For the Gold and Platinum levels of certification, applicants are required to demonstrate commitment to directly using and/or supporting high quality renewable electricity over the long term. The available options for achieving the renewable electricity targets in this section of the standard reflect this goal.

On-Site Renewable Electricity

To receive credit for on-site produced renewable electricity at the Gold level, the standard requires that the electricity must be *produced and consumed on site to the extent feasible*. This applies to scenarios where a facility produces electricity on site and is also connected to the electricity grid. Net metering is commonly employed, allowing for utility customers with on-site renewable electricity to sell any excess electricity produced to the utility. Best practice is to monitor electricity production and use to optimize and maximize the use of renewable electricity produced on site. Note that it should typically be feasible to consume on-site produced solar on site because the electricity will be produced in the daytime during typical working and manufacturing hours.

Energy that is produced and consumed behind the meter, including behind the meter battery storage, counts as being produced and consumed on site to the extent feasible. Behind the meter production and consumption may be demonstrated via provision of energy system diagrams and metering data.

On-site renewable electricity that is produced and consumed behind the meter may be fully allocated toward meeting the targets for the final manufacturing stage of the certified product. To ensure the energy is not double counted, the applicant must provide a signed statement confirming that the renewable electricity is not claimed elsewhere. To avoid misleading claims, applicants should not state that 100% of the attributed on-site renewable energy is used to produce the product, as the targets are met through energy attribution rather than direct consumption.

The sources of renewable electricity that receive credit are per requirements #2a-e.

Renewable energy attributes generated from on-site installations and retained/retired by the applicant may be banked for up to one year to account for purchases of non-renewable electricity from the grid that may be necessary due to fluctuations in on-site energy production (e.g., with changing day length and weather) and use. These energy attribute certificates may count as on-site produced electricity.

In some cases, attribute certificates are not issued for renewable electricity generated on site. If this is the case, the amount of on-site renewable electricity that may be claimed is equal to the measured total

amount of generated electricity minus the measured amount that is injected back to the grid if the requirement to produce and consume the electricity on site to the extent feasible is also achieved.

In the case of newly installed solar panels or wind turbines, it may not be assumed that the amount that will be generated will be equivalent to the production estimates provided by the equipment provider. At least six months (and ideally a full year) of production data must be available to ensure the estimates are relatively accurate. If these data are not available, an interim assessment review may be necessary to ensure the renewable electricity requirements are met over time. Before actual production numbers are supported by actual production data, the company cannot claim the newly installed renewable electricity facilities as counting toward the renewable electricity targets. Alternatively, if the installation will result in on-site emissions reductions, consider if the credit for investing in emissions reductions projects is a viable alternative for meeting the requirements in the relevant certification period. For information about receiving credit for investment in on-site renewables as an alternative for meeting the other (lower quality) one-half of the Gold level target, see the Further Explanation box above which also covers electricity procurement for Bronze and Silver levels (see sub-section titled 'Alternative to Renewable Electricity Procurement: Investing in New On-Site Renewable Electricity')

Power Purchase Agreements

A virtual power purchase agreement provides attribute certificates that are “unbundled” from the underlying electricity. Note that when procuring renewable electricity or electricity attributes (via PPAs and VPPAs respectively), the underlying attribute certificates must be retained and cancelled in all cases. Like other procurement scenarios described above, the electricity generation must be in the same market region as the manufacturing facility. For VPPAs, the grid region to which the generator is connected must have higher emissions rates compared to the grid region of the facility, unless they are the same. Please refer to the standard text and Required Documentation sections for additional information on PPAs and VPPAs.

PPAs and VPPAs are required to support new generators (≤ 15 years) at the Gold and Platinum level but not at the Bronze or Silver levels. The new date is applicable upon signing of the purchase agreement/contract. Several exceptions to the 15-year requirement apply in alignment with the [RE100 Technical Criteria](#) (Version 5.0, published 24 March 2025).

Permitted Exemptions to the 15-year Generator Age Requirement

The new (≤ 15 years) installation requirement does not apply to these scenarios:

- Self-generation (e.g., on site).
- Physical PPAs with projects to which there is a direct line and no grid transfers.
- Long-term project-specific contracts the corporate buyer has entered into as the original off-taker from the project(s), and extension of those contracts. This includes but is not limited to physical power purchase agreements with off-site grid-connected projects, financial power purchase agreements (also known as VPPAs), project-specific contracts with electricity suppliers, and project-specific unbundled EAC purchases.

Note: The RE100 exception to the 15-year limit for “claims to default delivered renewables” is not included here because it conflicts with other Cradle to Cradle Certified Gold level requirements (which specifically state that default electricity does not receive credit for half of the Gold level target).

- Long-term contracts with operational commencement dates before 1 January 2024.

Avoiding Double Counting: Retaining and/or Cancelling Energy Attribute Certificates (Requirement #4)

Attribute certificates associated with renewable electricity produced on site and procured via power purchase agreements must be retained and cancelled to support renewable electricity claims and avoid double counting. Refer to Requirements #4 and #5 applicable to the Bronze and Silver level targets and half of the Gold level target within this standard sub-section (Meeting the Renewable Electricity Targets) for additional information.

Achieving The Gold level Renewable Electricity Targets Through Multiple Gold-Level Target Options

One method of achieving the Gold level renewable electricity targets (per Requirement #1a) is to *procure or produce renewable electricity to match 50% of the electricity used, producing at least half of the 50% (i.e., 25% of the total electricity used) on site and/or procuring half through pre-finance or long-term power purchase agreements (PPAs) that support new renewable electricity installations*. If the 25% on-site or PPA portion of the requirement is only partially met, this may be compensated for through other Gold-level target options. Examples of achieving the Gold level using a combination of target options #1a and #1b are shown in the table below. Requirement #1b is to *procure renewable electricity supporting new renewable electricity installations to match 100% of the electricity used at all final manufacturing stage facilities*. Requirement #1a is quoted above.

Important: The contribution from other (lower quality) renewable energy procurement may not be higher than the contribution from on-site or PPAs meeting the Gold requirements.

Table – Examples of Achieving Gold Level Renewable Electricity Targets

Gold level has been achieved in scenarios (1), (3), and (4) but not in scenario (2).

Method #1a (final manufacturing stage)		Method #1b (facility-wide)		Total target met (1a+1b)
Scenario	Target met (%)	Scenario	Target met (%)	
(1) Energy Attribute Certificates (EACs) procured and cancelled amounting to 20% of electricity used in the final manufacturing stage <u>and</u> 20% of final manufacturing	40%	(1) EACs procured and cancelled amounting to 10% of electricity used in the final manufacturing stage <u>facility</u> . This is in	10%	50% (Gold)

stage electricity supplied from on-site generation.		addition to the EACs used to comply to method #1a.		
(2) EACs procured and cancelled amounting to 25% of electricity used in the final manufacturing stage <u>and</u> 10% of final manufacturing stage electricity supplied from on-site generation.	20%*	(2) EACs procured and cancelled amounting to 15% of electricity used in the final manufacturing stage <u>facility</u> . This is in addition to the EACs used to comply to method #1a.	15%	35% (Silver)
(3) EACs procured and cancelled amounting to 10% of electricity used in the final manufacturing stage <u>and</u> 25% of final manufacturing stage electricity supplied from on-site generation.	35%	(3) EACs procured and cancelled amounting to 15% of electricity used in the final manufacturing stage <u>facility</u> . This is in addition to the EACs used to comply to method #1a.	15%	50% (Gold)
(4) 20% of final manufacturing stage electricity supplied from on-site generation.	20%	(4) EACs procured and cancelled amounting to 30% of electricity used in the final manufacturing stage <u>facility</u> .	30%	50% (Gold)

*The target met is 20% instead of 35% since the contribution from EACs may not exceed the contribution from on-site generation. This ensures that easier sub-requirements are not leveraged to increase targets met.

References

- [Guide to Purchasing Green Power](#), (United States Environmental Protection Agency and others, September 2018)

Further Explanation

Achieving the Renewable Electricity Targets for Multiple Manufacturing Sites

In general, the renewable electricity targets apply to the final manufacturing stage as a whole. This means that, in some cases, renewable electricity procured or produced at one site may be applied to others. This is true as long as all requirements pertaining to meeting the renewable electricity targets are still met. For example, no double counting occurs, the market region is the same when relevant, and

facilities are using the renewable electricity on site to the extent feasible as required for half of the Gold target and for Platinum. This is further detailed in the table below for common production and procurement options.

Table - Conditions for applying eligible renewable electricity procured by or produced at one or more facilities towards meeting the renewable electricity targets at other facilities by procurement and production type. These conditions depend on whether the facility is in a location with a voluntary market and if there is a regulated tracking system that avoids double counting.

Renewable electricity is procured or produced by a facility located where there is a voluntary renewable electricity market and a regulated tracking system that avoids double counting (e.g., United States and European Union)	Renewable electricity is procured or produced by a facility located where there is no voluntary renewable electricity market and no regulated tracking system that avoids double counting
Type: Renewable electricity in the standard/default grid mix	
Not applicable. The default grid mix may not be claimed at any site where there is a voluntary market. Per the standard, renewable electricity (as defined in #2a-e) that is part of a utility's default offer may receive credit toward achieving the renewable electricity targets only if there is no voluntary renewable electricity market in the applicable market region.	- Renewable electricity that is part of the default grid mix may be claimed only for the site connected to the relevant grid and may not be transferred to any other site. - The percentage renewable for the facility and product is equal to the percentage renewable on the grid (no more).
Type: Unbundled renewable electricity attribute certificates (e.g., GOs, RECs)	
- All requirements for unbundled attribute certificates must be met, including the requirement that the installation is ≤ 15 years old (required at Gold level). - Unbundled attribute certificates may be applied to any site in the same market region. - If ownership of certificates is transferred to a different entity (e.g., to a supplier site that is part of the final manufacturing stage), the original producer may not count the renewable electricity themselves (e.g., a signed statement of transfer would be accepted as evidence).	- Not applicable as unbundled attribute certificates will not exist for facilities in this category. - Note that if there is a voluntary market but no regulated tracking system, the standard requires: If procuring unbundled renewable energy attribute certificates outside of a regulated tracking system that controls for double counting, a qualified third party must verify that double counting has not occurred.

Type: On-site produced renewable electricity (grid connected)

- | | |
|--|---|
| <ul style="list-style-type: none"> Attribute certificates for on-site produced renewable electricity that are not otherwise sold by the producing site may be transferred to other final manufacturing stage sites in the same market region. | <ul style="list-style-type: none"> The renewable electricity may not be counted elsewhere in the system or produced for regulatory purposes. (1) Confirm that the utility is not reporting the renewable electricity as part of the standard/default grid mix (in this case others on the grid are claiming it), (2) Confirm there are no regulatory policies in place that are requiring the site to produce renewable electricity. (3) If there are any attribute certificates, confirm the applicant is not selling them. Note: This bullet is required to claim the electricity at any site (including where it is produced). The renewable electricity may not be applied to other sites that are located where there is a voluntary market. Reason: These other sites are required to participate in their own voluntary market instead. Ownership of the attributes may not be transferred to a different entity (e.g., to a facility owned by a supplier) unless a qualified third party verifies that double counting has not occurred. Reason: This is essentially an unbundled attribute certificate situation outside of a regulated tracking system. |
|--|---|
-
- There must be evidence (e.g., a signed statement) that the transferring site(s) will not claim the renewable electricity for other purposes. For example, if a site's electricity is 15% on-site solar but a portion of this is transferred to a different site, the producing site may no longer claim to be operating on 15% renewable electricity. Note that the same rationale applies to cases where on-site production is more highly allocated towards producing the certified product than the percentage of renewable electricity at the facility overall. This is allowed, as long as the applicant does not double count/double claim the renewable electricity.
 - The installation age (≤ 15 years) requirement applicable to unbundled attribute certificates does not apply, Reason: The energy is still considered on site within the greater context of the final manufacturing stage, and the installation age requirement applies to unbundled attribute certificates.

- Reminder: For half of the Gold level target and for Platinum level, evidence that the electricity is consumed on site to the extent feasible is required. This will reduce the ability to match on-site produced electricity from one facility with non-renewable electricity at others.

Other procurement and production options

- Contact C2CPII if in doubt regarding how to apply these concepts to other situations.

Required Documentation

If Using Renewable Energy Attribute Certificates (RECs or GOs) to Meet the Targets

- Renewable Energy Attribute Certificate (REC or GO) or other official documentation (e.g., cancellation statements and/or verification via online databases such as GROENCHECK in Belgium) that indicates:
 - Date of purchase,
 - Validity period,
 - MWh purchased,
 - Identity of generator, and
 - Renewable electricity source (e.g., wind, solar).
- At Gold: Documentation indicating the age of the generator if this is not included on the certificate (must be ≤ 15 years). **Note:** In the United States and Canada, assurance that new installations are supported may be achieved via use of Green-e® certified Renewable Energy Certificates (RECs).
- Guarantee that the renewable energy attributes associated with the electricity delivered to the applicant can be claimed by the applicant and are not being claimed or counted elsewhere by any other party. **Notes:** In the European Union, this requirement is assumed to be met when Guarantees of Origin (GOs) are employed. In the United States and Canada, if Green-e® certified RECs are employed this requirement has been met.
- A description of the system through which the renewable energy is being tracked, identifying the entity tracking the attributes, describing how attributes are being tracked and how double counting is prevented. **Notes:** In the European Union, this requirement is assumed to be met when Guarantees of Origin (GOs) are employed. In the United States and Canada, if Green-e® certified RECs are employed this requirement has been met.
- For facilities located in the United States and Canada: Evidence that an appropriate amount of allowances have been retired from voluntary renewable energy set aside accounts. **Note:** This may be achieved via use of Green-e® certified RECs.
- C2C Certified Clean Air & Climate Protection Form with tables 1a and 1b completed.
- Commitment via a signed statement to tracking electricity use and procuring renewable electricity attribute certificate (EACs) at the required percentage on an annual basis during the

certification period. **Note:** This is required because it is best practice to match consumption with energy attribute certificate procurement at most on an annual basis to ensure that consumption is matched with valid EACs.

If Using Utility Delivered Renewable Electricity to Meet the Targets

For regions with a voluntary renewable electricity market (e.g., European Union, United States):

- European Union: Guarantee of Origin cancellation statement or other official documentation (e.g., active energy contract) as provided by the utility indicating the amount of GOs (MWh) cancelled on the applicant's behalf and the renewable electricity sources (e.g., solar, wind),
OR,
All regions (including the United States): Energy attribute certificate cancellation statement or other official documentation provided by the utility, indicating:
 - The amount of renewable energy attribute certificates (MWh) that were cancelled on the applicant's behalf (preferred), or the specific percentage of renewable energy in the mix delivered to the applicant.
 - Renewable electricity sources (e.g., solar, wind).
 - Guarantee that the renewable energy attributes associated with the electricity delivered to the applicant can be claimed by the applicant and are not being claimed or counted elsewhere by any other party. **Note:** In the United States, if Green-e® certified RECs are provided this requirement has been met.
 - A description of the system through which the renewable energy is being tracked, identifying the entity tracking the attributes, describing how attributes are being tracked and how double counting is prevented. **Note:** In the United States, if Green-e® certified RECs are provided this requirement has been met.
- C2C Certified Clean Air & Climate Protection Form with table 1a completed.

Note: Emails from the utility with reference to official documentation may be used to supplement information that is missing. In regions with 'leading regulations', an active energy contract that specifies the cancellation of energy attribute certificates on behalf of the applicant for the duration of the contract is sufficient without requiring cancellations to be verified for the prior year.

For Regions Where there is No Voluntary Renewable Electricity Market:

- Documentation and references used for determining that there is no voluntary renewable electricity market in the applicable region and that the applicant's utility has only one electricity mix option available.
- Documentation and references used for determining the average percentage of renewable electricity available on the applicable grid or in the country where the facility is located.
- C2C Certified Clean Air & Climate Protection Form with table 1a completed.

Note: When using C2CPII-recognized standards, a description of how the certification status may be validated (e.g., by checking a scheme's certificate database).

If Using On-site Renewable Electricity to Meet the Targets

- Description and photos of energy installation including evidence of sources (e.g., solar, wind).
- Evidence of the total annual on-site production (e.g., meter readouts or utility bills).
- Evidence of renewable energy attribute certificate retention and cancellation (if applicable, e.g., in the European Union and United States).
- If more on-site renewable energy is allocated to the certified product than the proportional share of on-site renewable energy relative to the total electricity consumption at the final manufacturing stage facilities, a signed statement from the applicant ensuring that the claimed renewable electricity is not double counted (e.g., not simultaneously claimed at the facility level for other purposes).
- For the Gold level, evidence that the renewable electricity is consumed on site to the extent feasible. For example, documented analysis of renewable electricity production and on-site use demonstrating efforts to optimize use, and/or evidence of behind the meter production and consumption.
- C2C Certified Clean Air & Climate Protection Form with table 1a completed.

If Using Power Purchase Agreements (Direct or Virtual) to Meet the Targets

- Fully executed contract between facility owner and energy provider that indicates:
 - Contract length (For the Gold level, must be ≥ 10 years. Alternative: Evidence the contract was signed pre-financing).
 - Location of the generator.
 - Age of generator (For the Gold level, must be ≤ 15 years. Alternatives: Evidence of direct line and no grid transfers, evidence that the buyer was the original off-taker, or evidence of contract being signed prior to 1 January 2024).
 - Amount of electricity that is/will be purchased (MWh).
 - Sources of electricity (e.g., wind, solar).
- Evidence of renewable energy attribute certificate retention and cancellation (if applicable, e.g., in the European Union and United States) or contract terms stating that the generator is transferring claims to the renewable electricity attributes to the buyer (i.e., that the generator will not sell or otherwise provide the renewable attributes to other parties).
- Gold level:
 - Evidence that the generator is in the same grid region as the final manufacturing facility (e.g., official grid region map with locations of generator and facility marked), or
 - For virtual power purchase agreements, indication of the emissions rates for the grid region where the facility is located and for the grid to which the generators is connected. Include references used. The grid region of the generator must have a higher emissions rate compared to the grid region of the facility, unless they are the same. This may be determined at the time when the virtual power purchase agreement contract was executed.

- C2C Certified Clean Air & Climate Protection Form with table 1a (for direct PPAs) or 1a and 1b (for virtual PPAs) completed.

Impoundment Hydroelectricity (For All Types of Procurement and Use Listed Above)

- Certificate from a C2CPII-recognized renewable (hydro) electricity standard indicating total MWh of certified hydroelectricity that has been purchased. Note that all other documentation requirements listed above apply, as applicable, depending on how the electricity is procured.

Alternative to Purchasing Renewable Energy Attribute Certificates: Financial Support of a Climate relevant Public Policy Initiative

- Cost estimate for RECs (United States and Canada) or GOs (European Union). Certificates used to estimate the cost must support one or more of the accepted energy types and meet generator age requirements. This estimation method may be used for other regions as well.
- Receipt or similar indicating donation amount and date (amount must be 2x the cost estimate). The donation must be within the prior three years at the time of certification.
- Description of the initiative, including link to initiative website if available.
- C2C Certified Clean Air & Climate Protection Form with tables 1a and 1d completed.

Investment in On-Site Renewable Generation

- Receipt or similar indicating investment amount and date.
- Description of the project, and how it meets the requirements for receiving credit for on-site renewable generation (e.g., eligible sources and capacity matching required targets).
- Supporting evidence for source and project capacity (e.g., photos, specification sheets, generation estimate calculations).
- A signed statement from the applicant ensuring that the renewable electricity would be attributed to the certified product and not double counted elsewhere (e.g., not simultaneously claimed at the facility level for other purposes).
- C2C Certified Clean Air & Climate Protection Form with tables 1a and 1e completed.

Meeting the Carbon Offset Targets

Carbon offsets may be used to address both direct and indirect greenhouse gas emissions. For example, this includes emissions produced on site from burning fuels and emissions resulting from the generation of purchased electricity or steam off-site.

Exceptions:

For Bronze and Silver levels, carbon offsets may not be used to address emissions attributable to purchased electricity in countries where there is an established renewable electricity market and related attribute tracking system and where the nuclear power share is > 10%.

For the Gold level, carbon offsets may not be used to address emissions attributable to purchased electricity in countries where there is an established renewable electricity market and related attribute tracking system.

To claim and apply carbon offsets toward the offset target(s), the following conditions must be met:

1. Offsets must be sourced from projects certified to a C2CPII-recognized offset project certification program that aims to ensure that:
 - a. The associated greenhouse gas reductions or removals are additional, accurately estimated, permanent, and not double counted.
 - b. Offset projects operate in compliance with local laws.
2. The offsets must be purchased voluntarily (and not for compliance purposes).
3. If using carbon offsets to address emissions attributable to the use of purchased electricity (i.e., scope 2 emissions): Emissions attributable to the purchased electricity must be calculated using residual emissions factors if available, or grid average emissions factors if not.

Further Explanation

Meeting the Carbon Offset (i.e., Carbon Credit) Targets

This section of the standard is applicable to using carbon offsets to achieve the targets for addressing greenhouse gas emissions described in the sub-section above titled 'Renewable Electricity and Greenhouse Gas Emissions Targets'. Carbon offsets may be employed to address emissions attributable to both purchased energy that was generated off site (i.e., scope 2 emissions) and emissions that occur directly at final manufacturing facilities (i.e., scope 1 emissions, for example, that result when fuels are burned on site). Purchase of carbon offsets to address emissions from these energy sources is an option through the Gold level of certification. For the Platinum level, carbon offsets may only be employed to address emissions from nonenergy sources and/or emissions resulting from the use of bioenergy receiving partial credit (see the Bioenergy section below for additional information).

As noted in this section of the standard, ***Offsets must be sourced from projects certified to a C2CPII-recognized offset project certification program*** (i.e., crediting standard/program). At the time of publishing this guidance, the C2CPII-recognized offset certification programs are:

- American Carbon Registry
- Clean Development Mechanism
- Climate Action Reserve
- The Gold Standard
- Verified Carbon Standard

Please refer to the [C2CPII-Recognized Certification Programs and Standards](#) for the most recent list of recognized programs.

C2CPII-recognized offset standards (i.e., crediting standard/program) are those that aim to ensure (a) *The associated greenhouse gas reductions or removals are additional, accurately estimated, permanent,*

and not double counted, and (b) Offset projects operate in compliance with local laws. Although not explicitly specified, an additional intent is that projects do not cause social or environmental harm. Whether these points are achieved is known to vary by project type, not only by offset standard. To reduce the risk that offsets certified to C2CPII-recognized programs do not meet the requirements, the following project types must be avoided unless the specific project and/or methodology has been rated as low risk by a third-party rating provider.

- Agriculture
- Biomass energy
- Cement production
- Energy efficiency, industrial demand side
- Energy efficiency, supply side
- Forestry and land use
- Fossil fuel switching
- Fugitive gas capture or avoidance
- Low-carbon transportation measures
- Renewable energy, large scale*

Notes:

- The list of high-risk project types above is taken from the [Carbon Offset Guide](#) (Broekhoff, D., Gillenwater, M., Colbert-Sangree, T., and Cage, P. 2019. "Securing Climate Benefit: A Guide to Using Carbon Offsets." Stockholm Environment Institute & Greenhouse Gas Management Institute. offsetguide.org/pdf-download/). Refer to this reference for further descriptions of the project types listed above.
- For additional information on choosing high quality offsets please refer to this Guide or to the related [Use of Carbon Credits in Aluminum Industry Decarbonisation Strategies: Issues and Guidance](#) (SEI and GHG Management Institute, 2023).
- *Small scale renewable energy is defined as <15 MW as per Carbon Offset Guide.

Ratings provided by the [Carbon Credit Quality Initiative](#) (preferred/recommended), or by BeZero, Calyx, and/or Sylvera may be used to make this determination. Accepted ratings and scores are as follows:

- Carbon Credit Quality Initiative: 4 or 5 or N/R (see note below)
- BeZero: A, AA, AAA
- Calyx: A, B
- Sylvera: Tier 1

Notes:

- The Carbon Credit Quality Initiative's (CCQI) scores are at the methodology level rather than the individual project level. This means that the scores apply to project types by standard rather than to individual projects. At the time of publishing this guidance, CCQI had assessed methods developed by all of the C2CPII-recognized offset standards/crediting standards (and not for any other standards. If other standards' methodologies are scored by CCQI (and

receive a 4 or 5 rating or a not relevant (N/R) designation for all indicators) the applicable standard and project type will also be accepted for the purposes of Cradle to Cradle Certified.

- Additional rating providers may be accepted with pre-approval from C2PCII.

Offsets must be purchased voluntarily (and not for compliance purposes). Further, participation in a cap-and-trade program as required by law does not receive credit. In general, applicants in sectors required to participate in emissions trading schemes locally may have purchased carbon offsets for compliance purposes. Typically, this is only relevant for energy intensive sectors. For example, steel and iron, aluminum, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids, and bulk organic chemicals (per the EU's [Emissions Trading System](#)). Note that emissions allowances are not the same thing as carbon offsets. However, if carbon credits/"offsets" are purchased voluntarily through the EU-ETS and they are sourced from projects certified per a C2PCII-recognized program (e.g., CDM) these do receive credit. In this case, applicants must also provide a statement indicating the credits were not purchased for compliance purposes.

Applicants are encouraged to select offset projects that also support and protect ecosystems, biodiversity, and local communities (i.e., REDD+ or similar).

Offsets may be purchased on an annual basis or for the full course of the certification period (i.e., three years). Note that it is considered best practice (but not required) to match offset vintage as closely as possible to the period in which emissions occur. Offsets may be purchased from a third party, provided all requirements are met, including that the offsets are retired and taken off the market.

To summarize, for carbon offsets to be accepted, one of the following would need to occur:

- Carbon offset provider generates carbon offsets under one of the C2PCII-recognized standards and is not classified as a high-risk project type unless highly rated by CCQI, BeZero, Calyx, or Sylvera. For CCQI, a rating of 4, 5 or NR (not relevant) is required for all quality indicators. A rating of NA (not assessed) is not accepted.
- Carbon credit provider's credit standards are reviewed and highly rated by CCQI. However, only the C2PCII-Recognized Standards have so far been reviewed by CCQI, so this does not help yet for alternative standards.

Using Carbon Offsets to Address Emissions from Purchased Electricity: Nuclear Power and Market Considerations

As noted in the standard, for the Bronze and Silver levels, *Carbon offsets may not be used to address emissions attributable to purchased electricity in countries where there is an established [voluntary] renewable electricity market and related attribute tracking system and where the nuclear power share is > 10%.* This restriction applies when both conditions exist together. For the Gold level, *carbon offsets may not be used to address emissions attributable to purchased electricity in countries where there is an established [voluntary] renewable electricity market and related attribute tracking system.*

Cradle to Cradle Certified supports the use of renewable energy. The reason for the nuclear power restriction is that nuclear power is not renewable and is also associated with risks of catastrophic accidents and generation of highly hazardous waste—although it is associated with low to zero greenhouse gas emissions. The restriction ensures that action will be taken in support of increasing the availability of renewable electricity in locations where there is a high percentage of nuclear in the mix and where renewable electricity procurement options are available. Without this restriction, the requirements to use renewables and/or purchase offsets could be completely or partially avoided by using offsets to compensate for emissions attributable to nuclear generated power (which are zero).

The following countries and regions have established (i.e., in existence for a long time and expected to continue to exist) voluntary renewable electricity markets and tracking systems: European countries that are [Association of Issuing Bodies \(AIB\) members](#), United Kingdom, and United States. Carbon offsets may not be used to address emissions from purchased electricity in any of these locations at the Gold level. Those with > 10% nuclear share also may not use offsets for this purpose at the Bronze and Silver levels.

Countries with > 10% nuclear power are: Armenia, Belarus, Belgium, Bulgaria, Canada, Czech Republic, Finland, France, Hungary, Korea (South), Pakistan, Romania, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Arab Emirates, United Kingdom, United States. This list is based on [2024 data from world-nuclear.org](#). If more recent data become available, they may be employed.

Table – Cases in which carbon offsets may and may not be used to address emissions from purchased electricity

Countries and Regions	Carbon offsets may be used at these levels to address emissions attributable to purchased electricity	Reason
Belgium, Bulgaria, Czech Republic, Finland, France, Hungary, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom. United States, e-grid subregions AZNM, FRCC, NEWE, NYUP, RFCE, RFCM, RFCW, SPNO, SRMV, SRMW, SRSO, SRTV, SRVC	None	Established voluntary renewable electricity market and nuclear share > 10%
All AIB member countries not listed above, United States, e-grid subregions not listed above	Bronze, Silver	Established voluntary renewable electricity market (but nuclear share ≤ 10%)

All other countries not listed above	Bronze, Silver, Gold	No established renewable electricity market (nuclear share is not considered and may be > 10% or ≤ 10%)
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Australia, Canada, China, India, Japan, New Zealand, South Korea, and Taiwan also have voluntary markets, but they are not considered “established”. Therefore, sites in these locations are not subject to the restriction on using carbon offsets to address emissions from purchased electricity due to existence of an established market.

Calculating Emissions Attributable to Purchased Electricity

The Clean Air & Climate Protection Form provides emissions factors for calculating emissions attributable to purchased electricity for all AIB member countries, the United States, and several other countries. For countries not included in the form, it may be necessary to purchase emissions factors from the International Energy Agency (IEA) to accurately calculate electricity attributable emissions and the amount of offsets required. If the emissions are relatively low, the cost of the emissions factor may seem unproportionally high. An accepted alternative is to base the offset purchase on a worst-case scenario, using an emissions factor for electricity produced from the dirtiest coal at a highly inefficient power plant: 2 tCO₂e/MWh (GHG Protocol, Emissions Factors from Cross Sector Tools, August 2012). If this approach is taken, location-based emissions (which are required to be calculated for transparency and awareness purposes per Sections 6.2 and 6.6) may be calculated using freely available emissions factors from sources other than the IEA.

Alternative to Purchasing Carbon Offsets: Investment in On-site Emissions Reductions Projects (Bronze, Silver, and Gold levels)

As noted in the sub-section titled ‘Renewable Electricity and Greenhouse Gas Emissions Targets’, investments in on-site emissions reductions projects receive credit as an alternative to purchasing carbon offsets for achieving the Bronze and Silver level targets. This is an option for addressing scope 1/direct and other scope 2/indirect emissions. It is not an option for addressing purchased electricity. The investment must be of equivalent value to a carbon offset purchase for achieving the applicable target (i.e., 5% for the Bronze level, 20% for the Silver level, and 50% for the Gold level). The investments must be within the prior three years at the time of certification to align with the certification period. Offsets used for these estimates must be certified to a C2CPH-recognized standard and meet all related quality criteria (i.e., avoidance of high-risk project types unless the project itself is highly rated) as described in this Certification Manual. Please refer to the standard text and the Required Documentation section below for additional information.

Electrification of transport between final manufacturing stage facilities is accepted as an on-site emissions reductions project.

C2CPII is considering the potential to accept buying and retiring allowances voluntarily from a cap-and-trade system as an alternative to buying carbon offsets/credits as discussed above. This could be an option in regions where the system allows voluntary purchase and cancellation of carbon allowances in addition to any required to be purchased per the regulations. This alternative would only be accepted for regions where the cap-and-trade systems are not oversupplied. This currently includes the EU-ETS and CA-ETS (per the Guide to Using Carbon Credits, Alternatives to Carbon Credits). C2CPII is still reviewing this approach at the time of publishing this manual. Please contact C2CPII if interested in utilizing this pathway.

References

- Broekhoff, D., Gillenwater, M., Colbert-Sangree, T., and Cage, P. 2025.
“[Securing Climate Benefit: A Guide to Using Carbon Credits](https://offsetguide.org/download/).” Stockholm Environment Institute Greenhouse Gas Management Institute. <https://offsetguide.org/download/>

Required Documentation

Carbon Offsets (i.e., Carbon Credits)

- Offset certificates indicating date of purchase, vintage, amount purchased (tCO₂e), offset standard, and project(s) supported (e.g., project numbers). Projects must be certified per C2CPII-recognized standards and support low-risk project types or be highly rated by a third-party rating system (CCQI, BeZero, Calyx, or Sylvera). Alternatively, standards must be highly rated by CCQI.
- For high-risk project types, evidence of having received a low-risk rating.
- C2C Certified Clean Air & Climate Protection Form with tables 2a and 2d completed and, if offsetting emissions from purchased electricity, tables 1a and 1c completed.
- For applicants in sectors required to participate in emissions trading systems (i.e., those in emissions intensive industries per examples in the guidance above), a signed statement that the offsets were purchased voluntarily and were not utilized for compliance purposes.
- If offsets are employed for addressing emissions attributable to purchased electricity:
 - Indication of the percent nuclear share in the region and references used if different from those available in the C2C Certified Clean Air & Climate Protection Form.
 - References for emissions factors employed if different from those provided in the C2C Certified Clean Air & Climate Protection Form.
- If procuring offsets on an annual basis (rather than procuring for the three-year certification period all at once): A signed statement of commitment to tracking emissions and procuring offsets on an annual basis at the required percentage during the certification period.

Alternative to Purchasing Carbon Offsets: Investment in On-site Emissions Reductions Projects (Bronze, Silver and Gold levels)

- Cost estimate for carbon offsets (must be based on offsets certified to a C2CPH-recognized standard and for projects with a low risk rating for restricted project types, if relevant).
- Evidence of investment amount and date (e.g., receipts for purchase of new equipment or for payment to contractors for retrofit). The investments must be within the prior three years at the time of certification.
- Description of the project and how it will contribute to reduced emissions.
- C2C Certified Clean Air & Climate Protection Form with tables 2a and 2e completed.

Accounting for Bioenergy and Achieving the Bioenergy Credit

If bioenergy is produced on site (including use of biofuels), the greenhouse gas emissions attributable to the bioenergy must be added to the total CO₂e subject to the offset targets.

If the bioenergy is produced from eligible fuels, the bioenergy credit may also be subtracted from the amount of offsets required to reach a given target. The bioenergy credit = (the carbon dioxide combustion emissions of the eligible biofuel) x (the bioenergy credit multiplier for the eligible fuel source type). In addition to receiving the bioenergy emissions credit for the use of eligible biofuels, electric bioenergy produced on site from these fuels may also be counted toward the renewable electricity target.

Eligible fuels are solid, liquid, or gaseous forms of fuel sourced from organic and renewable materials that would otherwise be categorized as waste as defined by the most recent version of the Green-e® Renewable Energy Standard for Canada and the United States. As an alternative to quantifying and limiting the amount of contamination in woody waste used for bioenergy production as required by Green-e® (which limits contaminants such as paints in woody waste on a British thermal unit (Btu) basis), if producing bioenergy from contaminated woody waste material, facilities must meet air emissions limitations and manage incinerator waste per leading regulations (see Section 6.1 for the definition of leading regulations in the context of air emissions).

The bioenergy credit multipliers by eligible fuel source type are as follows (see Section 12 Definitions for a description of the approach used to define these multipliers):

1. Agricultural crop residue that is unmerchantable as food and other similar rapidly renewable waste material: 0.63
2. Animal and other organic waste (e.g., food scraps), landfill gas, and wastewater methane: 1
3. Woody waste: 0.57

To receive the bioenergy credit, the applicant must retain all rights to the environmental attributes associated with the bioenergy. Emissions reductions attributes may not be sold, registered, or claimed by others.

Bioenergy must be produced on site and any biofuels must be used directly to receive the bioenergy credit with the following exception: For the Bronze and Silver levels, "green-gas" certificates may be employed to compensate for natural gas obtained through the standard gas grid. Carbon offsets

supporting bioenergy installations receive credit as described above in the section titled 'Meeting the Carbon Offset Targets'.

Further Explanation

Bioenergy, including biofuels, are often considered to be carbon neutral. However, this is not necessarily the case in the near term given the time period over which biomass needs to grow back, especially for slower growing plants like trees. Burning biomass and biobased fuels also produces other types of air emissions (in addition to greenhouse gases) that can contribute to reduced air quality. In addition, if land is used to grow biomass for energy production, there may be competition with land use for growing food. Pressure to grow biomass for energy production could also result in the conversion of natural areas to agriculture. For these reasons, Cradle to Cradle Certified only gives credit to bioenergy (including biofuels) that are produced from bio-based 'waste' materials. In addition, the use of woody waste for energy production receives only partial credit. Emissions from bioenergy and biofuels that do not receive credit (i.e., ineligible sources) must be treated in the same way as all other greenhouse gas emissions for the purpose of achieving the targets set out in the sub-section of the standard titled 'Renewable Electricity and Greenhouse Gas Emissions Targets'. In other words, if carbon offsets will be used to address greenhouse gas emissions (as allowed through the Gold level), and bioenergy that cannot be verified to be produced from eligible waste sources is used, the greenhouse gas emissions attributable to use of the bioenergy must be added to the emissions from any other sources, and this total is used to calculate the percentage of carbon offsets required.

As noted by the standard: *Bioenergy must be produced on site and any biofuels must be used directly to receive the bioenergy credit.* This means that **the bioenergy credit can only be applied to the specific site where the bio-based fuel/energy is used.** In other words, extra credit earned for using bioenergy at one site (i.e., beyond the credit necessary to achieve the desired achievement level) may not be used to achieve the target at another site.

Eligible Sources

Only the waste fuel types that are listed in the Center for Resource Solutions, [Green-e® Renewable Energy Standard for Canada and the United States](#) may receive the bioenergy credit. Note that this reference also includes some fuel types that do not receive credit and instead must be treated in the same way as using fossil fuel-based energy (i.e., energy crops).

Agricultural crop residue that is unmerchantable as food is one of the types of waste material, that, when used to produce energy, receives credit. The term "residue" is defined per the Renewable Energy Directive as a substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process, and the process has not been deliberately modified to produce it.

Woody waste used to produce bioenergy may contain only *de minimis* quantities of contaminated wood to receive credit. Per the Green-e® reference cited above, this is defined as "less than 1% of total

annual btu value is derived from treated wood". Per the standard: *As an alternative to quantifying and limiting the amount of contamination in woody waste used for bioenergy production as required by Green-e® (which limits contaminants such as paints in woody waste on a btu basis), if producing bioenergy from contaminated woody waste material, facilities must meet air emissions limitations and manage incinerator waste per leading regulations (see Section 6.1 for the definition of leading regulations in the context of air emissions).* Leading regulations pertaining to incinerator emissions and waste management are as defined by the European Union in the most recent version of the [Industrial Emissions Directive](#) (IED). This means that any site located in the EU that follows the applicable regulations automatically meets this requirement. Sites outside of the EU must achieve the emissions limit values and manage incinerator waste as specified by the IED to receive credit via this pathway for bioenergy produced from contaminated wood.

Calculating the Bioenergy Credit

Example calculation and explanation for a scenario where landfill gas (or wastewater treatment gas) and natural gas are used for the final manufacturing stage of the product:

- Bioenergy credit = (amount of landfill gas used * CO₂ emissions factor for landfill gas) x multiplier for landfill gas. **Note:** The emissions factor used for the eligible fuel must be for CO₂ only and may not include other greenhouse gases such as methane or nitrous oxide emissions. The rationale for this is that the multipliers used to calculate the bioenergy credit are based on estimates of the net atmospheric biogenic CO₂ contribution expected to occur (and on the other hand, expected not to occur) from burning biobased fuels at a stationary source. When burning these fuels, carbon dioxide plus small amounts of methane and nitrous oxide are released. The carbon dioxide can be taken up again by plants, but the methane and nitrous oxide cannot. Therefore, credit is not given for the methane and nitrous oxide portions of the greenhouse gas emissions resulting from these fuel types. Although this rationale is less directly relevant to the landfill gas and similar scenarios, the same method has been applied.
- Multiplier for landfill gas = 1.
- Total emissions = (amount of natural gas used * CO₂e emissions factor for natural gas) + (amount of landfill gas used * CO₂e emissions factor for landfill gas).
- Offsets required to achieve the Gold level target of 50% = (total emissions * 50%) – (bioenergy credit). If this value is negative, no offsets are required. If this value is positive, this is the amount of offsets that must be purchased.
- In other words, if aiming to achieve the Gold level, and (the bioenergy credit ÷ total emissions from all sources) > 50%, then carbon offsets will not have to be purchased (i.e., the Gold level has been achieved).

This means that if landfill gas or similar is the only fuel used in the final manufacturing stage, then it will not be necessary to purchase carbon offsets to achieve the Gold level. For the Platinum level, only a very small amount of carbon offsets will have to be purchased to account for the small portion of the emissions that are methane and nitrous oxide, and also to achieve the > 100% requirement.

The Clean Air & Climate Protection Form provides the necessary combination of emissions factors and multipliers for common bioenergy types (e.g., landfill gas and woody waste). Please note that for less common types of biofuels and bioenergy it will be necessary to obtain an emissions factor for the specific fuel to calculate the bioenergy credit using the formula and multipliers provided in the standard.

Biogas/Green-gas Certificates

The standard makes an exception for green-gas certificates, which allows for flexibility in meeting the requirement that bioenergy must be directly produced and used on site to receive credit. This exception is necessary because in the case of a green gas certificate for gas delivered through the gas grid, the gas burned on site will likely be a blend of biogas and gas from fossil fuels (or just fossil fuel), rather than purely biogas.

Certificates that do not indicate a period of validity will be considered valid for one year. Certificates may be banked for up to one year after purchase to match non-renewable gas use on site.

Required Documentation

- Receipts, meter readouts, or similar evidence for verifying the amount and type of eligible fuel purchased and used on an annual basis (provide data for at least one year).
- Statement from the manufacturer containing the following information: Reference to the applicable requirement numbers in the Green-e Renewable Energy Standard for Canada and the United States (most recent version) and explanation regarding how it is verified that the bioenergy or biofuel is from an eligible source. The explanation must include a strong rationale for how materials are indeed 'waste' and/or 'unmerchantable as food' (as applicable). Evidence may include reference to commonly accepted definitions (e.g., per regulations applicable to the material that define waste or that may not allow for it to be recycled or reused) and/or market research demonstrating that there is no existing or viable market for recycling the material.
- For contaminated woody waste, evidence of btu value of contaminants or evidence of compliance with leading regulations (i.e., air permit compliance per Section 6.1 and waste permit compliance as described above).
- References for emissions factors if different from those provided in the C2C Certified Clean Air & Climate Protection Form.
- C2C Certified Clean Air & Climate Protection Form with table 2b completed.
- If employing biogas/green-gas certificates (as allowed for the Bronze and Silver levels):
 - Certificate or other official documentation from the biogas generator indicating date of purchase, validity period, total amount purchased, source of biogas (e.g., anaerobic digestion of municipal waste biomass), and generator identity including location of gas generating installation.

- Evidence that the generator is in the same gas grid region as the final manufacturing facility (e.g., official grid region map with locations of generator and facility marked).
- Guarantee by the generator that the renewable energy attributes associated with biogas can be claimed by the applicant and are not being claimed or counted elsewhere by any other party.
- A description of the system through which the biogas is being tracked, identifying the entity tracking the attributes, describing how attributes are being tracked and how double counting is prevented.

Achieving the Performance Improvement Credit

For the Bronze through Gold levels, the renewable electricity and/or greenhouse gas emissions targets may be reduced when performance improvement(s) resulting from energy conservation and efficiency projects have been demonstrated and verified by a qualified third party. The performance improvement credit may be applied to (1) purchased electricity in terms of kWh or equivalent and direct emissions separately, or (2) combined scope 1 and 2 emissions. In general, the renewable electricity and offset targets may be reduced by one percentage point for each percent of normalized performance improvement achieved, within the following limits:

1. For Bronze level: The 5% renewable electricity and/or greenhouse gas emissions targets may be reduced by up to five percentage points (100% of the targets). If performance improvement(s) of 5% has been achieved, renewable electricity, carbon offsets, and/or other methods of achieving the targets are not required. Alternative: The facility is certified to the ENERGY STAR buildings and plants program or equivalent.
2. For Silver level: The 20% renewable electricity and/or greenhouse gas emissions targets may be reduced by up to 10 percentage points (50% of the targets). If the maximum performance improvement credit of 10% has been achieved, or the facility is certified to the ENERGY STAR building and plants program or equivalent, only 10% of electricity must be renewably sourced and only 10% of greenhouse gas emissions must be offset or addressed via the other allowable methods. Alternative: If, for the applicant company, absolute emissions reductions are achieved in line with the Science Based Targets Initiative's (SBTi) well below 2°C or 1.5°C scenarios, the 20% renewable electricity and/or offset targets may be reduced by up to 20 percentage points (100% of the targets). Targets must be verified by SBTi and absolute reductions in line with the targets must be realized over the prior certification period. In this case, if performance improvement(s) of 20% or more has been achieved, or the facility is certified to the ENERGY STAR building and plants program or equivalent, renewable electricity, carbon offsets and/or other methods of achieving the targets are not required.
3. For Gold level: The 50% renewable electricity and/or greenhouse gas emissions targets may be reduced by up to 12.5 percentage points (25% of the targets). If the maximum performance improvement credit of 12.5% has been achieved, only 37.5% of electricity must be renewably

sourced and only 37.5% of greenhouse gas emissions must be offset or addressed via the other allowable methods.

4. The performance improvement credit may not be used toward fulfillment of the Platinum level targets.

The performance improvement credit may be applied when all of the following conditions are met:

1. Performance improvement is achieved at a facility that is part of the product's final manufacturing stage.
2. The product is allocated a share of overall facility energy use and emissions proportional to its share in the facility's overall production. (This is required prior to determining the amount of carbon offsets and/or renewable electricity necessary to meet the remainder of the target(s)).
3. Performance improvements are determined using a baseline year of no more than 10 years prior to certification or recertification (as applicable).
4. Performance improvements from baseline to reporting year must be determined and normalized per an approved method and verified by a qualified third party with expertise in energy performance measurement and verification.
 - a. The International Performance Measurement and Verification Protocol (IPMVP), Method C (i.e., the whole facility method), or similar methods based on ISO 50015 and ISO 50047, are accepted.
5. The verifier must report performance improvement(s) in the appropriate quantities depending on how the remainder of the targets will be met as follows:
 - a. Performance improvement must be reported separately for electricity and all other greenhouse gas emissions sources (required if meeting renewable electricity and greenhouse gas emissions targets separately); or,
 - b. Total performance improvement for all energy sources combined must be converted to and reported as percentage of CO₂e savings achieved (i.e., avoided emissions).
6. The reporting year for the performance improvement verification report must be within one year of the certification issue date. Verification must be repeated upon each recertification.
7. The applicant must retain all rights to the environmental attributes associated with the performance improvement.

Further Explanation

Scope of the Performance Improvement Credit (Requirements #1-2)

Performance improvement [must be] achieved at the facility that is part of the product's final manufacturing stage per Requirement #1. This means that company-level performance improvements that are not relevant to the manufacturing stage facilities where the product is made do not receive credit. Performance improvements achieved for the facility overall receive credit (they do not have to be directly applicable to the processes associated with manufacturing the certified product). If there are multiple final manufacturing facilities and performance improvements have been achieved at several or

all of these facilities, the total improvement at all facilities combined may be employed in calculating the credit. Alternatively, the credit may be applied to just some of the facilities where the product is made with other means of achieving the targets applied at the remaining facilities. If this alternative option is employed, then performance improvements must have been achieved at each facility to which the credit is applied.

Per Requirement #2: The product [must be] allocated a share of overall facility energy use and emissions proportional to its share in the facility's overall production. (This is required prior to determining the amount of carbon offsets and/or renewable electricity necessary to meet the remainder of the target(s)).

Energy conservation and efficiency (C&E) projects and performance improvement estimates usually occur and apply at the facility level. Conversely, the default for Cradle to Cradle is for energy and emissions to be reported for (and targets applied to) the product, excluding non-attributable facility-level energy use and emissions. This requirement means that when applying the performance improvement credit to product-allocated energy use and emissions, the scope for the energy and/or emission numbers that the targets are based on must match the scope used in the performance improvement calculations. In other words, if performance improvement percentages are determined at the facility level, and the remainder of the targets will be met based on product-allocated energy use and emissions, the product must also be allocated a share of overall facility energy use and emissions proportional to its share in the facility's overall production (e.g., energy used to heat the building that may otherwise be considered non-attributable to the product). An alternative is to apply both the targets and the performance improvement credit to facility-level energy use and emissions, thereby avoiding the need to allocate to the final manufacturing stage all together.

Baseline (Requirement #3)

Per Requirement #3: Performance improvements are determined using a baseline year of no more than 10 years prior to certification or recertification (as applicable). This means that if efficiency improvements were made more than 10 years ago, a facility is not eligible to receive the performance improvement credit. This also means that if the baseline is set at 10 years ago, it will have to be adjusted at recertification to claim the performance improvement credit again.

Methods and Verification (Requirement #4)

Per Requirement #4, performance improvements must be determined per an approved method and verified by a qualified third party with expertise in energy performance measurement and verification. This means that applicants may carry out the estimates themselves, but the method used and result achieved must be verified by a qualified third party to ensure accuracy and conformance with the International Performance Measurement and Verification Protocol (IPMVP) Method C or similar. Qualified parties are defined as association of energy engineers with IPMVP accreditation or superior energy performance verification bodies. Equivalent or similar qualifications and/or experience may be accepted on a case-by-case basis.

Methods and Verification References (Requirement #4)

- [Association of Energy Engineers \(AEE\)](#) and [AEE directory](#)
- [International Performance Measurement and Verification Protocol \(IPMVP\)](#)
- [Superior Energy Performance \(SEP\) 50001 / 50001 Ready](#)

How to Report and Apply the Performance Improvement (Requirements #5 and #6)

How the performance improvements are required to be reported and applied depends on how the remainder of the targets (if any) will be achieved.

Method #5a (i.e., performance improvement is reported separately for electricity and all other greenhouse gas emissions sources) must be selected when an applicant would like to purchase energy attribute certificates (RECs or GOs) or use on-site renewables to meet the remainder of a renewable electricity target (i.e., the portion of the target that has not been met via the performance improvement credit) while using offsets to address other emissions. If using method #5a, energy performance improvement must be converted to % CO₂e savings for all energy sources except for purchased electricity and on-site renewables. Note that other emissions sources include purchased heat.

Method #5a is also required for facilities located in a region with a cap-and-trade program (i.e., in the European Union and some states in the United States). The reason for this is that within a cap-and-trade system that regulates the power generation sector, reductions in purchased electricity use due to conservation and efficiency (C&E) measures will not further reduce scope 2 emissions (i.e., the emissions resulting from the purchased electricity) beyond the cap. In this case, it is not appropriate to convert C&E savings into greenhouse gas emissions savings for purchased electricity. Note that it is also allowable to only calculate and apply the performance improvement credit to direct emissions, and to meet the renewable electricity targets and targets for any other type of purchased energy through other means.

If using method #5b (i.e., performance improvement is reported for all energy sources combined), total improvement for all sources (scope 1 and 2) must be converted to and reported as total % CO₂e savings. In this case, offsets may be used to address the remainder of the target (if any) within the constraints indicated by the standard. Emissions from bioenergy must be included in the total emissions estimates. However, if applicable, the bioenergy credit may also be applied (see the Bioenergy section above for further information). Again, it is also allowable to only calculate and apply the performance improvement credit to direct emissions and to meet the renewable electricity targets and targets for any other type of purchased energy through other means.

In all cases, if the total required target for the desired achievement level cannot be achieved completely through the performance improvement credit, then the other acceptable means of meeting the targets for that level may be applied to the remainder. For example, if a performance improvement of 8% has been achieved for direct emissions, the remainder of the Silver target (12%) may be achieved by using carbon offsets to compensate for 12% of greenhouse gas emissions.

Finally, as noted in Requirement #6: *The reporting year for the performance improvement verification report must be within one year of the certification issue date. Verification must be repeated upon each recertification.*

Avoiding Double Counting – Retaining Rights to Attributes (Requirement #7)

As noted in the standard: *The applicant must retain all rights to the environmental attributes associated with the performance improvement.* This means, for example, that if carbon offsets are produced and sold from the emissions reductions resulting from the performance improvements, then the performance improvement credit may not be claimed.

Required Documentation

- Verification report provided by a qualified third-party verifier that describes the methods used (e.g., IPMVP Method C) and includes reporting per Requirement #5a or b (as applicable). Report must have been generated in the past year and demonstrate that the baseline year is no more than 10 years prior.
- Name and qualifications of the third-party verifier.
- Explanation of scope of the performance improvements (per Requirement #1-2) and how the improvement will be applied towards achieving the Cradle to Cradle Certified targets.
- A statement signed by the facility owner indicating that the company is retaining all rights to the environmental attributes associated with the performance improvements made.
- For the Silver level, if employing the option to reduce the Silver target by more than 10 percentage points through verified performance improvements:
 - Evidence of the applicant company having achieved absolute emissions reductions in line with the Science Based Targets Initiative's (SBTI) well below 2°C or 1.5°C scenarios.
 - Evidence that the absolute reductions target(s) achieved have been verified by SBTi and have been realized over the prior certification period (e.g., SBTi verification report).
- Valid EnergySTAR certificate or equivalent if applicable.

6.4 Using Blowing Agents with Low or No Global Warming Potential

Intended Outcome(s)

Blowing agents used in the product's manufacturing and supply chain do not contribute to climate change or depletion of the ozone layer.

Applicable Achievement Level(s)

Gold

Requirement(s)

For blowing agents used to manufacture foam materials, use blowing agents with low to no global warming potential (GWP) and no ozone depletion potential (ODP).

Blowing agents with a RED or GREY hazard rating in the Climatic Relevance endpoint (as defined by the C2CPII Material Health Assessment Methodology) must not be used. This is required regardless of whether the blowing agent remains within the final product and regardless of whether the blowing agent is used during the final manufacturing stage or in the supply chain.

Exemption

Blowing agents used to manufacture foam materials if the foam material makes up < 1% of the product by weight.

Further Explanation

As noted, this requirement applies specifically to blown foam materials. Some blowing agents have a high global warming potential and/or ozone depletion potential. Selecting foams that use preferable blowing agents is best practice and required for the Gold level. Refer to the Cradle to Cradle Certified Material Health Assessment Methodology for the definition of a RED or GREY hazard for the Climatic Relevance endpoint.

If foam is purchased rather than produced and blown as part of the final manufacturing stage, it is recommended to collect data regarding the chemical composition of any blowing agents used while collecting data for the Material Health category requirements. (Otherwise, this information will have to be collected separately for the purposes of this Clean Air & Climate Protection requirement.)

Note that in the case that blowing agents are used in final manufacturing, the associated greenhouse gas emissions must also be added to total emissions per requirements in Section 6.2 Quantifying Electricity Use and Emissions, beginning at the Bronze level. Per Section 6.2 all greenhouse gases must be included in the quantification. This also includes refrigerants and other non-energy related emissions.

References:

- [Substitutes in Foam Blowing Agents](#) (Significant New Alternatives Policy (SNAP), U.S. EPA)

Required Documentation

- Bill of materials (as provided for the Material Health requirements) indicating the percentage by weight of the foam within the product overall.

- Assessment rating(s) of blowing agent(s) used as determined by a Cradle to Cradle Certified Material Health assessor.

6.5 Addressing Embodied Greenhouse Gas Emissions

Intended Outcome(s)

Offsetting or reducing embodied greenhouse gas emissions has demonstrably decreased the proportion of climate changing greenhouse gases attributable to manufacturing of the product.

Applicable Achievement Level(s)

Gold and Platinum

Requirement(s)

Gold level: Offset or otherwise address 25% of embodied greenhouse gas emissions attributable to the product from resource extraction through final manufacturing or through end-of-use.

Platinum level: Offset or otherwise address 100% of embodied greenhouse gas emissions attributable to the product from resource extraction through final manufacturing or through end-of-use.

At a minimum, a cradle-to-gate scope including emissions attributable to the final manufacturing stage must be employed.

Embodied greenhouse gas emissions may be addressed through a variety of methods, including but not limited to, the purchase of carbon offsets, projects with suppliers, product redesign, and savings during the use phase.

Reduction in embodied greenhouse gas emissions per functional unit receives credit when compared to a baseline of no more than 10 years prior to certification or recertification (as applicable).

Above average performance (lower embodied emissions per functional unit) receives credit when compared to an industry-wide third-party verified benchmark, if available. An industry-wide generic Environmental Product Declaration (EPD) published in the past five years may be used as the benchmark.

Alternatively, government benchmarks (or similar) or the performance of a sample of similar products may be used for comparison.

If EPD(s) are not available, a comparison based on life cycle assessment is accepted. The comparison may be to a similar existing product manufactured by the same company, or to a benchmark life cycle assessment for the same product demonstrating impact prior to improvement.

Qualified third-party verification of the percentage addressed is required if meeting the targets through methods other than offset purchase.

Further Explanation

The embodied emissions targets apply to cradle-to-gate emissions at a minimum (i.e., *resource extraction through final manufacturing*). However, it is highly recommended to include the entire life cycle through end-of-use, including product cycling. **See Section 6.2 Quantifying Electricity use and Greenhouse Gas Emissions for additional requirements regarding how embodied emissions must be quantified and verified.** Exception: For products containing bio-based materials, if biogenic carbon and associated emissions are included in the LCA and the scope is only cradle-to-gate, biogenic carbon may not be subtracted from total cradle-to-gate emissions as a method of achieving the targets. This is assuming that biogenic emissions have been subtracted from the raw materials stage in the LCA and EPD (generally modules A1-A3). This can be referred to as the -1/+1 approach where biogenic carbon is considered stored in the products and counted as negative emissions (-1). During the end-of-life stage (modules C), the biogenic carbon is assumed to be released to the atmosphere again (+1). More generally, biogenic carbon contained in bio-based materials may not be counted towards achieving the targets. It must be assumed that biogenic carbon will eventually be released.

The targets in this section (25% and 100% for the Gold and Platinum levels, respectively) apply to total annual emissions over the certification period of three years. Therefore, it will be necessary to calculate annual emissions from the per unit values determined per the quantification requirements in Section 6.2.

The targets in this section of the standard apply to cradle-to-gate embodied emissions at a minimum, which includes final manufacturing stage emissions (to which separate targets apply per Section 6.4). Note that it is not necessarily required to meet the Section 6.5 targets in their entirety, separate from the Section 6.3 targets. Adjustments can be made to account for the overlap in scope of the Cradle to Cradle Certified final manufacturing stage and the production phase of the LCA. However, this requires that the scope and methods of calculating and accounting for final manufacturing stage (per Cradle to Cradle certified) and production emissions (per the LCA) are consistent—and this may not be the case. If the methods are not consistent, this may also be adjusted and accounted for, although this may be difficult unless it is possible to access the detailed calculations underlying the LCA. Differences in the greenhouse gas emissions quantified for the final manufacturing stage for Cradle to Cradle Certified vs. for the production phase in an LCA may arise from use of average data for all or portions of the LCA vs. use of one year of facility-specific data for Sections 6.2 and 6.3, use of different emissions factors, different methods of treating bioenergy, different methods of reporting on emissions attributable to purchased electricity (location-based vs. market-based), and differences in the processes included in the final manufacturing stage compared to the production phase of the LCA. Further, note that use of renewable energy attribute certificates is not the same as offsetting or otherwise addressing emissions, which is required in Section 6.5. If attribute certificates (e.g., GOs, RECs) are procured to match electricity used in final manufacturing as accepted for achieving the Section 6.3 targets beginning at the Bronze level, these may not be counted in this section towards achieving the embodied emissions targets. Renewable electricity produced and used on-site for which the attributes are not sold (i.e., behind the meter use) may be claimed in this section. More generally, the GHG Protocol's Product Life Cycle

Accounting and Reporting Standard requires the use of location-based grid average emission factors for purchased electricity when quantifying embodied emissions (unless supplier specific emission factors are available and not included in the grid average). In conclusion, because of these issues, it may be simplest to meet the Section 6.3 and Section 6.5 targets separately in their entirety, accepting that some portion will be met twice.

However, if the underlying methods are consistent (or adjustments have been made to account for any inconsistencies), and the scope of final manufacturing stage and production are the same (or adjustments made), then the overlap in scope in the Section 6.3 and 6.5 targets may also be accounted for. A simplified example scenario is as follows: Total annual cradle-to-gate emissions per the LCA are 100 tCO₂e. Of this, 40 tCO₂e are attributable to the final manufacturing stage (i.e., the production stage of the LCA). The goal is to achieve the Gold level (with a 50% target for addressing final manufacturing stage emissions and a 25% embodied emissions target). The two targets may be met by addressing 50% of the 40 tCO₂e (i.e., 20 tCO₂e) and 25% of embodied emissions excluding final manufacturing (i.e., 25% of 100 minus 40 tCO₂e, which is 25% of 60 tCO₂e, which is 15 tCO₂e). Therefore, 35 tCO₂e must be addressed each year. If the two targets are met separately (each in its entirety thereby excluding the need to check and adjust the scopes and methods), then 20+25 (i.e., 45) tCO₂e must be addressed each year.

If using carbon offsets to address embodied emissions, the offsets must be certified to a C2CPH-recognized offset standard (see Section 6.3 for additional information).

As noted in the standard: *Qualified third-party verification of the percentage addressed is required if meeting the targets through methods other than offset purchase.* In other words, this is required to receive credit for emissions reductions resulting from projects with suppliers, product redesign, and savings during the use phase (that may also be the result of design decisions or be tied to how the product is used—for example to insulate a building which results in lower building energy use). As noted: *reductions in embodied greenhouse gas emissions per functional unit receives credit.* Functional units are defined per the applicable Product Category Rule(s). Note that the functional unit may include more than the certified product itself.

When comparing a product Environmental Product Declaration (EPD) to an industry-wide generic EPD, it is recommended—and highly preferred—for the product to also be included in the industry-wide EPD to enhance comparability. This aligns with the approach in [LEED v5](#), refer to the Level 2 Criteria in Climate Health. If this is not the case, the underlying assumptions of both the product EPD and the comparison EPD must be carefully reviewed to ensure the comparison is appropriate and that variability is controlled as much as possible. Key factors that can introduce inconsistencies include differences in background databases, Product Category Rules (PCRs), and the geographic regions where the products are manufactured. For instance, products made in different regions may use distinct energy mixes or production processes, which can significantly affect the results and reduce the reliability of the comparison. Additionally, it is essential that the functional units and life cycle stages being compared are the same.

As mentioned in the standard: *government benchmarks (or similar) or the performance of a sample of similar products may be used for comparison* as alternatives to an industry-wide generic EPD.

If EPD(s) are not available, a comparison based on life cycle assessment is accepted. The comparison may be to a similar existing product manufactured by the same company, or to a benchmark life cycle assessment for the same product demonstrating impact prior to improvement.

A potential method of achieving the embodied emissions targets is to demonstrate reduced embodied emissions due to incorporating recycled content into the product. Note that the amount of recycled content must also be verified (per Product Circularity Section 5.3 Increasing Demand: Incorporating Cycled and/or Renewable Content) to receive credit for this approach.

Qualified third parties are defined as life cycle assessment (LCA) practitioners with demonstrated experience conducting life cycle assessments per ISO 14040.

Required Documentation

- Explanation, rationale, and calculations for how total annual embodied emissions have been quantified, referring to the embodied emissions quantified and required documentation provided per Section 6.2.
- If using offsets to address embodied emissions, offset certificates indicating date of purchase, amount purchased (tCO₂e), offset standard, and project(s) supported (e.g., project numbers).
- If not using offsets to address embodied emissions, verification report from a qualified third party explaining how, and demonstrating that, the applicable target has been achieved. **Note:** A qualified third-party verification report is typically still required when using third-party verified EPDs to demonstrate “above average performance”, as EPDs quantify embodied emissions but typically do not indicate how a product compares to a benchmark.
- Name and qualifications of third-party verifier.

6.6 Transparency

Intended Outcome(s)

Product and manufacturing data are available to stakeholders, demonstrating the manufacturer's commitment to accountability for their impacts and encouraging ever-improving performance.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirement(s)

Publicly disclose information and/or data consistent with the product's level of achievement in the Clean Air & Climate Protection category, as defined by the requirements in the Cradle to Cradle Certified Transparency Requirements reference document.

Note: At the time of publishing the Version 5.0 standard, there are required Clean Air & Climate Protection disclosures at all achievement levels (depending on product type). Please see the most recent version of the Transparency Requirements reference document for the applicable requirements, as this reference document may be updated periodically even if the standard version has not changed.

Further Explanation

For additional information and documentation requirements please refer to the [Transparency Requirements](#) reference document and Transparency Report Form. The Form is available to Cradle to Cradle Certified assessors.

7 // Water & Soil Stewardship Requirements

Category Intent

Water and soil are treated as precious and shared resources. Watersheds and soil ecosystems are protected, and clean water and healthy soils are available to people and all other organisms.

Requirements Summary

To achieve a desired level within the category, the requirements at all lower levels must also be met.

Requirement	Bronze	Silver	Gold	Platinum
7.1: Final manufacturing facilities comply with water quality regulations or guidelines (i.e., permits, international guidelines, or industry best practice).	●	●	●	●
7.2: Water use at final manufacturing stage facilities is quantified.	●	●	●	●
7.4: Product-relevant chemicals entering effluent or sludge comply with restrictions aligned with leading chemical regulations. (Required for final manufacturing stage.)	●	●	●	●
7.3: At least one conservation technology or best practice has been implemented at facilities expected to have the greatest water- or soil-related impacts. (Required for final manufacturing facilities with high-volume processes in stressed locations and facilities with pollutant-intense processes.)		●	●	●
7.4: Product-relevant process chemicals entering effluent and sludge are defined and assessed.		●	●	●
7.4: Product-relevant effluent and sludge does not contain recognized PBTs, vPvBs, CMRs, or substances causing an equivalent level of concern, or exposure via effluent and sludge is unlikely or expected to be negligible. (Required for final manufacturing stage.)		●	●	●
7.3: Conservation technologies and best practices have been implemented at facilities expected to have the greatest water- and/or soil-related impacts. (Required for all final manufacturing			●	●

facilities with high-volume or pollutant-intense processes and/or in stressed locations.) • Actions have been taken to conserve water and/or soil in the supply chain, including the use of certified materials, working as part of multi-stakeholder group(s), and/or working directly with suppliers to implement water and soil stewardship requirements and address the processes of concern. (Required for $\geq 25\%$ of the product by weight or by cost.)				
7.4: Product-relevant chemicals in effluent and sludge are assessed and optimized (i.e., none are x-assessed or grey-rated). (Required for the final manufacturing stage.)			●	●
7.1: Off-site, independently operated effluent treatment facilities comply with effluent quality guidelines or regulations. (Required for manufacturing facilities in high-risk locations discharging process effluent off-site).				●
7.4: Product-relevant chemicals in effluent and sludge are assessed and optimized (i.e., none are x-assessed or grey-rated). (Required for leather, metal finishing, pulp/paper and textiles if present at $\geq 25\%$ of the product by weight or by cost.)				●
7.5: For final manufacturing stage facilities: • A comprehensive effluent and sludge quality management system has been established, and • Effluent and sludge produced as a result of all manufacturing processes used at the facility are optimized.				●
7.6: Publicly disclose information and/or data consistent with the product's level of achievement in Water & Soil Stewardship. (Required at Silver level; additional disclosures at other levels are recommended. See the Transparency Requirements reference document for details).	○	●	●	●

7.1 Effluent Quality Compliance

Intended Outcome(s)

Final manufacturing stage facilities are in compliance with regulatory and/or industry best practice effluent limitations.

Applicable Achievement Level(s)

Bronze and Platinum

Requirement(s)

Bronze level: For the final manufacturing stage, treat effluent (either on- or off-site) prior to discharge to the environment and adhere to effluent quality regulations or guidelines.

Platinum level: For final manufacturing stage facilities in high-risk locations discharging process effluent to off-site, independently operated effluent treatment facilities, demonstrate that the treatment facility treats effluent prior to discharge to the environment and adheres to effluent quality guidelines or regulations. Alternatively, if off-site, treatment facilities are out of compliance, adhere to effluent quality guidelines for direct discharge or otherwise address the issue.

Facilities discharging effluent directly to surface or groundwater must comply with the corresponding regional regulatory (if any), international, or industry best practice effluent quality guidelines for direct discharge. **Note:** Facilities discharging via a sewer system that does not route to an effluent treatment facility with at least secondary treatment capabilities or equivalent are discharging directly to surface or groundwater for the purposes of this requirement.

For the Bronze level:

For final manufacturing stage facilities meeting this requirement based on regulatory compliance, the parameters addressed in the permit must also be consistent with leading regulations, international guidelines, or industry best practice. Leading regulations are defined as those that include a functioning mechanism through which water quality-based limits are set.

Final manufacturing stage facilities discharging process effluent to an off-site, independently operated effluent treatment facility (e.g., publicly owned treatment works, central effluent treatment plant, or wastewater treatment plant) with at least secondary treatment must comply with required pretreatment limits, if any.

For the Platinum level:

Low-risk locations are defined as locations with leading regulations and effective enforcement. All other locations are considered high-risk.

If the off-site treatment facility is out of compliance, the issue must be addressed prior to certification at the Platinum level. Methods of addressing the issue may include demonstrating that the manufacturing facility is not contributing to the issue, the manufacturing facility is complying with regional regulatory (if

any), international, or industry best practice effluent quality guidelines for direct discharge, moving the manufacturing plant, or demonstrating that the third party has corrected the issue.

Effluent testing

When effluent must be tested for verification purposes, sampling and testing must be conducted according to the methods specified by regulatory permits, the off-site, independently operated effluent treatment facility, and/or other guidelines as relevant. The analytical laboratory conducting the tests must be accredited or certified for the specific analysis per ISO 17025, NELAP, or equivalent.

Further Explanation

Table - Summary of Section 7.1 Effluent Quality Compliance Requirements

Final manufacturing facility location type	Discharges process and/or sanitary effluent directly to surface or ground water (i.e., direct discharge)	Discharges process effluent to an independently operated effluent treatment facility with at least secondary treatment
All locations	<u>Bronze</u> : Manufacturing facility complies with permitted limits.	<u>Bronze</u> : Manufacturing facility complies with permitted pretreatment limits, if any.
Location without leading regulations	<u>Bronze</u> : Parameters included in the permit are the same as the parameters in a comparative set of best practice guidelines or leading regulations (if not, additional parameters are added and controlled as needed).	<u>Platinum</u> : Independently operated treatment facility complies with permitted limits. If the independently operated treatment facility does not hold a permit, it complies with international guidelines. (If treatment facility is not in compliance, the manufacturing facility demonstrates it is not contributing or otherwise compensates.)

Achieving the Bronze Level Requirements

At the Bronze level, facilities are required to comply with their direct discharge permits and with pre-treatment limits (if any). Facilities in locations without leading regulations that have direct discharge are

required to control additional parameters (beyond what is required by permits) if the parameters on their permits are not consistent with leading regulations or other guidelines.

These requirements apply to the product's final manufacturing facilities, not only to processes and effluent discharged as a result of manufacturing the certified product(s). This means that in some cases, manufacturing facilities will be subject to these requirements when the process to produce the certified product is dry. Please refer to [Final Manufacturing Stage Process Definitions](#) for information on how to identify the final manufacturing stage and the related facilities. In some cases, supplier facilities are part of the final manufacturing stage and are therefore subject to the Section 7.1 requirements (and all other requirements pertaining to final manufacturing stage facilities).

The following definitions (in alphabetical order) apply:

- **Compliance:** Compliance means that the manufacturing facility is adhering to the limitations required by the permit, international guidelines, or best practice (as relevant). Compliance is more specifically defined per the applicable regulations, guidelines, or best practice. If the permitting authority allows minor exceedances (e.g., exceedances of a certain frequency and amount may be allowed without corrective action required and/or violations may be otherwise categorized as major and minor), such exceedances are also accepted for the purposes of Cradle to Cradle Certified. For example, in the United States, facilities with 'significant noncompliance' have significant exceedances of effluent limits, which, per the [United States Environmental Protection Agency](#), can cause harm to human health and the environment, or failure to submit reports, which can mask serious deficiencies. Therefore, facilities in the United States must not have had a [significant noncompliance](#) in the year prior to certification (or three years prior to recertification) unless it is demonstrated that this issue has been resolved (see the sub-section in this Further Explanation box titled When Final Manufacturing Facilities are not in Compliance for additional information). For locations with leading regulations, if the regulations do not classify exceedances as minor vs. major (or similar), any case where a permit is suspended, withdrawn, and/or where a facility is required to shut down until the issue is corrected is considered major. In this case, the issue must be addressed and resolved prior to certification. Compliance is defined by the International Finance Corporation (IFC) guidelines (which may be referenced in locations without leading regulations) as follows: "effluent limits should be achieved, without dilution, at least 95 percent of the time that the plant or unit is operating, to be calculated as a proportion of annual operating hours." Note that minor exceedances are common, including in locations with 'leading regulations'. To determine if a facility is in compliance, effluent test results, summarized as required by the permitting authority or other guideline, must be compared to what is allowed according to the permit or guideline.
- **Direct discharge** is effluent discharged to surface or ground water instead of to an externally owned and operated wastewater/effluent treatment facility. As noted in the standard, Facilities discharging via a sewer system that does not route to a functioning effluent treatment facility with at least secondary treatment capabilities or equivalent are discharging directly to surface or ground water for the purposes of this requirement. Secondary treatment is defined as

processes that employ aerobic or anaerobic microorganisms and result in decanted effluents and separated sludge containing microbial mass together with pollutants. (This definition is per the [European Environment Agency](#).)

- Effluent is wastewater that is discharged from a facility. Stormwater is not considered wastewater/effluent for the purposes of these requirements.
- Leading regulations: According to the standard, *leading regulations are defined as those that include a functioning mechanism through which water quality-based limits are set*. Water-quality based limits are permitted limits for individual facilities that have been set based on what is protective of the quality of the receiving water. This is in contrast to technology-based limits that are set based on what is economically and/or otherwise technically feasible. An exhaustive list of locations with functioning mechanisms through which water quality-based limits are set has not been developed. However, it may currently be assumed that facilities in the European Union, Canada, Iceland, Japan, Liechtenstein, Norway, Switzerland, United Kingdom, and the United States are subject to leading regulations. This means that in these locations, the parameters addressed in the permits are by definition *consistent with leading regulations* as required. This is the default assumption and may be assumed unless evidence to the contrary comes to light for individual permits. Please contact C2CPII to determine next steps if this occurs. Locations may be added or removed from this list in future.
- Parameter: A quantifiable property of the wastewater or effluent that must meet or not exceed a defined limit set by the permitting authority or other guideline. Examples include Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS). A limit is set for each parameter. The standard requires that the parameters addressed in the permit are consistent with (i.e., the same as) leading regulations or other guidelines. It is not required for the limits to be the same.
- Sludge is defined as solid waste produced by an effluent treatment plant. Sludge is not in scope of the Section 7.1 requirements.

Requirements for All Final Manufacturing Facilities in Locations With 'Leading Regulations'

Facilities in these locations are required to demonstrate direct discharge permit compliance and pre-treatment limit compliance (as relevant). A signed explanation and declaration alone are accepted as evidence, with an exception for cases where there have been major or significant non-compliances in the prior year (for initial/new certification), or prior three years (for recertification). See Definitions above and the Required Documentation box for additional information and evidence required.

Requirements for All Final Manufacturing Facilities in Locations Without 'Leading Regulations'

Facilities in these locations are also required to demonstrate discharge permit compliance and pre-treatment limit compliance (as relevant). A signed explanation and declaration are required in all cases. Additional supporting documentation (e.g., permit and test data) is required as well unless the site is determined to be "low risk" overall. See Definitions above, and the Required Documentation box for additional information and evidence required.

Requirements for Final Manufacturing Facilities in Locations Without 'Leading Regulations' With Direct Discharge

For facilities with direct discharge in locations without leading regulations, it must also be demonstrated that the *parameters addressed in the permit are consistent with leading regulations, international guidelines, or industry best practice*.

Determining Parameter Consistency with Leading Regulations:

To determine if the parameters included in existing permits* for direct discharge are consistent with leading regulations, international guidelines, or industry best practice:

- Select a set of guidelines from the references listed below that are relevant to the industry and effluent produced.
- If guidelines specific to the industry are not available, reference effluent quality guidelines for an industry sector with analogous processes and effluents (this aligns with the International Finance Corporation's (IFC) approach).
- Compare the existing permits to these guidelines. The permits must include limitations on all parameters and specific chemical substances that are included in the selected set of comparative guidelines to be considered consistent.
- If any parameters or substances are missing from the permits, the applicant must identify appropriate limits for the additional parameters and/or substances per the international or industry best practice guidelines and demonstrate adherence to these limits via effluent testing as described in the sub-section titled 'Analytical Testing' at the end of this Further Explanation box.

*If permits do not exist and the facility is directly discharging to surface or ground water, the same steps apply (except that there is no permit to compare to and so controlled parameters must be entirely per the selected set of regulations or guidelines).

International and Industry Best Practice Effluent Quality Guidelines

International and industry best practice effluent quality guidelines include the following:

- [International Finance Corporation \(IFC\)](#) (refer to the set of guidelines for the relevant industry)
- For cases where only cooling water is discharged, parameters and limits in the IFC's General Wastewater and Ambient Water Quality guidelines (see link above)
- European Union - [Best Available Techniques](#) Reference document (BREFs)
- United States - Environmental Protection Agency's [Industrial Effluent Guidelines](#). Parameters included on a typical permit by sector may be found by searching the [Effluent Limitations Guidelines and Standards \(ELG\) Database](#).
- [Zero Discharge of Hazardous Chemicals \(ZDHC\)](#) Wastewater Guidelines

Confirming that Treatment Capacity is Sufficient for Compliance

For manufacturing facilities in this category (i.e., with direct discharge and in regions without leading regulations), **discharge volume must be compared to the capacity of the on-site treatment equipment to determine if it is likely that the facility is consistently treating all effluent prior to discharge.** Note that reporting on this information is required as part of the Bronze level requirements in Section 7.2 Quantifying Water Use. If it is necessary to treat all effluent prior to discharge in order to plausibly meet the required effluent limitations, and treatment capacity is less than discharge volume, then the issue must be resolved prior to certification. This information is requested unless continuous monitoring or highly frequent quality tests (e.g., weekly) are conducted and a summary of these data are provided. Note that the reason for this request is that the required biannual test data represent only a spot check. Capacity and volume information help to verify whether the facility can consistently operate within its permitted limits over time.

Plant capacity information may be listed on the permit or in design plans. If capacity is provided in terms of flow rate (e.g., m³/hour), multiply the flow rate by the hours of operation and compare the result to the discharge volume over the same period.

When Final Manufacturing Facilities are Not in Compliance with Permitted Pretreatment or Direct Discharge Limits (As Applicable)

Products manufactured in facilities that are not in compliance as defined in this manual are not eligible for certification unless it can be demonstrated that the issues resulting in non-compliance have been corrected. If this is demonstrated, non-compliances that have occurred prior to completion of corrective actions are acceptable.

Achieving the Platinum level Requirements

The Platinum level requirement is as follows: *For final manufacturing stage facilities in high-risk locations discharging process effluent to off-site, independently operated effluent treatment facilities, demonstrate that the treatment facility treats effluent prior to discharge to the environment and adheres to effluent quality guidelines or regulations. Alternatively, if off-site, treatment facilities are out of compliance, adhere to effluent quality guidelines for direct discharge or otherwise address the issue.*

Low-risk locations are defined as locations with leading regulations and effective enforcement. All other locations are considered high-risk.

The following definitions apply:

- **High- and low- risk locations:** At the time of publishing this document, all locations with leading regulations are also considered to have effective enforcement. This includes: All European Union member states, Canada, Iceland, Japan, Liechtenstein, Norway, Switzerland, United Kingdom, and the United States. This list of low-risk locations is subject to update in future. All other locations are considered high-risk.
- **Off-site, independently operated effluent treatment facilities:** This includes privately owned and government owned facilities. For example, publicly owned treatment works, central effluent treatment plant, or wastewater treatment plant. Note that if liquid process effluent is

shipped off-site for treatment (rather than being sent via sewage pipes) and then discharged from the treatment facility, the treatment facility is still subject to the requirements applicable to independently operated treatment facilities.

- **Process effluent** is effluent that has come into contact with product(s) manufactured at the facility, or with material constituents, precursors, and/or with process chemistry used at the facility. Water used for heating/cooling that does not come into contact with products, material constituents, precursors, or process chemistry is excluded.
- **Compliance:** Compliance means that the independently operated treatment facility is adhering to the permitted limits. This must be true currently and for the year prior to certification (for new certifications) and three years prior (for recertifications). If the permitting authority allows minor exceedances (e.g., exceedances of a certain frequency and amount may be allowed without corrective action required and/or violations may be otherwise categorized as major/minor or high vs. low concern), such exceedances are also accepted for the purposes of Cradle to Cradle Certified.

Determining if Off-Site, Independently Operated Effluent Treatment Facilities are in Compliance

To determine if an independently operated treatment facility is in compliance, effluent test results, summarized as required by the permitting authority, must be compared to what is allowed according to the permit. Permits and test results must be provided by the treatment facility. Alternatively, the compliance status of independently operated treatment facilities may be determined based on publicly available information (if available).

When Independently Operated Treatment Facilities are Not in Compliance

If an independently operated treatment facility is not complying with its permitted limits or with international guidelines, the standard requires that the final manufacturing stage facility demonstrate that it is not contributing to the issue or otherwise address the issue prior to certification at the Platinum level. Possible methods of addressing the issue include:

- Compensating for the inadequacy of the third-party plant by ensuring that the manufacturing facility itself complies with *regional regulatory (if any), international, or industry best practice effluent quality guidelines for direct discharge*.
- Convincing (and potentially working with) the third party to correct the issue.
- Moving the manufacturing plant to a location where there is a well-functioning treatment plant.

Note that international and industry best practice effluent guidelines are defined per the list above (refer to list titled 'International and Industry Best Practice Effluent Quality Guidelines' in the Bronze section). If compensating for the inadequacy of the third-party plant by ensuring that the manufacturing facility itself complies with *regional regulatory (if any), international, or industry best practice effluent quality guidelines for direct discharge*, manufacturing facilities must adhere to direct discharge limits applicable to the specific parameters or individual substances for which the independently operated treatment facility is out of compliance.

As noted, a likely preferred alternative is to demonstrate that the manufacturing facility's effluent is not contributing to the non-compliance of the treatment facility. For example, if the independently operated treatment facility is exceeding its permitted limits for zinc only and the manufacturing facility demonstrates, via effluent testing and/or process descriptions, that it does not discharge any zinc (or discharges an amount that is consistent with direct discharge limits), the requirement has been met.

Analytical Testing (Bronze and Platinum)

The standard requires: *When effluent must be tested for verification purposes, sampling and testing must be conducted according to the methods specified by regulatory permits, the off-site, independently operated effluent treatment facility, and/or other guidelines as relevant. The analytical laboratory conducting the tests must be accredited or certified for the specific analysis per ISO 17025, NELAP, or equivalent.* Note that this requirement is applicable to cases where testing beyond what is already required by the permitting authority is necessary for the purposes of Cradle to Cradle certification.

In general, additional analytical testing (beyond the testing already required by existing permits) is not required for the purposes of Cradle to Cradle certification unless:

- It is necessary to demonstrate that permit non-compliances have been corrected, or
- An independently operated treatment facility is not in compliance and therefore the manufacturing facility is required to compensate for this, or
- For locations without leading regulations, it is necessary to demonstrate compliance with additional parameters and limits that are not already controlled by the permits to align with international or industry best practice effluent quality guidelines. Note that in this case, only those substances that are not already tested as required for permit compliance must be tested.

If it is necessary to develop an appropriate testing protocol based on other guidelines, the testing frequency, sampling methods, and test methods described in the [ZDHC Wastewater Guidelines](#) may be applied. These methods were developed for the textile industry but may be applied to other industries as well. These guidelines include an allowance and method to adjust post-treatment pollutant concentrations by incoming concentrations of contaminants to account for cases where source water is already contaminated for reasons outside of the manufacturer's control. ZDHC specifies a testing frequency of twice per year. Additional test methods for priority pollutants (beyond those indicated by ZDHC) may be found in the relevant regulatory documentation. For example, in the European Union [Directive 2008/105/EC](#).

Per the International Finance Corporation, General Environmental, Health, and Safety Guidelines, "Monitoring programs should apply national or international methods for sample collection and analysis, such as those published by the International Organization for Standardization, the European Committee for Standardization, or the U.S. Environmental Protection Agency."

The following references may be helpful in identifying appropriate test methods:

- [Clean Water Act Analytical Methods](#), United States Environmental Protection Agency

- [JRC Reference Report on Monitoring of Emissions to Air and Water from IED Installations](#), Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control), European Commission, 2018. (see Chapter 7 Annexes)

Required Documentation

Bronze Level

Documentation requirements vary by risk level. The following definitions apply:

Low risk: Facilities in locations considered to have leading regulations and effective enforcement are considered low risk. At the time of publishing this document, all locations with leading regulations are also considered to have effective enforcement. This includes: All European Union member states, Canada, Iceland, Japan, Liechtenstein, Norway, Switzerland, United Kingdom, and the United States. This list of low-risk locations is subject to update in future. Exception: Facilities that have had major or significant non-compliances in the prior year (for initial/new certification), or prior three years (for recertification) are not low risk. Additional documentation is required as indicated below.

High risk: Facilities in locations without leading regulations or without effective enforcement are considered high risk. Currently, this includes all locations that are not designated as low risk above. Exception: Facilities that are not required to hold a permit, do not have direct discharge, and also do not conduct pollutant-intense processes are not considered high risk for the purposes of this requirement.

Pollutant-intense processes: This is defined in standard Section 7.3 Water & Soil Conservation as a process with high potential to negatively affect conventional water quality parameters such as biological oxygen demand (BOD), chemical oxygen demand (COD), and total suspended solids (TSS), and/or result in the release of hazardous chemicals with effluent. A list of processes that are typically pollutant intense is provided in the Further Explanation box for Section 7.3 (see table titled "Processes that are Typically High-Volume and Pollutant-Intense"). Facilities carrying out any of the processes listed are considered pollutant intense for the purposes of these documentation requirements.

Note/Exception: The Section 7.1 Effluent Quality Compliance requirements apply to effluent. Stormwater is not considered effluent. Therefore, any processes listed in Section 7.3 that are relevant to stormwater only are out of scope in Section 7.1.

Required documentation for all facilities:

A signed explanation and declaration from the applicant or final manufacturer (as applicable based on site ownership) stating that the facility or facilities at which the product is manufactured (1) is/are not required to hold discharge permits, or (2) is/are in compliance with the permits, and have been in compliance during the prior year (for initial certifications), or for the prior three years (for recertification). The statement must have been signed within the year prior to C2CPII receiving all documentation to apply for certification. Statements must be signed by a representative of the facility

with sufficient knowledge of the facility's compliance status.

Note: Example statements are provided in the manual for Section 6.1 Air Emissions Compliance. These examples may be useful when drafting a statement for this Section as well.

Additional required documentation for high-risk situations:

In addition to a signed explanation and declaration (described above), the following list of supporting documentation (as relevant) is required for:

1. Facilities that have had major or significant non-compliances in the prior year (for initial/new certification), or prior three years (for recertification), and
2. Facilities in locations without leading regulations that (a) are required to hold a permit (b) have direct discharge, or (c) conduct pollutant-intense processes. (**Note:** If one of these is true the others are not required to be considered; only one must be true for the list of documents below to be required.)
 - A copy of the discharge permit(s) including treatment or pretreatment parameters and limitations, and/or other quality guidelines employed (either in place of permits or used to determine consistency) as relevant. **Note:** Parameter consistency check is required for direct discharge scenarios only.
 - Effluent test results for conventional quality parameters and any individual substances as (and if) required by the permits or other guidelines.
 - Test results are to be summarized as required by the permitting authority, centralized treatment plant, or other guideline, as relevant.
 - At a minimum, biannual testing is required (i.e., two times per year), unless otherwise specified by the permits.
 - When testing is required: For the initial certification provide two sets of test data from the prior year at a minimum. For recertification, provide six sets of test data (i.e., two per year for the prior three-year certification cycle).
 - Alternatively, if compliance information is publicly available, a printout or screenshot of the data demonstrating regulatory compliance.
 - Alternatively, a statement signed by the relevant regulatory authority stating that the manufacturing facility has been in compliance over the prior year (for new certifications), or prior three years (for recertifications) is accepted.
 - For facilities discharging directly to surface or ground water, evidence of sufficient on-site treatment facility capacity and discharge volume (e.g., description of system design, technical manuals and specifications, and meter read outs of amounts discharged). This evidence is required for parameters that are covered by local permits and for any additional parameters that are being assessed for certification beyond legal requirements.
 - If guidelines other than those indicated by permits are used, and guidelines specific to the industry are not available, provide the rationale for selecting the comparative guidelines, including a description of how the processes and effluents are analogous to the relevant industry.

- If following the ZDHC wastewater guidelines, the documentation required by ZDHC.
- If a facility has minor or non-significant exceedances that are acceptable per local authorities, evidence that this is the case (e.g., a letter from the local authority indicating the exceedance has been accepted without penalty or reference to the regulation that defines this tolerance).

Platinum Level

If there are off-site independently owned effluent treatment facilities treating manufacturing facility process effluent in high-risk locations:

- A copy of the treatment facility's discharge permit including treatment limitations, and/or other international quality guidelines employed as relevant.
- Effluent test results for conventional quality parameters and any individual substances as required by the treatment facility's permits or other guidelines. Test results are to be summarized as required by the permitting authority or other guideline, as relevant.
- Alternatively, if compliance information is publicly available, a printout or screenshot of the data demonstrating regulatory compliance for the off-site facility is acceptable (e.g., see Enforcement and Compliance History Online ([ECHO](#)) database in the United States). **Note:** General statements indicating that a majority of off-site facilities in the region comply are not accepted.
- Alternatively, a statement signed by the relevant regulatory authority stating that the treatment plant has been in compliance for the prior year (for new certifications), or prior three years (for recertifications) is acceptable.
- If the treatment facility is out of compliance, evidence that the manufacturing facility is not contributing to the issue or that it has adjusted its processes to compensate.

7.2 Quantifying Water Use

Intended Outcome(s)

Water withdrawals, discharge, and consumption at facilities manufacturing the product(s) are quantified, creating a baseline against which reductions can be measured, and helping to identify areas for improvement.

Applicable Achievement Level(s)

Bronze

Requirement(s)

Quantify annual water withdrawals, discharge, and consumption for all final manufacturing stage facilities.

Data must be collected on the following and the data sources indicated:

1. Withdrawals by source and water type.
2. Discharges by receiving body/destination.

3. Capacity of on-site treatment equipment.
4. Consumption by source.
5. Total amount and percentage of water recycled and reused.

Further Explanation

The requirements in this section apply to all final manufacturing stage facilities, including those that only use water for hygienic purposes (toilets, hand washing) and/or in kitchens. Data are to be collected at the facility level (i.e., not only for the certified product).

The C2C Certified Water & Soil Stewardship Form includes fields for reporting the required data. If in doubt regarding the definitions of the various sources, water types, and receiving bodies, see [GRI 303: Water and Effluents](#). Note that rainwater is considered surface water. Collected rainwater is withdrawn surface water. Produced water is water that results from the manufacturing process (e.g., water extracted from agricultural input materials).

If discharge volume is not measured directly or estimated by the utility, it may be assumed to be equal to withdrawals minus consumption.

Updated data from the entire previous fiscal or calendar year is required if six months have passed since the calendar or fiscal year's end. If an application is submitted after this six-month period, comprehensive data from the entire previous year must be provided. For example, if the fiscal or calendar year ends on December 31, 2024, and an application is submitted after June 30, 2025, complete data from 2024 must be included in the submission.

References

- Global Reporting Initiative, [GRI 303: Water and Effluents](#)
- [CDP Water Security](#)

Required Documentation

- C2C Certified Water & Soil Stewardship Form for each final manufacturing stage facility. Other reporting formats are acceptable as long as all of the required data points are included and data are provided for each final manufacturing stage facility individually.
- Water utility bills and and/or meter readouts as supporting evidence of the data provided. At least one year of data is required for initial certification and for recertification.
- Updated data required: Data from the entire previous fiscal or calendar year is required if six months have passed since the calendar or fiscal year's end.
- For facilities with on-site treatment, a description of the design and capacity of the system and an explanation regarding how it can be verified that capacity is sufficient given discharge volume. There is a space for reporting this information in the C2C Certified Water & Soil Stewardship Form. For facilities in regions without 'leading regulations' (per Section 7.1) and

direct discharge, evidence of on-site effluent treatment capacity (e.g., system design specifications and technical manuals) is also required per Section 7.1.

7.3 Water & Soil Conservation

Intended Outcome(s)

Conservation technologies and best practices are increasingly being implemented to reduce water use and/or improve effluent and/or soil quality where there are known issues.

Applicable Achievement Level(s)

Silver and Gold

Requirement(s)

Silver level:

1. Implement at least one conservation technology or best practice at:
 - a. All final manufacturing stage facilities with high-volume processes in stressed locations, and
 - b. All final manufacturing stage facilities with pollutant-intense processes.

Gold level:

1. Implement conservation technologies or best practices at all final manufacturing stage facilities with high-volume or pollutant-intense processes, and/or in stressed locations, and
2. For materials that make up $\geq 25\%$ of the product by weight or (optionally) by cost, take action to conserve water and/or soil in the supply chain.

For the Silver Level:

1. For all final manufacturing stage facilities with high-volume processes in medium- to high-stress locations, at least one technology or best practice leading to water use reductions must be implemented, and
2. For all final manufacturing stage facilities with pollutant-intense processes, at least one technology or best practice leading to improved effluent quality must be implemented.
3. Facilities with high-volume processes are defined as facilities that withdraw or purchase $\geq 100,000$ m³ of water per year.
4. A pollutant intense process is a process with high potential to negatively affect conventional water quality parameters such as biological oxygen demand (BOD), chemical oxygen demand (COD), and total suspended solids (TSS), and/or result in the release of hazardous chemicals with effluent or runoff. A pollutant intense process is defined broadly to include soil erosion and loss, which, in addition to resulting in reduced topsoil quality and availability on land, also contributes to poor surface water quality.

Stress level is defined using the baseline water stress metric as defined per the most recent version of the World Resources Institute (WRI) Aqueduct database. Other methods of identifying stress level may be considered on a case-by-case basis.

For the Gold level:

1. For all final manufacturing stage facilities with high-volume processes in medium- to high-stress locations, technologies or best practices leading to the maximum feasible water use reductions must be implemented, and
2. For all final manufacturing stage facilities with high-volume processes in low-stress locations, at least one technology or best practice leading to water use reductions must be implemented, and
3. For all final manufacturing stage facilities in high-stress locations without high-volume processes, at least one technology or best practice leading to water use reductions must be implemented, and
4. For all final manufacturing stage facilities with pollutant-intense processes, technologies or best practices leading to the maximum feasible improvement in effluent quality must be implemented.

Further Explanation

Identifying Final Manufacturing Facilities Subject to these Requirements

The Silver and Gold levels require that technologies or best practices leading to water use reductions and/or improved effluent quality be implemented at final manufacturing facilities that use a high-volume of water and/or conduct pollutant-intense processes. The level of action required depends on achievement level and water stress level. These requirements apply at the facility level, which means that there may be cases where action is required even though production of the certified product does not directly contribute to the issue of concern.

The facility types listed below are subject to the requirements in this section of the standard:

Facilities with high-volume processes – The amount of water withdrawn and purchased by final manufacturing facilities was determined per the requirements in Section 7.2 Quantifying Water Use. As noted in Section 7.3, final manufacturing facilities that withdraw or purchase $\geq 100,000 \text{ m}^3$ of water per year are considered as having high-volume processes. This determination must be made facility wide (rather than based on processes conducted to manufacture the certified product alone). Note that the definition of high volume is based on withdrawal rather than consumption. The reason for this is that where withdrawals are high there is high reliance on water, even if consumption is relatively low.

Facilities in water stressed locations – The water stress level for all final manufacturing facilities is determined the most recent version of the World Resources Institute (WRI) [Aqueduct](#) database (i.e., Water Risk Atlas). Baseline water stress is also referred to as just “water stress” in the database/Atlas. It is found under the heading ‘Physical Risks Quantity’. The stress levels noted in the requirements are defined as follows:

- Low-stress locations are defined as locations with a baseline water stress risk level of low or low to medium per WRI’s Aqueduct database.

- Medium- to high-stress locations are defined as locations with a baseline water stress risk level of medium to high, high, or extremely high per WRI's Aqueduct database.
- High stress locations are defined as locations with a baseline water stress risk level of high or extremely high per WRI's Aqueduct database.
- If no data are available for a given location in WRI's Aqueduct database, data for adjacent areas may be used to infer risk level. Alternate data sources should also be explored, if available, to make a determination regarding risk level.

As an alternative to applying the baseline water stress metric as described above, it is allowable to use the projected change in water stress (scenario: business as usual, 2030).

Facilities with pollutant-intense processes – Facilities that conduct processes with high potential to negatively affect conventional water quality parameters such as biological oxygen demand (BOD), chemical oxygen demand (COD), and total suspended solids (TSS), and/or result in the release of hazardous chemicals with effluent or runoff are considered to have pollutant-intense processes. A pollutant-intense process is defined broadly to include soil erosion and loss, which, in addition to resulting in reduced topsoil quality and availability on land, also contributes to poor surface water quality. This determination must be made facility wide (rather than based on processes conducted to manufacture the certified product alone). See the table in the Further Explanation box at the end of Section 7.3 titled 'Processes that are Typically High-Volume and Pollutant-Intense' for a list of pollutant-intense processes. Facilities carrying out these processes (whether indoors or outdoors) to produce the materials listed on site must be considered pollutant-intense for the purposes of these requirements. Note that some of the processes listed in the table are unlikely to occur at final production facilities (e.g., applying pesticides on crops). These material and processes are listed in the table because it is also referenced for determining where to take action to address high-volume and/or pollutant-intense processes in the supply chain (required at the Gold level and discussed in the Further Explanation boxes that follow).

Implementing Technologies and Best Practices to Reduce Water Use and Pollution

A non-exhaustive list of suggested best practices and technologies may be found in a table at the end of the Water & Soil Stewardship section of this Certification Manual. The sections relevant to water in the European Union's [Reference Documents on Best Available Techniques](#) (BAT) will also be of use if available for the applicable industry. Note that Section 7.3 does not specify any requirements around the age of a technology or best practice. Therefore, with evidence that a technology or best practice is still recognized as such, it will receive credit regardless of when it was first implemented.

Rainwater Collection and Use

Rainwater collection is categorized as surface water withdrawal per Section 7.2 Quantifying Water Use and it contributes to determining whether a site is considered high-volume. In some locations (e.g., some U.S. states) all water is considered public property and rainwater collection may be restricted due to concerns that widespread harvesting could reduce streamflow and equitable water allocation based on prior agreements. However, when rainwater is collected and used legally, it may receive credit as a

best practice. While using collected rainwater does not reduce total water use, it does decrease demand on centralized supply systems, thereby reducing infrastructure strain and potentially lowering energy consumption.

For the Gold level, facilities with high-volume processes in medium- to high-stress locations and facilities with pollutant-intense processes are required to implement technologies and best practices leading to the maximum feasible water use reductions and effluent quality improvements, respectively.

Maximum feasible means that there are no technologies available, excluding emerging/novel techniques that are not yet commercially developed, that would reduce water use or improve quality (as required) more than what has been implemented. It is understood that maximum feasible water use reductions and quality improvements may be tied and that trade-offs may exist. When both pollutant-intense and high-volume processes exist, effluent quality and water use must be optimized simultaneously.

For facilities with pollutant-intense processes, one method for achieving the Gold level is to demonstrate that the United States Environmental Protection Agency's [New Source Performance Standards \(NSPS\)](#) are being met.

Note that prior work to reduce water use and improve effluent quality may receive credit (i.e., new actions are not necessarily required for the purposes of Cradle to Cradle certification).

Facilities that are High-Volume due to Throughput Cooling that are in Low-Stress Locations

For facilities with high-volume water use due to throughput cooling that are located in low-stress areas, the Gold level requirement is to implement at least one technology or best practice leading to water use reductions. However, if throughput cooling is the facility's only significant water-using process (aside from sanitary use), and Best Available Techniques (BAT) have been implemented, the facility can qualify for Gold level even if BAT does not require water reduction measures.

5. For materials that make up $\geq 25\%$ of the product by weight or (optionally) by cost:
 - a. For forest and agricultural raw materials (excluding untraceable commodity type agriculturally derived material, e.g., ethanol):
 - i. The material must be certified to a C2CPII-recognized standard that addresses the high-volume and pollutant intense processes of concern or an equivalent alternative to certification must be in place.
 - ii. Alternatively, for the Gold level (i.e., not an option for the Platinum level), the following are required:
 1. An explanation of the limitation(s) preventing the incorporation of the required percentage(s) of certified material and how, based on these limitation(s), the amount of certified material currently used represents the maximum that is currently feasible.
 2. The explanation must be reported publicly.

3. A strategy for addressing the identified limitation(s) and increasing the amount of certified material over time must be developed. The strategy must include discrete objectives and an associated timeline.
 4. For recertification:
 - (a) The applicant must demonstrate progress toward achieving the objectives.
 - (b) A description of progress made must be reported publicly.
- b. For other material types:
- i. A C2CPII-recognized certification or alternative that addresses the processes of concern must be in place (the alternative described in 5.a.ii above may be applied), or
 - ii. The applicant must be actively involved with a multi-stakeholder group working to address the processes of concern, or
 - iii. The applicant must work directly with material suppliers to implement the Water & Soil Stewardship requirements as follows:
 1. For initial certification at the Gold level:
 - (a) For tier 1 supplier facilities producing material(s) associated with high-volume processes and located in medium- to high-stress locations: At least one technology or best practice leading to water use reductions must be implemented.
 - (b) For tier 1 supplier facilities producing materials associated with pollutant-intense processes:
 - (i) The Effluent Quality Compliance requirements must be fulfilled (per Section 7.1), and
 - (ii) At least one technology or best practice leading to improved water and/or soil quality must be implemented.
 2. For recertification, progress must be demonstrated on identifying and addressing additional issues in the supply chain, if any.

Further Explanation

Taking Action to Conserve Water and/or Soil in the Supply Chain (Gold Level)

The supply chain focused requirement in Section 7.3 is: *For materials that make up $\geq 25\%$ of the product by weight or (optionally) by cost, take action to conserve water and/or soil in the supply chain.* Taking action in the supply chain is required in addition to the actions required at final manufacturing stage facilities (as described earlier). Action is required where high-volume and/or pollutant-intense process tend to occur as listed in the table in the Further Explanation box at the end of Section 7.3 titled 'Processes that are Typically High-Volume and Pollutant-Intense'. Note that these processes can occur at any supply chain tier, and multiple issues may affect multiple tiers for a single material.

For forest and agricultural raw materials to receive credit towards the required 25%, the *material must be certified to a C2CPII-recognized standard that addresses the high-volume and pollutant intense*

processes of concern or an equivalent alternative to certification must be in place.

For materials and issues other than those associated with forest and agricultural raw material extraction and production, there are several options that receive credit including: (5b.i) using materials certified to C2CPH-recognized standards, (5b.ii) working with multi-stakeholder groups to address the processes of concern, and (5b.iii) working directly with suppliers to implement Water & Soil Stewardship requirements.

Additional information is provided in this Further Explanation box for requirements 5a (for forest and agricultural raw materials) and 5b.iii (working directly with suppliers). If applying requirement 5b.i (using C2CPH-recognized standards) see the Further Explanation section below titled 'Using C2CPH-Recognized Certification for Forest and Agricultural Raw Materials'. The same approach applies to requirement 5b.i for other materials. If applying 5b.ii (working with a multi-stakeholder group) please refer to the Further Explanation box for Social Fairness Section 8.6 Collaborating to Solve Social Issues, which is also relevant to this requirement in Water & Soil Stewardship.

Using C2CPH-Recognized Certifications for Forest and Agricultural Raw Materials

To receive credit towards the required 25%, a forest and agricultural raw material *must be certified to a C2CPH-recognized standard that addresses the high-volume and pollutant intense processes of concern or an equivalent alternative to certification must be in place.*

The following forest and agricultural raw materials are associated with high-volume and/or pollutant-intense processes and are the subject of these requirements.

- **Crops**: Cotton*, maize/corn, soy, and sugarcane must be considered as typically grown using high-volume processes (i.e., irrigation). In addition, all crops are flagged as potentially associated with the following pollutant-intense (including soil erosion related) processes:
 - Pesticide and fertilizer use and associated chemical runoff to surface water.
 - Deforestation and other unmanaged/poorly managed land conversion to agriculture.
 - Excessive tilling and associated soil erosion and siltation of surface water.
- **Wood**: Wood is associated with pollutant-intense processes during production. These processes include deforestation, soil erosion and runoff as a result of poor forest management, and pesticide and fertilizer use.
- **Animal material**: Leather, wool, and other materials sourced from ungulates/grazing species (e.g., cashmere) are associated with pollutant-intense processes occurring during livestock production and farming, including the potential for land degradation, soil erosion, and pollutant run-off. Note that animal material is also required to be certified to a welfare certification program per Section 10 Animal Welfare.

For the Gold level, the goal is to use forest and agricultural materials that are certified to a C2CPH-recognized standard, or an equivalent alternative, that addresses these concerns. Currently recognized certification programs include the Forest Stewardship Council (FSC), the Global Organic Textile Standard(GOTS), and the Responsible Wool Standard.

Please refer to [C2CPII-Recognized Certification Programs and Standards](#) for the full list of recognized standards.

Additional programs may be recognized and added to the list of recognized programs and standards. Refer to Appendix 2 in this Certification Manual for requirements and the application process for recognition. The Appendix also lists requirements for “alternative equivalent to certification”. If it is not possible to use certified material or an equivalent alternative to certification, the option described in Requirement #5a.ii may be applied. In this case the limitation(s) identified will be publicly reported via the Transparency Report.

***Note:** Cotton sourced from certain locations is also associated with a high risk of child labor and/or forced labor. To address this concern, any cotton sourced *from source countries where there is reason to believe that child labor or forced labor is involved* (as defined for Gold level in Social Fairness Section 8.2) must be certified to a standard that also addresses child labor and forced labor. Organic standards (e.g., India organic regulation, China organic regulation) do not sufficiently address child labor and forced labor issues during the cotton production phase where these issues are high risk. This means that it may be possible to achieve the Gold level in Water & Soil Stewardship by using organic cotton sourced from these locations but not Gold level in Social Fairness (or overall). See Social Fairness Section 8.2 for additional information.

The required actions in this section apply specifically to the raw material extraction or production phase. Processes of concern may also occur in manufacturing steps occurring after raw material production. For example, in the case of leather, wet processing steps (e.g., tanning) are also high volume and pollutant intense. To address wet processing steps, applicants may choose from the options described in the next section of the standard (i.e., Requirement #5b.ii-iii). Credit is given when issues in both raw material extraction (e.g., agriculture, mining) and material processing (e.g., wet processing) are addressed for the same material. In this case, the weight of that material may be counted twice towards achieving the required 25%. For example, if leather constitutes 12.5% of a product and high-volume and pollutant-intense processes are addressed at both the farm and wet processing stages, then the Gold level is achieved (i.e., 12.5%+12.5% = 25%).

Working with Suppliers to Implement Water & Soil Stewardship Requirements (5b.iii)

The requirements below must be met for *materials that make up ≥ 25% of the product by weight or (optionally) by cost*.

1. *For initial certification at the Gold level:*
 - a. *For tier 1 supplier facilities producing material(s) associated with high-volume processes and located in medium- to high-stress locations: At least one technology or best practice leading to water use reductions must be implemented.*
 - b. *For tier 1 supplier facilities producing materials associated with pollutant-intense processes:*
 - i. *The Effluent Quality Compliance requirements must be fulfilled (per Section 7.1), and*
 - ii. *At least one technology or best practice leading to improved water and/or soil quality must be implemented.*

As noted earlier, high-volume and pollutant-intense processes may occur at any supply chain tier. However, this option provides credit for initially focusing on tier 1 suppliers, given this is where manufacturers tend to have the most access and leverage, and therefore opportunity to affect change.

To receive credit towards the 25% it must be demonstrated that action has been taken to address issues of concern at tier 1, where they exist. This means that **it may be necessary to investigate more than 25% of tier 1 suppliers to locate the issues and determine where to focus actions**. Minor commodity type components up to 5% (as defined in Material Health Section 4.2.1, 'Chemicals Subject to Review' #3) are out of scope.

If there are both high-volume and pollutant-intense processes occurring at one supplier location the requirements pertaining to both issues (i.e., requirements 1a and 1b) must be met to receive credit towards the 25%. If there are multiple suppliers for a single material associated with processes of concern, the issues must be addressed at all supplier locations to receive credit towards the 25%.

Alternative: It is not required to take action beyond tier 1 for initial Gold-level certification under option 5b.iii. However, **credit is given for actions taken at other supplier chain tiers**. This means that it is not necessary to continue to investigate tier 1 if it is instead demonstrated that issues have been addressed for materials that make up $\geq 25\%$ of the product by weight or (optionally) by cost when considering tiers beyond tier 1.

The following definitions apply:

Stress: Per the standard, *stress level is defined using the baseline water stress metric as defined per the most recent version of the World Resources Institute (WRI) Aqueduct database. Other methods of identifying stress level may be considered on a case-by-case basis*. This is the same approach used to identify stress level for final manufacturing facilities. See heading 'Facilities in Water Stressed Locations' earlier in this section of the document (i.e. for Section 7.3 Bronze level) for additional information.

High-volume and pollutant-intense: The requirements apply to facilities producing materials typically associated with high-volume or pollutant-intense processes. Please refer to the table in the Further Explanation box below titled 'Processes that are Typically High-Volume and Pollutant-Intense' to identify materials and processes in scope for these requirements. If a listed process is used to produce a listed material at a tier 1 supplier location, it is in scope.

The standard defines high-volume facilities as those that *withdraw or purchase $\geq 100,000$ m³ of water per year*. Demonstrating that a high-volume process does not occur at a supplier facility as defined by the 100,000 m³ cut off, even though the facility does produce a listed material using a listed process, is one method of achieving the requirement in this case. This may be demonstrated by collecting annual water use data from the supplier (e.g., as required in Section 7.2). Note that there is not a similar cut-off value for pollutant-intense processes. Facilities carrying out the list processes to manufacture the listed materials must be considered pollutant intense in all cases and the applicable requirements met to receive credit towards the 25%.

Tier 1 is defined as direct suppliers to the final manufacturing stage and sometimes these suppliers are

actually tier 2 or beyond in relation to the applicant.

Technologies and best practices leading to water use reductions and/or improved quality: For information on implementing best practices and technologies, please refer to the Further Explanation section with heading 'Implementing Technologies and Best Practices to Reduce Water Use and Pollution' above where it is discussed in the context of final manufacturing facilities. The same information applies to supplier facilities. A non-exhaustive list of technologies and best practices are provided in the table at the end of the Water & Soil Stewardship section of this manual (see table titled 'Water & Soil Stewardship Example Conservation Technologies and Best Practices'). In addition, the use of recycled content receives credit as a method of avoiding issues associated with raw material production and extraction.

Recertification

For recertification, the standard requires that *progress must be demonstrated on identifying and addressing additional issues in the supply chain, if any*. This requirement applies to all supply chain tiers. Progress towards identifying and addressing issues at any tier receives credit.

This requirement does not apply upon transition from Versions 4.0 and 4.1 to Version 5.0 because it is a new requirement to Version 5.0. The requirement applies upon subsequent recertification to Version 5.0.

Required Documentation

To receive credit for implementing a water conservation best practice or technology, the following must be provided:

- A description of the practice or technology.
- Evidence that the best practice or technology has or can be expected to lead to either water use reductions and/or quality improvements as relevant. The evidence provided may:
 - Be direct evidence that applies specifically to the site (e.g., test data demonstrating reduced release of pollutants before and after a best practice was implemented), and/or
 - Be generally applicable (e.g., a comparative estimate of water use reduction that can be expected or has already been realized based on the technical documentation for new equipment compared to that of older equipment that has been replaced). This option does not require historical usage data for comparison to current. Rather, it may depend on information about the functionality of existing (new) equipment compared to the older equipment that is no longer in use, and/or
 - Be in the form of a qualified third-party or governmental report describing the technology and stating that Best Available Techniques are in place. The report must be dated after the most recent EU Best Available Techniques reference document when relevant.
- An estimate/indication of the percentage of total effluent and/or water use (as relevant) that

the best practice will affect.

- Proof of implementation (e.g., receipts of purchase and installation for new equipment or photos, process flow diagrams, and on-site verification via a manufacturing facility site visit).

To receive credit for implementing the maximum feasible improvements (Gold level):

- Description of all best practices and technologies that are employed at the facility.
- Argument and rationale demonstrating that these practices are the maximum feasible including supporting references.

To receive credit for the use of certified materials, the program certificate and proof of purchase must be provided. Or, if unable to achieve this requirement, an explanation of the limitation(s) and a strategy for addressing the identified limitation(s). Note that these limitation(s) are required to be publicly reported via the Cradle to Cradle Certified Transparency report or another public-facing outlet.

To receive credit for working with a multi-stakeholder group to address issues and processes of concern:

- Description of group participants (e.g., participant list and/or stakeholder types).
- Evidence of the issues the partnership seeks to address.
- Evidence of active participation. For example, evidence of regular meeting attendance, evidence of taking leadership roles in the initiative, or documentation describing the terms and understandings between the company and collaboration partners that demonstrates active involvement.
- Documentation of outputs from the collaborative activity.

For the Gold level supply chain focused requirements, a Bill of Materials form or equivalent indicating which materials have been addressed, including material weights and concentrations. This must demonstrate that the required $\geq 25\%$ has been achieved.

To receive credit for working directly with suppliers to implement Water & Soil Stewardship Requirements, the same documentation is required of suppliers as for final manufacturing facilities. See Sections 7.1, 7.2, and 7.3 for additional information.

Further Explanation

The table below lists materials that are typically produced using high-volume water use process(es) and pollutant-intense process(es). This may include processes that negatively impact aquatic and soil environments (e.g., deforestation, soil erosion, runoff into surface waters). Listed materials and the associated processes, if applicable to the product seeking certification, must be addressed to meet the Silver and Gold level requirements in Section 7.3 Water & Soil Conservation. This list is also referenced in the Required Documentation box for Section 7.1 Effluent Quality Compliance for determining when additional supporting evidence is required.

A high-volume water use process is a process that typically requires a high volume of water. Facilities (including supplier facilities where listed materials are manufactured) that use (i.e., withdraw and/or

purchase) $\geq 100,000$ cubic meters (m³) of fresh water per year are considered high-volume water users. Any supplier of a listed material carrying out a process marked as “high volume” below is considered to use a high volume of water unless water use data are provided that demonstrate otherwise.

A pollutant-intense process is a process with high potential to negatively affect conventional water quality parameters such as biological oxygen demand (BOD), chemical oxygen demand (COD), and total suspended solids (TSS), and/or result in the release of hazardous chemicals with effluent or runoff. A pollutant-intense process is defined broadly to include soil erosion and loss, which, in addition to resulting in reduced topsoil quality and availability on land, also contributes to poor surface water quality. Any supplier of a listed material carrying out a process marked as “pollutant intense” below is considered to use a (typically) pollutant-intense process in all cases. There is not a quantitative cut-off in the way that there is for the high-volume designation.

Note that these problematic processes may occur at multiple supply chain tiers for a given material. For example, a cotton textile is typically associated with issues during both crop production and wet-processing steps. A virgin aluminum part is typically associated with issues during bauxite mining and primary aluminum production. Virgin fossil hydrocarbon derived polymers are typically associated with issues during oil extraction and primary polymer production.

Table – Processes that are Typically High-Volume and Pollutant-Intense

Material	Manufacturing, Extractive, and Environmental Process(es)	High-volume Water Use	Pollutant Intense	
			Chemicals and Effluent Quality Impacts	Soil Erosion Impacts
Cement	Slurry preparation, use of wet kiln instead of dry kiln process.	✓	-	-
Ceramic tile	Wet process: milling.	✓	-	-
Chemicals (i.e., the transformation of organic and inorganic raw materials by a chemical process to form products) ⁱ	Process cooling and heating (high volume); Cleaning/rinsing, process water and sludge disposal (pollutant intense).	✓	✓	-

Crops: cotton, maize/corn, soy, sugarcane	Irrigation. Use of pesticides (insecticides, herbicides, fungicides, etc.) and fertilizers, associated chemical runoff to surface water. Deforestation and other unmanaged/ poorly managed land conversion to agriculture, excessive tilling and associated soil erosion and siltation of surface water.	✓	✓	-
Other crops	Use of pesticides (insecticides, herbicides, fungicides, etc.) and fertilizers, associated chemical runoff to surface water. Deforestation and other unmanaged/ poorly managed land conversion to agriculture, excessive tilling and associated soil erosion and siltation of surface water.	-	✓	-
Glass	Float process - cooling, washing recycled material.	✓	-	-
Leather	All wet leather processing steps including curing, prepping, tanning, and dyeing; waste handling.	✓	✓	-
Material sourced from grazing species / ungulates (leather, wool, etc.)	Deforestation and poor management resulting in soil erosion and runoff.	-	-	✓
Metals (ferrous and non-ferrous)	Primary metal production processes: cleaning, cooling, etc.	✓	✓	-

Mined metal ores (includes iron, aluminum, nickel, copper, zinc, and other ores ⁱⁱ)	Hydraulic mining. Mine dewatering, acid and metalliferous drainage and tailings production, soil erosion and runoff (from surface mining), material separation and transport, etc. Extraction of valuable metals (silver and gold) using mercury and cyanide.	✓	✓	-
Mined minerals (includes stone, sand, gravel, gypsum, clay, and other minerals)	High volume: Mine dewatering (if necessary) - potential to lower the water table. Pollutant intense: soil erosion and runoff.	✓	-	✓
Metal finishes (includes chrome, galvanization, etc.)	Finishing/plating, rinsing/cleaning, rectifier cooling.	✓	✓	-
Oil and gas (includes material produced with oil and gas)	Hydraulic fracturing/fracking, water injection/waterflooding.	✓	✓	-
Plastics (recycled)	Washing post-consumer plastic for recycling.	✓	-	-
Plastics (virgin/ primary production)	Process cooling and heating (high volume); Cleaning/rinsing, process water and sludge disposal (pollutant intense).	✓	✓	-
Pulp and paper (includes all cellulosic pulp, e.g., pulp used to make textile fibers)	Debarking, pulping, pulp washing, pulp bleaching. Papermaking: Pulp dilution and dewatering.	✓	✓	-
Semiconductors	Cleaning/rinsing with ultrapure water (UPW) and ultrapure water production, cooling.	✓	✓	-

Textiles (includes fiber and yarn stages)	Wet processing, including scouring, bleaching and other wet pre-treatment steps, sizing and desizing woven textile materials, dyeing, finishing including denim finishing, washing, coatings (if applied as part of wet processes).	✓	✓	-
Wood/timber	Debarking (high volume), sawmill timber processing (pollutant intense).	✓	✓	-
Wood/timber	Deforestation, forest management (poor management resulting in soil erosion and runoff, use of pesticides and fertilizers).	-	✓	✓

ⁱ Note: Per the Nomenclature of Economic Activities (NACE), Manufacture of chemicals and chemical products includes: Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms, Manufacture of man-made fibres, Manufacture of other chemical products, Manufacture of paints, varnishes and similar coatings, printing ink and mastics, Manufacture of pesticides and other agrochemical products, Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations. Per the North American Industry Classification System (NAICS), the chemical manufacturing subsector consists of these industry groups: Basic Chemical Manufacturing: NAICS 3251, Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing: NAICS 3252, Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing: NAICS 3253, Pharmaceutical and Medicine Manufacturing: NAICS 3254, Paint, Coating, and Adhesive Manufacturing: NAICS 3255, Soap, Cleaning Compound, and Toilet Preparation Manufacturing: NAICS 3256 Other Chemical Product and Preparation Manufacturing: NAICS 3259.

ⁱⁱ Refer to the following reference for a full list of metal ores included in this key material category: U.S. EPA, "Mineral Mining and Processing Effluent Guidelines," United States Environmental Protection Agency, <https://www.epa.gov/eg/mineral-mining-and-processing-effluent-guidelines> [Accessed 23 February 2026].

7.4 Assessing and Optimizing Product-Relevant Chemicals in Effluent and Sludge

Intended Outcome(s)

Chemicals entering receiving waters and soils as a result of product manufacturing have been intentionally selected based on their preferred safety attributes. Problematic substances are progressively avoided through restrictions aligned with leading regulations and based on hazard endpoints and risk. At higher levels of achievement, chemicals released with effluent and sludge are compatible for human and environmental health.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirement(s)

Bronze level: All product-relevant chemicals entering effluent or sludge during the final manufacturing stage comply with restrictions aligned with leading regulations as defined in the Cradle to Cradle Certified® Restricted Substances List reference document.

Silver level:

- Define and assess product-relevant process chemicals entering effluent or sludge during the final manufacturing stage.
- Ensure that any product-relevant chemicals (including product-relevant process chemicals) released with effluent or sludge during the final manufacturing stage:
 - Are not classified or listed as carcinogenic, mutagenic, or toxic to reproduction (CMRs) or causing an equivalent level of concern unless exposure is unlikely or expected to be negligible, and
 - Are not listed as persistent, bioaccumulative, and toxic (PBTs), or very persistent and very bioaccumulative (vPvBs).

Gold level:

- Define and assess all product-relevant chemicals entering effluent or sludge during the final manufacturing stage.
- Ensure that any product-relevant chemicals released with effluent or sludge during the final manufacturing stage are compatible with human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology, allowing only a, b, and c assessed chemicals within effluent and sludge.

Platinum level:

- Define and assess all product-relevant chemicals entering effluent or sludge at select supplier facilities.
- Ensure that any product-relevant chemicals released with effluent or sludge at select supplier facilities are compatible with human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology, allowing only a, b, and c assessed chemicals within effluent and sludge.

For the Bronze level:

1. Product-relevant chemicals are defined as intentional product inputs and process chemicals (including single chemicals and chemical mixtures, as well as known contaminants) used to manufacture the product. **Note:** Process chemicals are further defined in Section 12 Definitions.
2. All product-relevant chemicals that enter or potentially enter the effluent are in scope.
3. If applicable, restriction thresholds apply to the chemical mixtures as received from the supplier.
4. Substances within process chemical mixtures are subject to review at a concentration $\geq 0.1\%$ (≥ 1000 ppm), with the following exceptions:
 - a. If a limit below 1000 ppm is indicated for a specific substance by the applicable Bronze level chemical restrictions aligned with leading chemical regulations in the Cradle to Cradle Certified® Restricted Substances List reference document (see Section 4.2.1), the lower limit applies.

- b. If a specific concentration limit (SCL) for any toxicity endpoint of a substance is below 1000 ppm as indicated by the Table of Harmonized Entries in Annex VI to the Classification, Labelling, and Packaging of Substances and Mixtures regulation, the lower limit applies.

For the Silver level:

1. For process chemical formulations, all substances present at 1000 ppm (0.1%) or above within the formulation are subject to review. Substances may be grey-rated due to missing toxicity information and otherwise must have received an abc-x rating.
2. Restricted CMRs, PBTs, vPvBs, and substances causing an equivalent level of concern are listed in the Cradle to Cradle Certified® Restricted Substances List reference document.

For the Platinum level, the “select” suppliers in scope are:

1. Suppliers at any tier that use pollutant-intense processes associated with leather, metal finishes, pulp and paper, and textiles that are $\geq 25\%$ of the product by weight or by cost. These pollutant-intense processes are defined in Section 7.3.

Further Explanation

The requirements in this section of the standard apply to the certified product and not to the entire facility where the product is made. For Bronze, Silver, and Gold levels, the final manufacturing stage of the certified product is in scope. For Platinum level, processes occurring in the supply chain are also in scope in some cases. This is described below. The requirements in this section align closely with those in the Material Health category. See Material Health Section 4.2.1 Restrictions Aligned with Leading Regulations and 4.2.3 Restrictions Based on Hazard Endpoints and Risk for additional information. Important differences are noted here.

Identifying Product Relevant Chemicals Entering Effluent and Sludge (Final Manufacturing Stage)

As noted in the standard:

1. *Product relevant chemicals are defined as intentional product inputs and process chemicals (including single chemicals and chemical mixtures, as well as known contaminants) used to manufacture the product. Note: Process chemicals are further defined in the Section 12 Definitions.*
2. *All product relevant chemicals that enter or potentially enter the effluent are in scope.*

This means that the requirements apply to substances that are already subject to review per the Material Health category plus any additional process chemicals that do not remain in the final product above subject to review levels but have some potential to enter the effluent and sludge. All chemicals with the potential to enter effluent and sludge during the process must be included in the scope. Note that intentional product inputs that are not subject to review in an individual homogeneous material (per the Material Health category) that do enter effluent and sludge as part of final manufacturing stage processes, are subject to review in the context of effluent and sludge. In general, unless water only contacts the product at a point when chemicals within the product are unavailable for release (e.g., they

are reacted into the material matrix), it must be assumed that there is potential for chemicals within the product to enter effluent and sludge. **See the Definitions section of the standard for a definition of a process chemical.** Note that the definition includes substances that may not traditionally be identified as such. The definition includes essentially any chemical that is present during the final manufacturing stage of the certified product, including intermediates and intentional product inputs not subject to review in the final product. If liquid effluent is shipped off-site for treatment (regularly or occasionally) and then discharged from the treatment facility this is considered effluent for the purposes of these requirements.

Bronze Level: Section 4.2.1 Restrictions Aligned with Leading Regulations (Final Manufacturing Stage)

For chemicals with potential to enter the effluent and sludge that are subject to review per the Material Health category, compliance with the Section 4.2.1 restrictions is already addressed via the Material Health requirements. Therefore, the only additional requirement for Water & Soil Stewardship is to confirm that any process chemicals used during the final manufacturing stage that are also released or potentially released with effluent and sludge also comply (i.e., compliance with the "Core List" tab of the Restricted Substances List reference document). As noted in the standard, *restriction thresholds apply to the chemical mixtures as received from the supplier*. Single chemical substances that are restricted for use per leading regulations may not be used as process chemicals.

Silver Level: Confirming that CMRs, substances causing an equivalent level of concern, PBTs, or vPvBs are not released with effluent and sludge (Final Manufacturing Stage)

For chemicals with the potential to enter the effluent and sludge that are also subject to review per the Material Health category, confirming that CMRs, substances causing an equivalent level of concern, PBTs, and vPvBs, are not released with effluent and sludge is already addressed via the Material Health requirements. This will have been achieved by either collecting supplier declarations stating these substances are not present in the product's materials or via material health assessments that consider (among other things) the toxicity of the chemical in the context of release to the environment, if applicable. Therefore, the only additional requirement for Water & Soil Stewardship is to confirm that any process chemicals used during the final manufacturing stage that are also released or potentially released with effluent and sludge are not CMRs or cause equivalent concern, PBTs, or vPvBs.

There are two important distinctions for the Water & Soil Stewardship category:

1. The first is that process chemicals released to effluent and sludge must be assessed at the Silver level. This means that for process chemicals released to effluent and sludge during the final manufacturing stage, supplier declarations alone are not accepted. Instead, full material disclosure must be obtained for these process chemicals, and a material health assessment rating must be assigned. The following exception applies: *Substances may be grey-rated due to missing toxicity information*. This means that substances may be 'grey' due to lack of toxicity data on any hazard endpoint, but they may not be 'grey' due to missing composition information (**Note:** 'grey' is an assessment designation that is defined per the Cradle to Cradle Certified

Material Health Assessment Methodology). This will allow a Material Health assessor to confirm that Silver level restricted substances are not released.

2. Secondly, it is important to note that: For process chemical formulations, all substances present at 1000 ppm (0.1%) or above within the formulation are subject to review (unless there is a lower restriction limit per leading regulations, in which case that limit takes precedence). This is a higher subject to review limit than the default for substances in the product's materials, which is 100 ppm (0.01%) in most cases. See the Definitions section for a definition of process chemical.

Assessing Chemicals in Effluent and Sludge

Assessing chemicals in effluent and sludge is required at the Silver level as noted above for process chemicals, and for the Platinum level where certain pollutant-intense processes within the supply chain are also in scope. In addition, this is required in the Material Health category requirements for chemicals subject to review in the product that are also released to effluent and sludge (in increasing percentages of the product by weight, i.e., 75% Bronze, 95% Silver, 100% Gold).

Note that assessments must be carried out on the reacted form of the parent chemical in any case where chemical reactions are known to occur within the effluent that result in the formation of more hazardous substances (e.g., dioxins may form in pulp mill effluent especially when elemental chlorine bleaching is used).

See the Material Health Methodology (in particular the methods for assessing effluent and sludge) for further information on how to assess chemicals in this context. In brief, regarding exposure, if a closed loop system is in place this may allow for chemicals with RED and grey hazard ratings to receive a c-assessment. However, if hazardous substances are disposed of with effluent or sludge when the system is periodically flushed or cleaned, or if hazardous substances are within the sludge and it is not handled appropriately, a c-assessment will not be possible. Appropriate handling of sludge is defined based on the Material Health Assessment Methodology. If a chemical can be c-assessed in the context of sludge, the sludge by definition is handled adequately or appropriately.

Gold and Platinum Levels: Using Optimized Chemistry (Final Manufacturing Stage and Select Suppliers)

The Gold level requirement is to: *Ensure that any product-relevant chemicals released with effluent or sludge **during the final manufacturing stage** are compatible with human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology, allowing only a, b, and c assessed chemicals within effluent and sludge.* As noted above, the Cradle to Cradle Certified Material Health Assessment Methodology is used to assess chemicals in effluent and sludge for the purposes of the Water & Soil Stewardship category.

The Platinum level requirement is to: *Ensure that any product-relevant chemicals released with effluent or sludge **at select supplier facilities** are compatible with human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology, allowing only a, b, and c assessed chemicals within effluent and sludge.*

An important distinction for the Platinum level in the Water & Soil Stewardship category is the scope, which includes 'select suppliers'. Those in scope are *suppliers at any tier that use pollutant-intense processes associated with leather, metal finishes, pulp and paper, and textiles that are $\geq 25\%$ of the product by weight or by cost*. These pollutant-intense processes are defined in Section 7.3 Water & Soil Conservation (see both the standard and manual). For example, this means that for an apparel product, it is required to assess all chemicals released to effluent and sludge during any wet processing of the textile(s) used that occurs after the raw material production or extraction stage, including wet processing of fiber, yarn, and the textile itself.

Required Assessment Ratings for Specific Materials and Substances

The substances listed below will always be x-assessed if released with effluent or sludge (however, see note below regarding bleaching chemistry). For the substances listed below that are x-CMR (per the Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation), PBT, vPvB, or equivalent concern (which are currently defined based the list of REACH SVHCs), and are discharged with effluent during the final manufacturing stage of the product, the product is limited to the Bronze level. If the substance is released in the supply chain by a 'select supplier' in scope for the Platinum level, the product is limited to the Gold level. Substances that are x-assessed but are not CMRs, substances of equivalent concern, PBT, or vPvB, may be used at the Silver level.

- Chrome plating, use of chrome VI: x-CMR
- Leather tanning, use and/or formation of chrome VI: x-CMR
- Biological and biologically-derived fibers
 - Elemental chlorine bleaching: x-CMR (due to the likely formation of dioxins and other issues) unless shown otherwise.
 - Elemental chlorine free (ECF) bleaching based on chlorine dioxide or similar: x-assessed due to the formation of organohalogenes in effluent and sludge. It is allowable to assume no CMRs or SVHCs for the purposes of the Silver level. However, for the Gold or Platinum level (as relevant), this must be demonstrated as noted below.

Note regarding assessment of bleaching chemistry

It is highly unlikely that a final manufacturing stage process using ECF bleaching will achieve the Gold level in the Water & Soil Stewardship category because organohalogenated substances will be present in effluent and sludge when using the typical ECF process, and per the Material Health Assessment Methodology, all organohalogenes must be x-assessed due to life cycle concerns. The Material Health Assessment Methodology has an allowance for determining that substances in effluent are below safe limits (thereby allowing for c-assessment if so); however, because a wide range of substances with a range of toxicity concerns can potentially form in effluent when using ECF bleaching, safe limits may not be easily determined. Another option is to demonstrate that any problematic substances (in this case Adsorbable Organic Halides (AOX) as a substance group and dioxins) are below detection in effluent and, assuming AOX is also in sludge, that sludge is handled appropriately. Refer to the Material Health Assessment Methodology for additional information. Note that the sludge handling method that would allow for a c-assessment per the current

methodology (assuming AOX is present) is one where the sludge is kept in a closed system of nutrient recovery and re-used without exposure concerns.

If effluent produced from a bleaching process will be tested with the aim of achieving a c-assessment, it must, at a minimum, be tested for AOX and the most toxic dioxin congener (2,3,7,8-TCDD). The required detection limits for effluent are as follows, unless permit limits are lower, in which case those take precedence:

- AOX: 20 ppb. This is the detection limit for United States Environmental Protection Agency test method 1650, required for use in demonstrating compliance with the United States effluent guidelines for pulp and paper. In the European Union, several possible test methods may be used including ISO 9562. Laboratory detection limits for ISO 9562 may vary. If it can be demonstrated that nearby laboratories are unable to test to 20 ppb, a limit of 50 ppb may be used.
- 2,3,7,8-TCDD: 10 pg/L. This is based on the United States Environmental Protection Agency test method 1613.

Note: If Elemental Chlorine Free (ECF) bleaching is used to produce pulp, paper products are likely to contain chlorine (and potentially organochlorine) above subject to review limits (100 ppm). This is relevant to the Material Health category. Although pulp bleaching is out of scope in Water & Soil Stewardship until the Platinum level, it must be assumed that ECF bleached paper contains organochlorine unless shown otherwise. This means ECF bleached paper is generally limited to the Silver level unless compliance can be demonstrated through organohalogen testing. Note that man-made cellulosic fibers that were produced using a chlorine dioxide or similar bleaching process are unlikely to contain organochlorine above the subject to review limit for homogeneous materials.

Required Documentation

Please refer to the Required Documentation in the Material Health Sections 4.1 Inventory and Assessment of Chemicals and Materials, 4.2.1 Restrictions Aligned with Leading Regulations, and 4.2.3 Restrictions Based on Hazard Endpoints and Risk. The same requirements apply to Water & Soil Stewardship Section 7.4.

7.5 Optimizing Effluent and Sludge Quality at the Facility Level

Intended Outcome(s)

Effluent and sludge at final manufacturing facilities are managed with the aim of protecting local water quality and ecosystem health.

Applicable Achievement Level(s)

Requirement(s)

For the final manufacturing stage facilities:

- Establish a comprehensive effluent and sludge quality management system, and
- Optimize the effluent and sludge produced as a result of all manufacturing processes used at the facility.

The following are in scope:

1. Effluent and sludge produced as a result of all manufacturing processes at the facility.
2. Non-manufacturing effluent and sludge (e.g., from water used in toilets, kitchen areas) unless treated by an off-site, independently operated effluent treatment facility.
3. All chemicals with potential to enter effluent and sludge including, but not limited to:
 - a. Process chemicals,
 - b. Intentional product inputs,
 - c. Chemicals used to treat and clean cooling systems,
 - d. Chemicals used to treat the effluent, and
 - e. Custodial/cleaning chemicals used in the manufacturing area.

Managing Effluent and Sludge Quality

The comprehensive effluent quality management system must:

1. Be informed by an understanding of:
 - a. The hazardous substances (defined as substances with RED hazard(s) per the Material Health Assessment Methodology) used intentionally and unintentionally by the facility and the industry. This must be determined based on a comprehensive review of safety data sheets and the relevant literature on chemicals of known and emerging concern, both regulated and non-regulated.
Note: This is different from the chemical inventory required for materials and products in the Material Health category.
 - b. Local and catchment level water quality issues that are relevant to the facility, surrounding ecosystem, and community, including the quality of source and receiving waters, and the health of receiving ecosystems, and communication with non-governmental organizations (NGOs) working on local water issues and/or local water authorities.
2. Include comprehensive methods for avoiding the intentional and unintentional use, and subsequent introduction, of hazardous substances to the environment via effluent and sludge. The methods must address all chemicals in scope and may include but are not limited to:
 - a. Use of third-party certified and optimized input formulations and materials,
 - b. Analytical testing of purchased formulations to screen for hazardous contaminants, and
 - c. Adherence to industry best practice manufacturing restricted substances lists.
3. Include qualified third-party verification that processes and procedures for on-site treatment facility operation (if any) and water quality management are in place and functioning.

4. Monitor conventional water quality parameters (e.g., pH, total suspended solids, biochemical oxygen demand), and for the release of hazardous substances relevant to the industry and facility. The following are required:
 - a. Effluent as it leaves the facility must be tested for all substances of concern identified per the required research (per #1).
 - b. Best practices must be used to collect samples.
 - c. Testing must be conducted at least two times per year.
 - d. Laboratories conducting the tests must be ISO 17025 accredited.

Optimizing Effluent and Sludge Quality

1. For conventional water quality parameters, facility(ies) releasing effluent directly to surface or groundwater (defined in Section 7.1) must comply with the more stringent of the limitations indicated by either their permits or as follows:
 - a. pH: 6-9
 - b. Biological Oxygen Demand (BOD): 25 mg/L
 - c. Total Organic Carbon (TOC): 35mg/L or Chemical Oxygen Demand (COD): 100 mg/L
 - d. Total Suspended Solids (TSS): 30 mg/L
 - e. Ammonia (as N): 10 mg/L
 - f. Total nitrogen: 10 mg/L
 - g. Total phosphorus: 2.0 mg/L
 - h. Temperature: < 3 °C increase
 - i. Color: 7 m-1 (436 nm; yellow) 5 m-1 (525 nm; red) 3 m-1 (620 nm; blue)
 - j. Oil and grease: 10 mg/L
 - k. Coliform: 400 bacteria/100 ml

Applicants who would be required to comply with effluent limits more stringent than those indicated by their permits may alternatively publicly disclose an explanation of the conditions and/or trade-offs preventing the facility from meeting the more stringent limits.

These effluent limits are the most stringent of those listed for multi-brand consortia or for the benchmark countries (if not included in multi-brand consortia list) per Zero Discharge of Hazardous Chemicals Programme, Textile Industry Wastewater Discharge Quality Standards Literature Review REV1, 2015.

2. Hazardous substances identified per the required research (per the Effluent and Sludge Quality Management section #1) must not be x-assessed in effluent or sludge (per the Material Health Assessment Methodology section on assessment of effluent and sludge). Receiving water is defined as the ultimate receiving water in the case of off-site, independently operated effluent treatment facilities.

Further Explanation

Effluent and Chemicals in Scope

Facilities that have completely dry or closed loop systems in place, do not discharge any manufacturing process effluent or sludge, and depend on independently operated treatment facilities to treat non-process effluent (i.e., from toilets and sinks) are not subject to the requirements in this section (with verification).

The requirements in this section apply to effluent and sludge discharged from final manufacturing stage facilities, not only to the effluent produced as a result of producing the certified product. Essentially any chemical used on site with potential to enter effluent and sludge is in scope.

Managing Effluent and Sludge Quality

In addition to the requirements themselves, the following additional information and explanation is provided:

Requirement #1a:

- Review all safety data sheets (SDSs) for chemicals and chemical mixtures in scope (as defined in #1-3, including #3a-e). Compile a list of chemicals with associated RED hazards as listed on all SDSs and as defined by the Material Health Assessment Methodology.
- To identify contaminants of emerging concern that may be relevant to the industry, review governmental and academic publications (see for example). Examples of contaminants of emerging concern include certain pesticides, pharmaceuticals, PFASs, phthalates, flame retardants, and siloxanes.
- Another approach for identifying hazardous chemicals that are in use by the industry and therefore potentially present in purchased formulations (even if not listed on SDSs, which may be incomplete or inaccurate), is to review current and prior uses of substances on the REACH annex XVII and the Candidate List of Substances of Very High Concern for chemicals relevant to the industry. This information can be found in REACH Annex XV restriction reports and dossiers. This approach is most relevant to regions where regulations are lagging.

Requirement #2: For example, this may include the use of Cradle to Cradle Certified mater and formulations, ZDHC MRSL compliance formulations, or the use of ChemIQ, a testing protocol developed by VF Corp.

Requirement #3: Staff that are operating any on-site treatment plants must be appropriately trained and qualified. If the facility has ISO 14001 or equivalent and the system includes processes and procedures for managing effluent, this may receive credit (however, this will have to be determined on a case-by-case basis because ISO 14001 certification does not always explicitly address water quality).

Requirement #4: Testing and sampling methods required by the [ZDHC](#) Wastewater Guidelines are recommended. Also see the Cradle to Cradle Certified Material Health Assessment Methodology for

additional methods.

If it can be determined that a substance is typically removed from the liquid effluent by wastewater treatment processes, then it may not be necessary to test for that substance on an ongoing basis. To determine if a chemical is likely to be removed by wastewater treatment processes, the Material Health Assessment Methodology for assessing effluent and sludge may be applied. The following reference may be useful for this purpose: EU Wide Monitoring Survey on Waste Water Treatment Plant Effluents, 2012, ([download link](#)).

Optimizing Effluent and Sludge Quality

As noted, hazardous substances identified per the required research (per the Effluent and Sludge Quality Management section #1) must not be x-assessed in effluent or sludge (per the Material Health Assessment Methodology section on assessment of effluent and sludge). This means that if hazardous substances are identified per the required research, that a Material Health Assessment Body is required to conduct the assessment work to determine if the identified substances are x-assessed.

When applying the limits for conventional parameters included in the standard, where a range or greater than/ less than sign is not included, these are maximum allowable limits (i.e., $\geq$).

Required Documentation

- If relevant, evidence that the facility is not subject to these requirements (e.g., photos and diagrams of a fully closed loop water system and description of the process for cleaning the system including how any waste/sludge is handled, and/or photos and diagrams showing that water is otherwise only used for sanitary and hygienic purposes with effluent sent to an independently operated treatment facility).
- Research report including:
 - A list of hazardous chemicals relevant to the industry, facility, local ecosystem, and community, in the context of water.
 - Indication of which of these chemicals can and cannot be removed by the treatment methods employed.
 - List of references.
- Description of the methods used to control input chemistry.
- Evidence of third-party verification of effluent quality management system.
- If effluent is treated on site, evidence of relevant staff training and qualifications for operating treatment plant.
- Effluent test data, methods, and lab qualifications.
- For any hazardous substances identified, assessment results demonstrating that the substance is not x-assessed in the context of effluent and sludge.

Further Explanation

Table - Water & Soil Stewardship Example Conservation Technologies and Best Practices

The following are example conservation technologies and best practices for fulfilling the Water & Soil Stewardship requirements in standard Section 7.3 Water & Soil Conservation. These are applicable for cases where one best practice or technology is required. These examples were selected based on their potential to have medium to high impact on improving quality and/or reducing water use as noted. Some of the listed practices will also positively impact soils (e.g., see rows for crops).

Impact type	Material	Process or sub-material	Technologies and Best Practices	References
Quality	Several	Wastewater treatment	Use reverse osmosis, ultrafiltration, and/or nanofiltration to treat process water.	
Quality	Several	Wastewater treatment	Use constructed wetland to treat process water.	Constructed Wetlands (US EPA)
Quality	Wood/timber	Sawmill	Divert stormwater around storage areas with vegetated swales, and/or berms.	Industrial Stormwater Factsheet: Timber (US EPA)
Quality & Quantity	Chemicals	Ammonia production	Recycle steam condensate, process, and scrubbing waters to reduce the amount of chemicals released to the environment (air and water emissions) and the original amount of chemicals added to process water.	Best Available Techniques Reference Documents (European Commission)
Quality	Chemicals	Soap manufacturing	Utilize wastewater treatment with flow balancing, first reaction stage (denitrification—NO ₃ to N ₂ —in a stirrer tank where the external carbon source is added), second reaction stage (degradation of residual organics in a stirrer tank by addition of small amounts of nitrate), and separation (the activated sludge is returned to the first reaction	Best Available Techniques Reference Documents (European Commission)

			stage) to remove nitrates and phosphates from effluent water	
Quality	Metal finishes	Plating line	Install an ultrafiltration system for recovery of degreasers and oil for reuse to minimize BOD loading to wastewater.	
Quality & Quantity	Metal finishes	Plating line	Install a closed loop system with filtration, ion exchange, and electrolytic recovery.	
Quality	Metal finishes	Plating line	Transition to using base alloys that do not have to be plated (e.g., stainless steel).	
Quality	Metal finishes	Cleaning	Use mechanical mixing, agitation, and air blowing in plating and rinsing processes to reduce amount of chemicals needed in rinse baths.	California Department of Water Resources
Quality	Metal finishes	Cleaning	Utilize multiple tanks and countercurrent rinsing (rinse parts in dirtier water in the beginning of the process and move to more clean water at the end of the process) for parts to reduce the risk of contamination and need to dump entire rinse tanks of water	California Department of Water Resources
Quality & Quantity	Metal finishes	Cleaning	Utilize a dragout control method. Dragout occurs when processed parts are removed from one tank and transferred to another, contaminating the rinse.	California Department of Water Resources
Quality	Mined & extracted materials	Acid and metalliferous drainage	Leading practice for the prevention and treatment of acid and metalliferous drainage includes identification, characterization, scheduling, transport, segregation, selective placement, co-disposal and sometimes blending of sulfidic and carbonate-bearing materials, as well as an appropriate level of monitoring.	Preventing Acid and Metalliferous Drainage (Australian Government, 2016)

Quality	Several	Boiler	Minimize boiler blowdown: Install a conductivity controller that can continuously measure the conductivity of the cooling tower water and that will initiate blowdown only when the conductivity set point is exceeded or have blowdowns scheduled by volume of use, not time of use.	California Department of Water Resources
Quality	Several	Boiler	Maximize boiler condensate return via pipe loops that return cooled, condensed steam to reduce the amount of new boiler water (saving treatment energy, water, and chemicals).	California Department of Water Resources
Quality	Several	Cleaning equipment	Install Clean In Place (CIP) technology for pipes and tanks rather than taking apart the system and soaking for cleaning.	California Department of Water Resources
Quality	Wood/timber, pulp & paper	Debarking	Transfer from water intensive water pressure debarking process to mechanical bark stripping processes.	
Quality	Pulp & paper	Debarking	Transfer from water intensive water pressure debarking process to mechanical bark stripping processes.	
Quality	Pulp & paper	Pulping	Move from chemical pulping processes that require water rinses and release wastewater higher in BOD and chemical contaminants to a mechanical pulping process.	Pulp and Paper Mills Pollution Prevention and Abatement Handbook (World Bank)
Quality	Several	Cooling	Utilize recycled water for cooling water and eliminate one pass cooling systems (exception to elimination of one pass cooling: use	Catalogue of Good Practices in

			water for another purpose after cooling (e.g., irrigation). • Increase number of cycles for which water is used in cooling tower. • Use an air-cooled condenser system as opposed to a water-cooled condenser or cooling system. • Capture rainwater on site and use for cooling water (if allowed by regulations). • Use a cooling tower or chilled water loop instead of once through cooling for water-cooled rectifiers. • Conversion of evaporative cooling towers to dry cooling towers eliminates evaporation and reduces water losses.	Water Use Efficiency (Water Resources Group, 2012) Alliance for Water Efficiency
Quantity	Cement	Kiln	Use dry process kilns instead of wet process kilns.	Cement Sustainability Initiative (WBCSD, 2018)
Quantity	Cement	Slurry thinning	Use chemical thinners (water reducing ad-mixtures) to thin slurry and reduce water use.	
Quantity	Semi-conductors	Rinsing	Use filters to produce pure water – Optimize pretreatment for RO, to minimize the amount of reject water, through the use of activated carbon filtration to produce high-quality DI water and increased water recovery.	California Department of Water Resources
Quality & Quantity	Crops	Management	• Conversion to organic practices (when water conservation issues are included in a certification counts as both Quality & Conservation best practice). • Install drip irrigation.	

			• Use terracing and/or contour buffer triples to control overland flow. • Use grassed waterways for flow control. • Edge-of-field buffering and filtering. • Cover cropping. • Fallow high-slope lands. • Any technique that reduces runoff and increases infiltration and retention by soils and sub-surface geology (recommended techniques to achieve this vary by region).	
Quality	Crops	Management	Conversion to IPM practices. • Use application methods to reduce runoff/infiltration (e.g., subsurface injection, plowed under, timing to avoid rainfall). • Test soil nutrients and adjust application to agronomic rates to minimize nitrogen and phosphorous loss at origin. • Use less soluble fertilizer sources (chemical, manure, pre-application treatment). • Protect wellhead to minimize direct flow to groundwater. • Install and maintain impoundments to trap sediment, nitrogen, and phosphorous.	
Quantity	Crops	Management	Manage water use by monitoring crop life cycle and when water deficit benefits formation of fruit or boll vs leaf formation.	
Quality & Quantity	Chemicals	Handling of process water and condensate	Recycle condensate, process, and scrubbing waters, to enable the use of more efficient scrubbing liquids to reduce the amount of water treatment needed, the amount of chemicals released to the environment (air and	Best Available Techniques Reference Documents

			water emissions), and the amount of chemicals added to process water.	(European Commission)
Quality & Quantity	Pulp & paper	Debarking	Transfer from water intensive water pressure debarking process to mechanical bark stripping processes.	
Quality & Quantity	Pulp & paper	Pulp washing	Switch from conventional pulp washing (which consumes huge quantity of water because it is a batch process) to continuous countercurrent processes.	
Quality	Mined & extracted materials	Tailings	Implementation of a risk-based approach, critical controls, engineer-of-record and independent review of tailings storage facilities. ICMC guidance focuses on governance to reduce risk of tailings dam failure and hence uncontrolled release.	MAC Guide to the Management of Tailings (Mining Association of Canada, 2017)
Quality	Chemicals	Solvents, plastics	Closed systems for solvent use and recovery of residual solvents. Using gas-phase polymerization processes for polyethylene and polypropylene in fluidized beds or continuous-flow stirred-bed reactors (to avoid using solvents).	
Quantity	Textiles	Dyeing	Use low impact dyes. Low impact dyes are defined as dyes that: (1) Have a high absorption rate (>70%), (2) Require less rinsing compared to conventional dyeing processes (results in at least a 20% reduction in water compared to alternatives), and (3) Do not contain toxic metal mordants, toxic metal chromophores, or other highly toxic chemicals (i.e., not assessed as defined by the Cradle to Cradle Material Health methodology). For low impact reactive dyes, 50% less salt and soda ash are	Cattermole Consulting (2018)

			needed for fixation when compared to conventional reactive dyes. For polyester, select disperse dyes that are used in water free dyeing equipment.	
Quantity	Several	Maintenance	Develop a schedule including timelines that regularly checks and fixes plumbing water leaks. The first round of checking and fixing must have occurred to receive credit. Scheduled checks must occur bi-annually at a minimum to receive credit.	Clean by Design (NRDC, 2015)
Quality & Quantity	Several	Process water	Full recirculation of process water, with makeup water added to account for evaporation.	
Quality & Quantity	Plastics	Process water	Use gas-phase polymerization processes for polyethylene and polypropylene in fluidized beds or continuous-flow stirred-bed reactors (to avoid using solvents, which pollute and have higher energy costs to recover solvent/dry the polymer); closed systems for solvent use and recovery of residual solvents.	
Quality	Textiles	Management	Conformance with the Zero Discharge of Hazardous Chemicals (ZDHC) wastewater guidelines (progressive or aspirational limits).	
Quality	Textiles	Management	Conformance with the Zero Discharge of Hazardous Chemicals (ZDHC) Manufacturing Restricted Substance List (MRSL) at the facility level.	

7.6 Transparency

Intended Outcome(s)

Product and manufacturing data are available to stakeholders, demonstrating the manufacturer's commitment to accountability for their impacts and encouraging ever-improving performance.

Applicable Achievement Level(s)*

Bronze, Silver, Gold, and Platinum

Requirement(s)*

Publicly disclose information and/or data consistent with the product's level of achievement in the Water & Soil Stewardship category, as defined by the requirements in the Cradle to Cradle Certified Transparency Requirements reference document.

***Note:** At the time of publishing the Version 5.0 standard, there are required Water & Soil Stewardship disclosures at the Silver level and recommended disclosures at other levels. Please see the most recent version of the Transparency Requirements reference document for the applicable requirements, as this reference document may be updated periodically even if the standard version has not changed.

Further Explanation

For additional information and documentation requirements please refer to the [Transparency Requirements](#) reference document and Transparency Report Form. The Form is available to Cradle to Cradle Certified Conformity Assessment Bodies.

8 // Social Fairness Requirements

Category Intent

Companies are committed to upholding human rights and applying fair and equitable business practices.

Requirements Summary

To achieve a desired level within the category, the requirements at all lower levels must also be met.

Requirement	Bronze	Silver	Gold	Platinum
8.1: A human rights policy based on international human rights standards is in place.	●	●	●	●
8.2: For final manufacturing stage facilities, performance on implementing respect for human rights is measured. Corrective actions for select issues (e.g., child labor, forced labor) are complete. Corrective actions are planned for any other poor performance issues and, at recertification, progress is demonstrated.	●	●	●	●
8.2: Social audit performance data are requested from tier 1 suppliers in high-risk locations. At recertification, progress is made on supply chain data collection and corrective actions, if needed. Corrective actions for select issues (e.g., child labor, forced labor) are complete.		●	●	●
8.3: A grievance mechanism is available to applicant-owned final manufacturing facility employees.		●	●	●
8.2: Materials associated with high risk of child or forced labor or support of conflict are certified to a C2CPH-recognized certification program or an equivalent alternative is in place. If a certification program is not available, a traceability exercise is conducted upon recertification.			●	●
8.3: A grievance mechanism permits final manufacturing facility employees and other stakeholders to obtain redress for negative human rights impacts.			●	●
8.4: Responsible sourcing management systems support respect for human rights within the product's supply chain.			●	●

8.5: The company incorporates stakeholder engagement and feedback into human rights risk management. Stakeholder feedback informs strategy and operations.				●
8.6: The company is collaborating to develop and scale solutions to an intractable social issue within the value chain of the product.				●
8.7: The company fosters a work environment in which social fairness operates as a core value.				●
8.8: Publicly disclose information and/or data consistent with the product's level of achievement in Social Fairness. (All Social Fairness disclosures are recommended and not required. See the Transparency Requirements reference document for details.).	○	○	○	○

8.1 Human Rights Policy

Intended Outcome(s)

Facility leadership is formally committed to respecting and upholding human rights as defined by international standards.

Applicable Achievement Level(s)

Bronze

Requirement(s)

Commit to respect human rights, as enshrined in municipal law and internationally recognized human rights standards, through company policy. For incomplete policies, plan corrective actions and, at recertification, demonstrate progress on policy improvement.

Commitment must be via a policy or policies that establish human rights expectations for final manufacturing stage facilities (at minimum). The policies must:

1. Include a commitment to support the following:
 - a. Elimination of discrimination with respect to employment and occupation,
 - b. Elimination of harassment and abuse,
 - c. Elimination of all forms of forced or compulsory labor, or activities that are known to lead to forced labor (e.g., human trafficking),
 - d. The abolition of child labor and adequate protections for workers above the legal working age and below age 18,
 - e. Prevention of excessive working hours,

- f. Freedom of association and collective bargaining,
 - g. Safe and healthy work, including:
 - i. Access to water, sanitation, and hygiene (WASH),
 - ii. Emergency preparation and response,
 - iii. Hazardous materials handling procedures,
 - iv. Management systems that address health and safety risks, and
 - v. Appropriate building construction, electrical, and fire safety.
 - h. Provision of the legal minimum wage and all legally mandated benefits,
 - i. Aspirations for the provision of a living wage that covers the necessities for life as defined in its local context (e.g., food, water, housing, health care, education, clothing, transportation, childcare, discretionary income), and
 - j. Fair and ethical business practices, including anti-corruption/bribery.
2. Be formally approved by a duly empowered officer of the applicant company or facility (as relevant), or by the board of directors.

The policy or policies must be guided by the Fundamental Conventions of the International Labor Organization and the United Nations Guiding Principles on Business and Human Rights, as well as the International Bill of Human Rights. Where national law and these international human rights standards differ, the higher standard applies; where they are in conflict, the applicant or facility owner (as applicable) must seek to respect internationally recognized human rights to the greatest extent possible.

Further Explanation

Definition of Human Rights

Human rights are rights inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status. Human rights include the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education, and many more. Everyone is entitled to these rights, without discrimination (www.un.org/en/global-issues/human-rights). Internationally recognized human rights are defined in the [International Bill of Human Rights](#) (which includes the Universal Declaration of Human Rights, codified through the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights), as well as the eight International Labor Organization (ILO) Core Conventions set out in the [Declaration on Fundamental Principles and Rights at Work](#).

The ILO Core Conventions are:

- Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)
- Right to Organise and Collective Bargaining Convention, 1949 (No. 98)
- Forced Labour Convention, 1930 (No. 29) and its 2014 Protocol
- Abolition of Forced Labour Convention, 1957 (No. 105)
- Minimum Age Convention, 1973 (No. 138)

- Worst Forms of Child Labour Convention, 1999 (No. 182)
- Equal Remuneration Convention, 1951 (No. 100)
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111)
- Occupational Safety and Health Convention, 1981 (No. 155)
- Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)

Committing to Respect Human Rights

The Foundational Principles of [UN Guiding Principles on Business and Human Rights](#) (UNGPs) stipulate that **businesses are expected to respect human rights**, meaning that they should avoid infringing on the human rights of others and should address adverse human rights impacts in which they are involved. The responsibility to respect human rights applies to all businesses, regardless of their size, sector, operational context, ownership, and structure. According to the UNGPs, "In order to meet their responsibility to respect human rights, business enterprises should have in place policies and processes appropriate to their size and circumstances, including a policy commitment".

In alignment with the UNGPs, Cradle to Cradle Certified also requires that companies commit to respect human rights through company policy.

Required Policy Scope: At the Bronze level, the standard requires that the policy or policies *establish human rights expectations for final manufacturing stage facilities (at a minimum)*. This means that it must be clear from the policy language that final manufacturing facilities are within scope of the policy or policies. For applicant owned facilities, corporate level policy that applies to all owned operations is one method of achieving this. For contract manufacturing and suppliers that are part of the final manufacturing stage, a statement in the applicant's policy that the policy intends to set expectations for suppliers and business partners (or similar language) is accepted. Supplier owned facilities may alternatively achieve the requirements through their own policies or by signing on to an applicant's supplier code of conduct that complies with the Cradle to Cradle Certified human rights policy requirements. This scope aligns with the Version 5.0 standard's focus on the certified product's final production at the Bronze level. Note that human rights expectations are required to be set for the supply chain more comprehensively at the Gold level (see Section 8.4 Responsible Sourcing Management System).

Although the minimum policy scope focuses on final manufacturing, it is recommended that a broad (company-wide and value chain wide) scope be applied in alignment with the UNGPs, which state that policy should "stipulate the enterprise's human rights expectations of personnel, business partners, and other parties directly linked to its operations products or services". Entities linked to operations include those "with which the enterprise has contractual relationships. Note that "directly linked" includes linkage through a series of interconnected relationships (e.g., through several supply chain tiers). Robust policies are informed by risk assessment and set expectations for all relevant stakeholders and potentially affected groups (including vulnerable groups). Potentially affected groups may include women and girls, children, people with disabilities, minorities, indigenous peoples, migrant workers,

older persons, lesbian, gay, transgender, and bisexual persons, etc. Relevant stakeholders may include workers' representatives, investors, local communities, and those affected by end of use and cycling. Stakeholders are more generally defined in the standard Definitions section as follows: An individual who may affect or be affected by an organization's activities. An affected stakeholder is an individual whose human rights have been affected by an enterprise's operations, products, or services.

Required Policy Elements (Requirement #1a-j): Each of the human rights issues listed in requirements #1a-j must be explicitly included in a policy or policies that are applicable to final manufacturing stage facilities (at minimum). This means that the policy must reference each point listed in Requirement #1 (child labor, forced labor, etc.) in some form. **The exact wording from the standard is not required. However, the language used must clearly reflect the same intent and meaning.** To support accurate interpretation, refer to the relevant laws and international guidelines associated with each term. Definitions (including references) are provided in the Definitions section of this document. Review of the definitions can help determine whether alternative language is sufficiently aligned.

Discrimination (Requirement #1a): The policy is required to state that the company is committed to *elimination of discrimination with respect to employment and occupation*. It is recommended that the policy also clearly state what is meant by discrimination as follows. ILO convention 111 notes that discrimination includes (but is not limited to) "any distinction, exclusion or preference made on the basis of race, colour, sex, religion, political opinion, national extraction or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation." Article 2 of the Universal Declaration of Human Rights (part of the International Bill of Human Rights) states that "Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status." EU directive 2000/43/EC requires equal treatment between persons irrespective of racial or ethnic origin. Note that "ethnic origin" or ethnicity refers to cultural factors and can encompass nationality, language, traditions, religion, ancestry, and heritage, while "race" is a social construct referring primarily to physical characteristics, especially skin color, facial features, and hair texture, that have historically been used to categorize people. Ideally, a comprehensive definition of discrimination including all types mentioned above (race, ethnicity, gender, etc.) will be included in the policy. However, any language that clearly commits the company to eliminating discrimination of all kinds is accepted.

ILO Convention 111 notes that "Any distinction, exclusion or preference in respect of a particular job based on the inherent requirements thereof shall not be deemed to be discrimination." This or similar language is acceptable if included in the policy along with the commitment to eliminate discrimination.

Harassment and Abuse (Requirement #1b): The policy must (at minimum) note that the company is committed to eliminating harassment and abuse. Language with the same intent and meaning is also accepted. It is recommended that the policy define this as: (1) Any form of—or threat of—physical violence, including slaps, pushes, or other forms of physical contact as a means to maintain labor

discipline is not utilized. (2) Any form of verbal violence, including screaming, yelling, or the use of threatening, demeaning, or insulting language, as a means to maintain labor discipline is not utilized. (3) Sexual harassment of any kind. See ILO Convention 190 for additional information. Note that this is a recommendation because this convention is not one of the core ILO conventions that (at minimum) must be referenced in and inform the policy.

Excessive Working Hours (Requirement #1e): Policies that include a commitment to preventing “excessive working hours” by using the specific term, or that commit to limiting working hours in a more detailed way (e.g., as described in the Definitions section of the standard or similar) are both acceptable. For ease of reference, the definition is as follows: *Excessive working hours – More than the maximum working hours of eight hours per day, or 48 hours per week. Overtime is the number of hours worked beyond the maximum allowed by week, and international standards limit this to 60 hours per week. Rest days are a continuous period of at least 24 hours each week.* For full transparency, it is recommended that policies include both the general term and more specific defining language. Alternative language to “preventing excessive working hours” that has the same meaning is also accepted. Note that while the Fundamental Conventions of the International Labour Organization (ILO), the United Nations Guiding Principles on Business and Human Rights, and the International Bill of Human Rights—each of which must be directly referenced in and inform the policy—affirm the right to reasonable working hours, they do not provide a specific definition of “excessive working hours.” The definition in the Definitions section of the standard is based on several (non-core) ILO conventions. ILO Convention No. 1 – Hours of Work (Industry) Convention, 1919 sets the standard workweek at 48 hours, with a maximum of eight hours per day. ILO Convention 14 – Weekly Rest requires one day of rest per week. For comparison, the European Union’s Working Time Directive requires no more than 48 working hours per week (including overtime). There is an allowance (depending on country) to average across several months to a year. Averaging (e.g., as described in this directive or other similar local regulations is also allowed for Cradle to Cradle Certified). In addition, one rest day per each seven-day period is required.

Committing to preventing excessive working hours can be difficult for companies operating in countries that do not already require this by law (e.g., United States)—or do require it by law but may not be consistently enforcing it in practice (e.g., China). Existing labor contracts may allow and/or encourage excessive working hours in such locations. Both manufacturers and workers may be highly reliant on the existing system. Note that one of the checks included in Section 8.2 Monitor & Verify Performance is on working hours. In Section 8.2, the company is expected to measure its performance on this issue. If excessive working hours are occurring (as defined in the Definitions section), a corrective action plan is required and a progress report on correcting the issue will be requested at recertification. In other words, although companies are expected to commit to preventing excessive working hours per the Section 8.1 Human Rights Policy requirements, it is understood that implementing this commitment may take time and effort in some locations. Note that if living wages are not paid, preventing excessive working hours may not be possible. This is why aspirations to pay a living wage is also required to be included in policy.

Safe and Healthy Work (Requirement #1g): Evidence of implementation of each safe and healthy work sub-point (e.g., WASH, emergency preparedness and response, etc.) in final manufacturing facility operations (via checks required for Section 8.2)—is accepted as an alternative to explicitly mentioning each sub-point in the policy. In other words, the policy may commit to safe and healthy work in a general way, if supporting evidence demonstrates that all required sub-elements are being addressed/implemented in practice. The alternative is for the policy to explicitly mention each sub-point.

Living Wage (Requirement #1i): The policy is required to state the company's *Aspirations for the provision of a living wage that covers the necessities for life as defined in its local context (e.g., food, water, housing, health care, education, clothing, transportation, childcare, discretionary income)*. Ideally, this entire clause will be included in the policy. However, policies stating that the company aspires to pay a living wage (without inclusion of the additional description), and policies omitting the term living wage but still including the descriptive text or similar (i.e., noting the company aims to pay wages that *cover the necessities for life as defined in its local context (e.g., food, water, housing, health care, education, clothing, transportation, child care, discretionary income)*) are also accepted.

Reference to International and Higher Standards: Cradle to Cradle Certified requires the following information be written into all policies: *The policy must be guided by the Fundamental Conventions of the International Labor Organization and the United Nations Guiding Principles on Business and Human Rights, as well as the International Bill of Human Rights. Where national law and these international human rights standards differ, the applicant must follow the higher standard; where they are in conflict, the applicant must seek to respect internationally recognized human rights to the greatest extent possible.* This means that if local law does not permit the company to uphold a higher international standard, it must still seek to respect (i.e., commit to respect) the international standards referenced to the degree possible.

Alternative: It is best practice to include the above statements directly in the company policy to ensure full transparency. However, if a company **fully commits** to upholding all points as set out in the UNGPs within its policy, this is accepted as an alternative to also (separately) mentioning the ILO conventions and the International Bill of Human Rights. In this case, the following statement may also be omitted from the policy itself: "Where national law and these international human rights standards differ, the applicant must follow the higher standard; where they are in conflict, the applicant must seek to respect internationally recognized human rights to the greatest extent possible." This is because the UNGPs state that this is what companies should do. The commitment to the UNGPs must be explicit and comprehensive. Vague statements like "we support the UNGPs" or "the company is guided by the UNGPs" are not sufficient. It must be clear that the company fully intends to apply the UNGPs. Being only guided by the UNGPs may mean that the company does not necessarily intend to follow the higher standard when *national law and the referenced international human rights standards differ*. This means (for example), that it would be possible for a company to benefit from the use of prison labor (such as in the United States) or from workers paying recruitment fees (such as in Taiwan)—practices which are

legal in these jurisdictions, but which are regarded as lesser or conflicting with international norms against forced labor.

Formal Approval (Requirement #2): The policy is required to be formally approved by a duly empowered officer of the applicant company (or facility as relevant) or by the board of directors. Formal approval may be demonstrated by a signature (e.g., by the Chief Executive Officer, Chief Sustainability Officer, or lead legal counsel) on the policy. A signature on a list of relevant policies or other related official documents (e.g., employee handbooks) is accepted (each individual policy is not required to be signed in this case). Evidence of digital document approval is also accepted. **Public disclosure of the policy(ies) is accepted as an alternative to a signature.**

Note on the United Nations Global Compact (UNGC): Companies that have signed the United Nations Global Compact (UNGC) or state they support it are still required to meet the Section 8.1 Human Rights Policy requirements. The UNGC requires signatories to commit to 10 Principles. Principle 1 is that “Businesses should support and respect the protection of internationally proclaimed human rights”. This is further defined in guidance provided by the UNGC to require inclusion of the ILO Fundamental Conventions and International Bill of Human Rights in company policy. In other words, the UN Global Compact and Cradle to Cradle Certified have very similar requirements for human rights policies. Once the UNGC is implemented, it is expected that company policy will also meet the Section 8.1 requirements. However, the higher level commitment to the 10 principles is not sufficient on its own.

Alternative to a Company Policy: Policy of an Initiative to Which the Company Has Publicly Pledged Itself

The initiative must meet the following requirements:

- Transparent on its policy elements and members,
- Policy elements correspond to the required elements in this section, and
- Oversight and reviews of member performance.

Incomplete Policies

Applicants are highly encouraged to ensure their human rights policies are comprehensive and complete upon initial certification. However, given it can take time to obtain the internal approvals necessary to update policies, the standard provides additional time to adjust when needed. In cases where the policy or policies do not fully meet the requirements, it is required to *plan corrective actions and, at recertification, demonstrate progress on policy improvement*. Requirements for providing credible corrective action plans are included in Section 8.2 (see Certification Manual Further Explanation sub-section titled Criteria for a Credible Corrective Action Plan (CAP)).

References

- [United Nations Guiding Principles on Business and Human Rights](#) (United Nations, 2011)
- [International Bill of Human Rights](#) (United Nations, 1996)
- [Fundamental Conventions of the International Labor Organization](#)
- [ILO Conventions](#) (Full List)

- [How Businesses Impact Human Rights](#) (UNGP Reporting Framework, 2015)

Required Documentation

Achievement of the Cradle to Cradle Certified policy requirements may be demonstrated through a single applicant company policy document that applies a broad scope (e.g., policy states that it sets expectations for employees, business partners, and suppliers for cases where contract manufacturers and suppliers are included in the final manufacturing stage) and addresses all required policy elements. Alternatively, the requirements may be achieved through a collection of policy documents and similar (e.g., company policy, employee codes, collective bargaining agreements, and supplier codes).

For low-risk locations (i.e., the policy owner is not in a de facto high-risk location as defined in the Section 8.2 Monitor & Verify Performance, Further Explanation section), the C2C Certified Social Fairness Form may be used to self-assess compliance with the policy requirements. The form is available through all Cradle to Cradle Certified Conformity Assessment Bodies. When performing a self-assessment, all policy requirements still apply, including the bulleted items listed below. The difference is that facility representatives assess the completeness of policies. Underlying policy documents are not required to be submitted. The Social Fairness Form must include policy excerpts and explanations showing how each policy requirement is met. For elements missing or incomplete (if any), the form also includes a location to provide corrective action plans. Alternatively, facilities in low-risk locations may choose to submit their policy documents to a Cradle to Cradle Certified Conformity Assessment Body for review and verification.

For high-risk locations (i.e., the policy owner is in a de facto high-risk location as defined in the Section 8.2 Monitor & Verify Performance, Further Explanation section), documentation must be provided that meets the documentation requirements as listed below. The C2CPH-recognized programs and standards accepted for Section 8.2 Monitor & Verify Performance may also be accepted for achieving the policy requirements in future. Please refer to [C2CPH-Recognized Certification Programs and Standards](#) for the most recent status.

Required documentation for initial certification:

The C2C Certified Social Fairness Form, completed and signed, including the corrective action plan section (if necessary), for each final manufacturing stage facility. This is an option for policies owned by low-risk locations only.

OR,

Policy document(s) (i.e., may be covered by one or more documents) that:

- Set expectations for final manufacturing facilities at minimum.
- Explicitly include commitments to all of the required policy elements. Alternative language that has the same meaning as the required policy elements is accepted.

- Include a commitment to adhering to all local and state laws covering human rights.
- Define human rights per, and explicitly reference, the Fundamental Conventions of the International Labor Organization, the United Nations Guiding Principles on Business and Human Rights, and the International Bill of Human Rights. Alternative: Full commitment to upholding all points of the UN Guiding Principles on Business and Human Rights.
- Explicitly specify that where national law and these international human rights standards differ, the company commits to following the higher standard, and where they are in conflict, the applicant (or supplier or business partner) will seek to respect internationally recognized human rights to the greatest extent possible. Alternative: Full commitment to upholding all points of the UN Guiding Principles on Business and Human Rights.
- Are approved (i.e., signed either physically/handwritten or digitally) by a duly empowered officer of the applicant company (or facility as relevant) or by the board of directors. Evidence of public disclosure of the policy or policies is accepted as an alternative to signature.
- Sub-elements of g. (e.g., Requirement g.i. Access to water, sanitation, and hygiene (WASH)) may be absent from the policy if it is demonstrated that these sub-elements are implemented in final manufacturing stage operations. (Implementation is taken as evidence of commitment to addressing these issues in practice.) In this case, the policy will be accepted with mention of a commitment to health and safety more generally.
- For incomplete policies: Corrective action plan developed according to the Criteria for a Credible Corrective Action Plan (see Section 8.2 Bronze level 'Further Explanation' box).

Recertification: Evidence of corrective action plan closure and/or progress (if a plan was required at initial certification).

Alternative to a Company Policy: Policy of an Initiative to Which the Company Has Publicly Pledged Itself

- List of policy elements and corresponding required elements in this section,
- Evidence of company membership in the initiative, and
- Oversight or review procedure.
- All evidence listed above must be publicly available, please provide the links.

8.2 Monitor and Verify Performance

Intended Outcome(s)

Performance on upholding human rights is monitored and verified at product manufacturing facilities, ensuring that corrective actions are taken when poor performance is identified and increasing the level of assurance that risks to human rights are addressed.

Applicable Achievement Level(s)

Bronze, Silver, and Gold

Requirement(s)

Bronze level: For final manufacturing stage facilities, measure performance on implementing respect for human rights and confirm the completion of corrective actions associated with issues of high concern including child labor, forced labor, corruption/bribery, and immediate threats to life and safety. For any other poor performance issues, plan corrective actions and, at recertification, demonstrate progress on addressing the issues.

Silver level: Request data measuring performance on implementing respect for human rights from all high-risk tier 1 suppliers. At recertification, demonstrate continued efforts to obtain performance data and evidence of tracking corrective actions that may be necessary at tier 1 supplier locations.

Gold level: For components and raw materials associated with high risk of child labor, forced labor, or support of conflict, specify or certify to a C2CPH-recognized certification (if available) or equivalent that verifies high performance on these issues.

For the Bronze level:

1. Performance must be measured on implementing respect for human rights across the human rights topics that are required to be included in the Section 8.1 Human Rights Policy, at a minimum.
2. Performance data must be generated and verified by a qualified party.
3. For facilities in high-risk locations, performance data must be generated every 1.5 ± 0.5 years. For low-risk locations, performance data must be generated every three years (i.e., for the initial certification and at each subsequent recertification).
4. If identified, the following issues of high concern must be resolved prior to certification or recertification:
 - a. Child labor,
 - b. Forced labor,
 - c. Corruption/bribery,
 - d. Unauthorized subcontracting,
 - e. Missing or deficient permits (i.e., business license, building permit, and environmental permit(s) if required by local regulations),
 - f. Any immediate threat to life or safety (e.g., poor fire safety, structural safety hazard), and
 - g. Denial of access to the facility, workers, or files.
5. Performance may be measured using C2CPH's Social Fairness form, a C2CPH-recognized social audit certification or program, or equivalent.

Further Explanation

Measuring Performance

The Bronze level requirement to measure performance **applies to all final manufacturing stage facilities**. Performance is required to be measured on all of the required policy elements listed in

Section 8.1 (e.g., forced labor, discrimination, excessive working hours). In addition, performance must be measured on points #4a-g, defined in this section (Section 8.2).

Performance may be measured using the Cradle to Cradle Certified Social Fairness Form, a C2CPH-recognized social audit certification or program, or equivalent. The Social Fairness Form is primarily intended to be used to measure performance in low-risk locations. A list of documentation and other evidence that must be reviewed as part of completing this form is included in the Required Documentation box in this section (below). Information on utilizing other third-party standards to measure and verify performance is provided at the end of this Further Information box. For final manufacturing facilities in high-risk locations in particular, the use of other standards is a recommended approach for achieving the requirements in this section.

Who may Generate Performance Data

As noted above, performance data must be generated for all final manufacturing facility locations. The standard indicates that *performance data must be generated and verified by a qualified party*. Who is considered qualified depends on the risk level of the applicant's headquarters and final manufacturing facility(ies) locations per the table below. For low-risk locations, the applicant may generate their own performance data without specific qualifications required, although use of a qualified auditor is encouraged. For high-risk locations, a **qualified third-party auditor or qualified internal auditor is required**.

Table – Who is permitted to generate performance data

Who is permitted to generate performance data for final manufacturing facilities (including contract manufacturing) depends on location risk levels of the applicant's headquarters and the manufacturing facility as noted. The same approach applies for data collection from tier 1 suppliers to the final manufacturing stage of the certified products (as required for Silver level).

Location types		Who is permitted to generate data (✓)			
Applicant location type	Final manufacturing facility (including contract manufacturing/supplier) location type	Applicant	Contract manufacturer/ Supplier	Qualified internal auditor	Qualified third-party auditor
Applicant headquarters, low risk*	Applicant owned, low risk	✓	n/a	✓	✓
	Applicant owned, high risk		n/a	✓	✓
	Contract manufacturing/supplier, low risk	✓	✓	✓	✓
	Contract manufacturing/supplier, high risk			✓	✓
	Applicant owned, low risk		n/a		✓

Applicant headquarters, high risk*	Applicant owned, high risk		n/a		✓
	Contract manufacturing/supplier, low risk		✓	✓	✓
	Contract manufacturing/supplier, high risk			✓	✓

*Location risk level is defined below (see heading “High-risk Locations”)

Qualified third party and qualified internal auditors are defined as follows:

- **Qualified third-party auditor:** An individual employed by a third-party social audit or social compliance firm possessing valid social audit credentials such as certification from the [Association of Professional Social Compliance Auditors \(APSCA\)](#). Qualified third-party auditors are not permitted to provide other services to the applicant company, as this constitutes a conflict of interest. **Note:** See section on using third-party standards below. The auditors for currently recognized third-party standards meet this requirement.
- **Qualified internal auditor:** An individual employed directly by the applicant company, who meets all of the following criteria:
 - Employed in a dedicated social compliance auditor role.
 - Possesses an accepted social audit credential (e.g., APSCA, WRAP, SA8000 lead auditor training, or similar).
 - At least three years of social auditing experience.

High-risk Locations

The following locations are de facto high risk:

Afghanistan, Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Belize, Benin, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, China, Colombia, Comoros, Congo (Democratic Republic), Congo (Republic), Cook Islands*, Côte d’Ivoire, Cuba, Djibouti, Dominican Republic, Ecuador, Egypt (Arab Republic), El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Gabon, The Gambia, Georgia, Ghana, Greece, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Iran, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Korea (Democratic Republic/North Korea), Kosovo, Kuwait, Kyrgyz Republic, Lao PDR, Lebanon, Lesotho, Liberia, Libya, Madagascar, Malawi, Malaysia, Maldives, Mali, Martinique, Mauritania, Mexico, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nauru, Nepal, Nicaragua, Niger, Nigeria, Niue*, North Macedonia, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Puerto Rico, Romania, Russian Federation, Rwanda, Réunion, São Tomé and Príncipe, Saudi Arabia, Senegal, Serbia, Sierra Leone, Solomon Islands, Somalia, South Africa, South Sudan, Sri Lanka, Sudan, Suriname, Eswatini (formerly Swaziland), Syrian Arab Republic, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Türkiye (formerly Turkey), Turkmenistan, Uganda, Ukraine, Uzbekistan, Vanuatu,

Venezuela, Vietnam, Virgin Islands (U.S.), West Bank and Gaza, Yemen (Republic), Zambia, Zimbabwe.

De facto high-risk locations are defined as countries that fall below the 65th percentile when taking an average of the six World Bank [Worldwide Governance Indicators](#). The approach for identifying de facto high-risk locations for Cradle to Cradle Certified is based on the Social Accountability International (SAI) method of identifying locations that require enhanced auditing procedures. The SAI method itself relies on the World Bank's Worldwide Governance Indicators referenced. C2PCII will update the list of de facto high-risk locations when the World Bank releases new indicators (approximately annually). The list published in this document is based on the indicators for 2024 (published in 2025) and remains applicable until updated by C2PCII. Applicants and assessors are not required to consult the latest indicators independently to determine risk level. Furthermore, the list that was active at the time of certification may be applied throughout the certification period.

In future, C2PCII may add additional nuance to the risk designations, for example to capture high-risk industries operating in locations otherwise defined as low risk.

Confirming that Corrective Actions have been Completed for Issues of High Concern

Once performance has been measured as required for Bronze level, corrective actions are required as follows: *confirm the completion of corrective actions associated with issues of high concern including child labor, forced labor, corruption/bribery, and immediate threats to life and safety*. This means that if child labor, forced labor, corruption/bribery, immediate threats to life and safety, or any of the other issues listed in #4a-g in this section are identified when measuring performance, the facility must demonstrate that corrective actions have been taken and the issue has been resolved prior to certification.

Note that corrective actions are commonly tracked in a Corrective Action Plan (CAP). CAPs are developed to document necessary improvement and track actions taken. CAPs are commonly developed as a required summary of non-compliances in factory audit reports. They are often documented in a spreadsheet to outline specific issues identified and track relevant progress thereafter. For applicants utilizing third-party auditors to measure performance, this is where to look to confirm that corrective actions have been taken on the issues noted above and the applicable corrective action plan closed (see below for additional information).

Developing Corrective Action Plans (CAPs) and Demonstrating Progress (for Other Issues)

Once performance has been measured, corrective action plans must be developed per the following requirement: *For any other poor performance issues, plan corrective actions and, at recertification, demonstrate progress on addressing the issues*. 'Other poor performance issues' refers to performance on the required policy elements, other than those identified as 'issues of high concern'. For example, this includes poor performance on discrimination, working hours, freedom of association, wages, and health and safety concerns that do not constitute immediate threats.

Criteria for a Credible Corrective Action Plan (CAP)

All CAPs are required to include the following elements:

- Reference to requirement,
- Reference to local or national law violated (if relevant),
- Description of the issue/violation/non-compliance,
- Supporting evidence,
- Perceived root cause (this could be based on cost, lack of awareness, management system failure, industry norm, physical site limitation, training deficit, government limitation, customer requirement or lack of oversight, etc.),
- Recommendation for improvement OR agreed upon corrective action to take (**Note:** per the OECD, actions are expected to be proportionate to the severity of the harm),
- Management comments,
- Person responsible (assigned and identified in the document),
- Specific action/improvement plan,
- Timeline for completion, and
- Management sign-off.

Demonstrating Progress: Completion/Closure of CAPs

The expectation is for CAPs to be closed within the time allotted for completion (e.g., 30-90 days is common).

However, evidence of closure may be provided upon recertification if an audit was conducted just prior to certification and the time for completion has not yet occurred. If an issue is not resolved at recertification, the reason provided must be adequate—e.g., root cause of discrimination may be based on decades-long practices embedded in country cultural practices, etc. In these scenarios, while remediation is not required for the first round of recertification, progress towards remediation is required.

Utilizing Third-party Standards to Measure Performance

Companies may utilize a variety of other tools, protocols, and standards to measure performance at facilities. However, be aware that not all standards have the same focus and/or level of detail—including details related to the issues contained in requirements for the human rights policy (Section 8.1) and issues of high concern listed in requirements #4a-g of this section. For facilities certified to (or audited per) some social standards and/or audit protocols, many of the Section 8.2 Monitor and Verify Performance requirements for the Bronze level (including use of a qualified auditor as required for de facto high-risk locations) will have been met.

The Section 8.2 Monitor and Verify Performance requirements have been compared to several facility level standards (e.g., Social Accountability International SA8000). These standards and protocols are listed in the [C2CPII-Recognized Certification Programs and Standards](#) document, available on C2CPII's website. Please refer to this document for the full list of recognized standards and protocols that may be used to achieve the Section 8.2 requirements, including a list of any Section 8.2 requirements that are not covered by each (see column titled 'Recognition Notes' in the linked sheet).

When employing a recognized standard or program to measure performance at a facility, the following are required:

1. For Cradle to Cradle requirements that are not covered within the standard used (as noted in [C2CPII-Recognized Certification Programs and Standards](#)), individual answers/responses and comments must be provided in the Social Fairness Form where applicable. This evidence may be supported by evidence and observations collected during a manufacturing facility site visit conducted for Cradle to Cradle Certified (see Appendix 1).
2. The certificate and report that resulted from use of the other standard must be submitted and verified to be valid (e.g., by checking an applicable registry on the certifying body's website).
3. All violations and/or "non-compliances" identified in the reports and the associated corrective action plans (CAPs) must be reviewed to ensure that issues of high concern as defined per Cradle to Cradle Certified have been resolved, and that credible CAPs (as defined in guidance above) have been created for other issues. Note that non-compliances with a third-party standard is not necessarily the same as non-compliance with the Cradle to Cradle Certified requirements.

Required Documentation

Bronze Level

- Applicant headquarters location, list of final manufacturing stage facilities and their locations, and associated risk levels.
- Evidence that performance has been measured for all final manufacturing stage facilities on the required policy elements (Section 8.1 Human Rights Policy, #1a-j) and issues of high concern (Section 8.2 #4a-g).
- If employing the Cradle to Cradle Certified Social Fairness Form for achieving this requirement: The fully completed form(s) signed by the responsible facility representative(s) conducting the audit(s). Separate forms (or form tabs) must be completed for each facility. For scenarios where it is indicated that the applicant or contract manufacturer/supplier is qualified to generate performance data (see Table 'Who is Qualified' in the Further Explanation Box above), a facility representative may self-assess a facility's performance using this form. Specialized social audit qualifications and supporting documentation (other than the completed form) are not required*. C2CPII reserves the right to request the underlying evidence if concerns about compliance surface during the course of the application review (or otherwise).
- If employing third-party standard(s) or protocols for achieving this requirement: Certificate(s), audit report(s), corrective action plan(s), and evidence of gap closure (see guidance above).
- For final manufacturing stage facilities in de facto high-risk locations, evidence of qualifications of the third party of internal auditor generating the performance data (i.e., name and credentials).
- Evidence of corrective actions taken (for issues of high concern) or corrective action plans (for other issues).

- Recertification: Evidence of corrective action plan closure and/or progress. **Note:** These requirements existed in Versions 4.0 and 4.1. Products transitioning to Version 5.0 from Version 4.0 or 4.1 must meet recertification requirements.
- Recertification (de facto high-risk locations): Evidence of monitoring having occurred 1.5 ± 0.5 years over the prior certification period.

***The following evidence is required to be evaluated** by the facility representative(s) completing the C2C Certified Social Fairness Form (assuming a low-risk location where the facility will self-assess) for each policy element (Section 8.1 Human Rights Policy #1a-j) and issue of high concern (Section 8.2 #4a-g). These documentation and other evidence review requirements are also listed in more detail within the Social Fairness Form.

For procedural requirements, in any case where a procedure is not written down (e.g., in a quality manual or similar formal company document), because it is built into software or similar that is required to be used to carry out a related task (e.g., hiring and related age verification), this implicit procedure and how it is carried out in practice may be described in the Social Fairness Form. A document with a written step-by-step procedure is not required in these cases. For example, age verification may be built into hiring and payroll software making it impossible to hire without verifying age while simultaneously not necessary to document the full procedure beyond specifying that a certain software system be used and training relevant staff to use it. In this case, this implicit procedure for checking age may be described in the form.

The aim should be to always review comprehensive documentation, encompassing the items listed below to the extent possible. However, if documentation is unavailable for aspects that (1) aren't 'issues of high concern' and (2) aren't already mandated by other sections of the standard, the process of acquiring or developing such documentation may be incorporated into a corrective action plan. For instance, working hours may not be tracked for certain employee classifications making it impossible to review the requested working hours and rest day data. In such instances, establishing a system to monitor this information (and then gathering the necessary data over time) may be part of a corrective action plan. Such plans are expected to be closed per the associated timeline. Closure will be checked at recertification.

a. Discrimination

- Procedures for implementing anti-discrimination in the workplace. Examples of relevant procedures include:
 - Job description and language screening procedure, including (a) Guidelines that emphasize objective qualifications, (b) requirement that job descriptions be screened for discriminatory terms (e.g., "young", "fit") prior to posting.
 - Standardized interview procedure, including structured interviews using the same questions for all applicants (with the aim of avoiding bias).
 - Standardized promotion eligibility procedure requiring that promotions are based on clear, performance-based criteria only.
 - Training procedure for all staff and management receive regular trainings on anti-

discrimination, unconscious bias, and cultural awareness.

- Evidence that an individual's characteristics (e.g. gender, ethnic origin, etc.) are not used as the basis of decisions regarding employment or discipline.

b. **Harassment and abuse:**

- Procedures that aim to ensure the workplace is free of harassment and abuse. Definitions of harassment and abuse should (i.e., it is recommended) include: (1) Any form of—or threat of—physical violence, including slaps, pushes, or other forms of physical contact as a means to maintain labor discipline is not utilized. (2) Any form of verbal violence, including screaming, yelling, or the use of threatening, demeaning, or insulting language, as a means to maintain labor discipline is not utilized. Examples of relevant procedures include:
 - Harassment and abuse documentation and disciplinary procedure, including procedure for tracking/documenting incidents of harassment or abuse, investigating, and steps for taking disciplinary action when needed.
 - Training procedure for regular, mandatory training for all levels of staff on acceptable behavior and how to recognize/report harassment and abuse.

c. **Forced or compulsory labor:** See section below relevant to issues of high concern.

d. **Child labor:** See section below relevant to issues of high concern.

e. **Excessive working hours**

- Procedures for implementing the commitment to prevent excessive working hours. Examples of relevant procedures include:
 - Procedure for ensuring that all contracts include work hour and rest day expectations aligned with national law, contract, or international standards, whichever is higher. (e.g., procedure defining this within the local regulatory context and explaining how this should be checked by trained human resources personnel).
 - Procedure setting out steps for tracking working hours and rest days and for using these data to inform eligibility for additional shifts or overtime.
 - Procedure for training and providing time tracking tools to salaried workers to discourage overwork (or requiring time tracking for these employees)
 - Procedure establishing a right to disconnect to ensure workers can fully log off after hours. (e.g., Company procedure that restricts or disables after-hours emails, meetings, and calls and sets expectations for management to respect this and set an example).
 - Subcontractor evaluation procedure, including selection criteria and contract clauses that require realistic product delivery timelines and prohibit excessive working hours.
- Documentation demonstrating that all legally required time and attendance records are complete, accurate, and up to date. These records should be maintained by the employer for at least 12 months, or longer if required by law.
- Data shows that overtime hours and rest days are tracked.
- Data shows that regular working hours for all employees are within allowable limits under applicable laws or agreements, whichever is stricter and that all **employees are provided with at least one day off (24 hours) in every seven-day period.**

For final manufacturing stage facilities with up to 100 workers, data for at least 20% of employees must be provided. For facilities with more than 100 workers, data for 10 + the square root of the total number of workers must be provided. (Alternatively, an approach used by a C2CPII-recognized social standard or protocol may be referenced).

- Review data for at least three pay periods per employee.
- Review data for all pay grades and for peak work period(s).
- If there are several locations, indicate what the allowable limits are by location and parse the data by location.
- Data shows that working hours are not excessive per the following definition: Maximum working hours of eight hours per day, or 48 hours per week. Overtime is the number of hours worked beyond the maximum allowed by week, and international standards limit this to 60 hours per week. Rest days are a continuous period of at least 24 hours each week. National laws can vary from international standards. Key References: International Labor Organization (ILO) Convention 1 – Hours of Work (Industry), ILO Convention 30 – Hours of Work (Commerce, Offices), ILO Convention 116 – Reduction of Hours of Work, ILO Convention 14 – Weekly Rest.

f. **Freedom of association and collective bargaining:**

- Procedures for ensuring support of freedom of association and collective bargaining. Example: Collective bargaining engagement procedure sets out rules of engagement for management and workers groups and prohibits interference or retaliation. Procedure should demonstrate respect for freedom of association and collective bargaining, and that discrimination, harassment, intimidation, interference, or retaliation for efforts to freely associate or bargain collectively is not tolerated. Note that collective bargaining agreements support this point but are not themselves considered procedures.
- Evidence that access is granted to worker's representatives from worker's organizations to all workplaces in the facility, where such access is necessary to enable them to carry out their representation. (ILO R143 - Workers' Representatives Recommendation, 1971 (No. 143), Article 12).
- Where a collective bargaining agreement (CBA) is in place, documentation for existing or past CBAs are provided as evidence that these records are kept on file.
- Where freedom of association and the right to collective bargaining are restricted by law, evidence that employees are free to join (or not join) legal employee organizations without interference and there is not refusal to recognize such organizations. This could be documented in a policy statement and records of existing employee organizations in existence.

g. **Safe and healthy work:** Documentation of compliance with applicable laws and regulations governing the work environment, including the following. This may include copies of past health and safety reports, preferably conducted by an internal audit or third-party audit firm. Alternatively, certain points may be directly checked and verified visually (e.g., it is possible to directly check if eyewash stations are currently functional) when completing the Social Fairness form. Provide this information for each final manufacturing stage facility separately.

i. Access to water, sanitation, and hygiene (WASH):

- Employees have access to drinking water.
- There is a sufficient number of toilets consistent with local law per floor and gender; when local law requirement does not exist, the employer should have at least one toilet for every 25 for both male and female employees respectively (recommendation of World Health Organization [WHO]).
- Toilets are maintained clean and provide appropriate privacy (toilets are functioning, regularly maintained and clean, toilet paper or other hygienic option available, stalls have doors, may be locked from the inside, are separate for each sex or designed for a single individual to use at a time.
- Toilets are freely accessible at any time as needed by employees or, at a minimum, readily available upon request. Toilets are accessible to employees with reduced mobility.
- Portable toilets (if any) are vented and equipped with lighting.
- Employees have access to clean water for washing within nearby proximity to toilets.

ii. Emergency preparedness and response:

- Compliance with all applicable laws and regulations governing 'Emergency Preparedness'.
- The facility maintains all fire safety certificates, licenses, and inspection records as legally required. This is also listed as an "issue of high concern".
- There are sufficient numbers of emergency exits at the workplace (production floors, office areas, warehouse, etc.). This is also listed as an "issue of high concern".
- Emergency exits are clearly marked with illuminated exit signs.
- Emergency exits are accessible and free from obstruction during working hours (including overtime).
- Emergency exits are unlocked during working hours (including overtime). This is also listed as an "issue of high concern".
- Fire escape and main exits are discharged directly to the exterior of building.
- Fire and emergency evacuation plans are prominently posted on every floor and work area as well as near exits and stairways.
- Aisles, stairs, and passageways are kept clear at all times.
- Evacuation drills are conducted regularly, at least once per year or more often where required by law.
- The facility provides first aid arrangements for the treatment of acute work-related accidents and emergencies on site by trained first aid personnel.

iii. Hazardous materials handling procedures:

- Compliance with all applicable laws and regulations governing 'Chemical and Hazardous Substances'.
- An inventory of chemical and hazardous substances used in the workplace is maintained.

- Chemicals used at the workplace are registered for the intended use when applicable. All local safety standards and applicable laws are adhered to.
 - Material safety data sheets (MSDSs) are prominently posted in both storage and use zones and maintained in languages understood by workers.
 - Chemicals and hazardous substances are properly labelled as per label instructions of local safety standard and MSDSs are maintained.
 - Appropriate, functioning Personal Protective Equipment (PPE) is provided to workers free of charge. This is also an "issue of high concern".
 - Appropriate, functioning Personal Protective Equipment (PPE) is worn by workers according to posted signage. This is also an "issue of high concern".
 - There are functioning emergency eyewash station and/or showers provided where corrosive chemicals or high volumes of solvents are handled and used.
 - Protective measures are in place to protect employees from exposure to mineral dust when relevant (e.g., relevant strategies to reduce dust exposure in textile production include wet processing, dust extraction by suction, and separation of dusty and non-dusty workspaces).
 - Employees who are involved in handling, clean-up and disposal of chemicals and hazardous substances received regular training on emergency response plans and actions (with training records maintained).
- iv. **Management systems that address health and safety risks:** A valid ISO 45001 certificate, or copies of past health and safety reports, preferably conducted by an internal audit or third-party audit firm, to identify any type of health and safety violations. This must include evidence of/that:
- There is a designated management representative responsible for health and safety as per legal requirements.
 - Records are kept of health and safety violations that have occurred, actions taken to correct any issues, and whether corrective action plans have been completed. This is also listed as an "issue of high concern".
 - Appropriate training is provided for managers on how to implement the health and safety management system.
 - There is a system to identify and monitor laws, regulations, and customer requirements that apply to the workplace. The most current version(s) of applicable laws, regulations, and customer requirements for health and safety management systems (if any) must be available for review.
- v. **Appropriate building construction, electrical, and fire safety:**
- There are no indications of possible structural collapse on the interior or exterior of buildings, such as large visible cracks or sagging in walls and floors. (This is also listed as an "issue of high concern").
 - Compliance with all applicable laws and regulations governing 'Building Safety', 'Electrical Safety', and 'Fire Safety'.
 - All legally required building or construction certificates/reports/permits are current

and available for review. (This is also listed as an 'issue of high concern')

- Building inspections are conducted on a regular basis as per standard of practice or country law.
- Where required by law, maximum occupancy signage is clearly posted within each room, near each entrance. Maximum occupancy is within building permit requirements.
- There are sufficient protections for building roof and floor opening preventing falls and accidents.
- Suitable temperature control and ventilation systems are present and functioning.
- Electrical equipment has appropriate safety warning labels.
- Electrical panels/control panels/distribution boards are easily accessible/unblocked.
- Electrical wires and outlets are in safe conditions (e.g., no unprotected wires, etc.).
- High voltage areas and generator areas are restricted to authorized personnel only.
- The workplace has a qualified professional (electrician, hired or outsourced) to maintain electrical system on regular basis.
- There is a suitable fire detection and emergency alarm system covering the facility, and as required per local or national law.
- If applicable, emergency alarm system is clearly designated (visible signs), unobstructed, and audible throughout the entire workplace. The system is inspected regularly and tested in coordination with fire drills.
- There is a functioning emergency lighting system.
- Fire extinguishers shall be sufficient in numbers as legally required and maintained in good condition.

h. Legal minimum wage and all benefits including employer contributions for social security benefits and services:

- Procedures regarding wages are to be paid at least at minimum wage or industry wage as agreed with a collective bargaining agreement, whichever is higher.
- Procedures regarding that overtime hours are paid at a premium as legally required or by contractual agreement, whichever is higher.
- Procedures to provide all legally mandated benefits to eligible workers, including all legally mandated maternity leave benefits and protections, legally mandated breaks, and that aim to ensure employees are paid correctly for all legally required paid time off.
- Documentation demonstrating that all legally required payroll documents, journals, and reports are provided, complete, accurate, and up to date. These records should be maintained by employer for at least 12 months, or longer if required by law. They should include correct and accurately calculated legal withholdings in employee pay records, such as taxes, social security, pension, or healthcare from employee wages as required by law.

i. **Living wage:** This is aspirational at Bronze level and is therefore recommended for inclusion in performance measurement but is not required. See Section 8.7 for additional information.

j. **Fair and ethical business practices, including anti-corruption/bribery:** See section below relevant to issues of high concern.

***The following evidence is required** to be reviewed per issue of high concern (Section 8.2 Monitor & Verify Performance #4a-g):

- a. **Child labor:** Written copy of its age verification procedures; a description of training procedures for staff responsible for hiring; a review of randomly selected employee files to verify age was appropriately verified with a government-issued ID.
For final manufacturing stage facilities with up to 100 workers, at least 20% of files must be checked. For facilities with more than 100 workers, at least 20 files must be checked. Applicants in low-risk locations may conduct this review themselves and submit a summary of the methods and results, including indication of how many files were reviewed, the company locations that they represent, percentage of employees this represents, and if any issues were identified. Employee files are not required to be submitted.
- b. **Forced or compulsory labor:** Sample of employee contracts to show they include all legally required employment terms. For final manufacturing stage facilities with up to 100 workers, at least 20% of contracts to be checked. For facilities with more than 100 workers, at least 20 files must be checked. Applicants in low-risk locations may conduct this review themselves and submit a summary of the methods and results, including indication of how many contracts were reviewed, the company locations that they represent, percentage of employees this represents, and if any issues were identified. Employee contracts are not required to be submitted.
Note: If recruitment fees are identified or have been in the past, third-party documentation indicating fees were fully repaid to workers must be reviewed.
- c. **Corruption/bribery:** Written procedures that document commitment to the anticorruption and bribery process, including documented consequences for violating the policy. Copies of training content and training schedules to ensure all employees understand the policies and procedures. Existence of whistleblowing channels to support reporting issues. If the audit revealed instances of corruption or bribery, proof of corrective measures taken to resolve these issues is necessary. These corrective actions must go beyond merely having policies, procedures, or training.
- d. **Unauthorized subcontracting:** Written policies, procedures, and records that require disclosure and tracking of subcontractors to customers as part of the customer's approval process. Examples include emails to customers requesting permission to subcontract. Note also that the Social Fairness Form provides an option to indicate that subcontractors are not used and therefore the point is not applicable. A signature is required on the form.
- e. **Missing or deficient permits** (i.e., business license, building permit, and environmental permit(s) if required by local regulations): All valid permits required by local regulations. If there is a delayed permit due to longer governmental review periods, the applicant must provide documentation verifying it has requested the permit. If building permits are not available, evidence of inspection by a qualified third party (e.g., structural engineer). For rented facilities, rental agreements may be provided instead of building permits.

f. **Any immediate threat to life or safety** (e.g., poor fire safety, structural safety hazard. Note that some issues are repeated here from other lists above):

- There are no indications of possible structural collapse on the interior or exterior of buildings, such as large visible cracks or sagging in walls and floors.
- There are a sufficient number of emergency exits at the facility (production floors, office areas, warehouse, etc.).
- Emergency exits are unlocked during working hours (including overtime).
- The facility maintains all fire safety certificates, licenses, and inspection records as legally required.
- Appropriate, functioning Personal Protective Equipment (PPE) is provided to workers free of charge.
- Appropriate, functioning Personal Protective Equipment (PPE) is worn by workers according to posted signage.
- Specialized machinery and equipment have all required and up-to-date licenses/permits (forklift, cargo lift, boiler, compressor, etc.).
- Specialized equipment operators (forklift, cargo lift, boiler, electrician, hot work [e.g., welding], etc.) are licensed where legally required and trained in safety operating procedures.
- Points of operation and other potentially dangerous parts are operated with proper machine guards and safety features.
- Emergency stop buttons and lockout/tagout systems are available and functional.
- Compliance with all applicable laws and regulations governing employee protection and machine safety.
- Documentation of actions taken to correct violations recorded, and whether those corrective action plans have been completed.

g. **Denial of access to the facility, workers, or files:** Written policies that document the company's commitment to transparency and maintaining all appropriate documentation for review by its customers (for contract manufacturers/suppliers) and/or qualified parties (i.e., the social auditors required to conduct the performance evaluation for high-risk locations).

Documentation of communication regarding these expectations. For applicants and facilities in low-risk locations, providing access to a Cradle to Cradle Certified Conformity Assessment Body also serves as sufficient evidence.

Alternatives for demonstrating conformance (low-risk sites):

The list of required documentation to review and points to verify above represents a best-case documentation scenario and assumes that applicants have already been tracking this information, e.g. though routine health and safety monitoring and reporting. However, there will be cases where this information will be comprehensively gathered for the first time for the purposes of Cradle to Cradle Certified. For low-risk locations and for topics/issues that may be directly and readily observed (e.g., cleanliness of toilets, presence of fire extinguishers), a Cradle to Cradle Certified Conformity Assessment Body (CAB) may verify these points during the manufacturing facility site visit (Site Visit requirements

are described in Appendix 1). In this case, the CAB representative will take photos identifying any problem areas during the site visit (e.g., photos of a blocked emergency exit). The Social Fairness Form has a column to indicate which points may be verified visually during the site visit directly. In addition, applicants may choose to provide the documentation listed above for the assessor to review (rather than reviewing it themselves). In this case, the assessor will indicate where there are gaps or other issues and where CAPs are required. The completed form must be signed by the facility representative in all cases.

Silver level: Request data measuring performance on implementing respect for human rights from all high-risk tier 1 suppliers. At recertification, demonstrate continued efforts to obtain performance data and evidence of tracking corrective actions that may be necessary at tier 1 supplier locations.

For the Silver level:

1. Social audit performance data must be requested from all high-risk tier 1 suppliers providing components and materials that are subject to review (as defined in Material Health Section 4.1).
2. Performance must be measured on implementing respect for human rights across the key human rights topics as listed for Bronze level #1 at minimum. If data are outdated or not available, the applicant or facility owner must arrange for a social audit to be conducted.
3. Audits must be performed by qualified personnel with a social audit credential and no conflicts of interest related to the supplier.
4. Data must be generated within the past 24 months.
5. If identified, the following issues of high concern must be resolved prior to certification or recertification:
 - a. Child labor,
 - b. Forced labor,
 - c. Corruption/bribery,
 - d. Unauthorized subcontracting,
 - e. Missing or deficient permits (i.e., business license, building permit, and environmental permit(s) if required by local regulations),
 - f. Any immediate threat to life or safety (e.g., poor fire safety, structural safety hazard), and
 - g. Denial of access to the facility, workers, or files.
6. Corrective actions must be planned or ongoing for any other poor performance issues identified. At recertification, the applicant must demonstrate progress on:
 - a. Encouraging suppliers to complete corrective actions,
 - b. Tracking whether timelines are adhered to, and
 - c. Taking steps to suspend or terminate relationships with suppliers that fail to make progress on remediation.

Further Explanation

Identifying Suppliers Subject to the Silver Level Requirements (Risk Level and Tier)

High risk is defined for tier 1 suppliers at the Silver level in the same way as for the final manufacturing stage facility locations at the Bronze level. Please see the Further Explanation box for Bronze level in this section (Section 8.2) for the list of de facto high-risk locations. All tier 1 suppliers in these locations are considered high risk.

Tier 1 suppliers are defined as direct suppliers to the final manufacturing stage of the product (i.e., this requirement applies only to the supply chain of the certified product; however, note that “tier 1” as defined for Cradle to Cradle Certified may be tier 2 for the applicant company in cases where contract manufacturing is carrying out the final manufacturing stage of the product). These (actual tier 2) suppliers are in scope for this data request.

Requesting Performance Data from High-risk Tier 1 Suppliers

The Silver level requires that applicants request performance data for all high-risk tier 1 suppliers. Performance data for tier 1 suppliers may be generated through a new social audit or provided from existing information that was recently generated for the supplier’s facility by a qualified party. The same requirements for generation of performance data as described for Bronze level apply, including the requirements for use of other third-party standards and audit protocols (e.g., SLCP, SA8000, BSCI).

When requesting performance data from tier 1 suppliers, it will be necessary to specify that:

- Performance must be measured on the required policy elements (per Section 8.1) and the issues of high concern per this section (Section 8.2).
- For any poor performance issue identified, corrective action plans are required.
- The data must have been generated in the past 24 months.
- The data must be generated by a qualified third party (i.e., a third-party APSCA auditor that does not provide any other paid services to the supplier*).
- The request could be met via certification to a third-party standard (e.g., SA8000) or audit according to a social auditing protocol (e.g., SLCP, BSCI), including via provision of a certificate and audit report that may already be available.

*See definition of a qualified third-party auditor and the table defining who is permitted to generate performance data in the Further Explanation box above (Section 8.2 Bronze level). The same requirements apply for Silver level. Note that there is also an option for the data to be generated by a qualified internal auditor for all applicants (regardless of locational risk level for corporate headquarters), if such an auditor is available. In this case, the request to the supplier would be to allow the applicant company’s qualified internal auditor to conduct an audit rather than requesting the data as listed above.

When Social Audit Performance Information for High-risk tier 1 Suppliers is not Available

Where applicant companies do not initially have access to social audit performance information, the Silver level can still be achieved as long as data have been requested. Upon learning that data are not available or are outdated, a social audit by a qualified party must be arranged. Qualified parties must not have a conflict of interest related to the supplier. Conflicts of interest include other paid services provided to the supplier such as separate engagement already taking place in the form of corrective action management, in-factory training, or other support.

Demonstrating Progress

For recertification it is required that applicants *demonstrate continued efforts to obtain performance data and [provide] evidence of tracking corrective actions that may be necessary.*

For recertification, it is expected that the performance data requested at the time of the prior certification will have been obtained. In addition, where corrective actions were found to be necessary based on the data received, the applicant company is expected to encourage and track completion of corrective actions. In addition, if there have been tier 1 supplier changes since the prior certification, data must have been requested from these additional suppliers. For cases where data has not yet been obtained, progress is also defined as having scheduled a date on which an audit will be conducted in the near future, or suppliers having provided self-assessment questionnaires. However, if a supplier has not provided the requested information within one certification cycle (a three-year period), the applicant company must take steps to suspend or terminate relevant high-risk tier 1 supplier relationships—this is a sign of lack of trust and transparency between the buyer and manufacturer and does not indicate responsible supply chain management. Further, note that any issues of high concern (which may be identified via the required monitoring) must be resolved prior to certification or recertification. Therefore, disengaging (i.e., suspending or terminating the relationship) with the supplier(s) where these issues occurred may be necessary if the certification will be retained.

If the company decides to disengage from a supplier, it should:

- Comply with national laws, international labor standards, and terms of collective bargaining agreements (if relevant).
- Provide information supporting the business decision to the supplier's management and supplier's trade union.
- Give the supplier sufficient notice of the end of the relationship.
- Demonstrate its own efforts to mitigate the identified adverse impact for as long as the company has an ongoing relationship with the supplier while disengaging.

Note: These requirements existed in Versions 4.0 and 4.1. Products transitioning to Version 5.0 from Version 4.0 or 4.1 must meet recertification requirements.

Required Documentation

Silver Level (Minimum for Initial Certification)

- A list of tier 1 suppliers by location and associated de facto risk levels. **Notes:** Tier 1 refers to direct suppliers to the final manufacturing stage of the product. If supplier locations are listed in the space provided in the C2C Certified Bill of Materials form, the (de facto) risk levels will be automatically determined.
- Evidence of communication requests (i.e., an example) to tier 1 suppliers in high-risk locations (e.g., emails or other formally documented communication) and supplier responses. Reminder: Tier 1 is defined as the direct suppliers to the final manufacturing stage of the certified product.

Once data have been received (this may occur for the initial Silver level certification or for recertification), the same evidence as is required for the Bronze level (i.e., for final manufacturing facility performance measurement), is also required for tier 1 suppliers as follows:

- Evidence that performance has been measured on the required policy elements (Section 8.1 Human Rights Policy, #1a-j) and issues of high concern (Section 8.2 #4a-g) within the past 24 months. See detailed evidence/documentation requirements* in the Bronze level Further Information box.
- If employing third-party standard(s): Certificate(s), audit report(s), corrective action plan(s), and evidence of gap closure (see the Bronze level Further Information box for additional information). In this case the list of documentation required per the bullet above is not directly required because this will have been covered/examined as part of the third-party audit.
- Evidence of qualifications of the qualified third part(ies) or internal auditor generating the performance data (i.e., name and credentials of auditor).
- Evidence of corrective actions taken (for issues of high concern) or corrective action plans (for other issues).

Silver Level Recertification

- Evidence of progress on obtaining social audit data from suppliers (e.g., social audit reports that have been obtained over the past three years or self-assessment questionnaires submitted by suppliers). **Note:** Provision of a self-assessment questionnaire counts as progress only once.
- Evidence of corrective action plan (CAP) tracking by the applicant as well as CAP closures and/or other progress. For example, signed and closed CAP report(s) and copies of communications encouraging suppliers to adhere to timelines and take correction actions.
- If any suppliers have failed to make progress on providing data or on corrective actions: Evidence of the applicant company's written policy or criteria for suspending or terminating relationships with suppliers and evidence of action taken if/when this situation has arisen. This may include email communications to suppliers about warnings, timelines, and updates to contract terms to suspend or terminate relationships.

Gold level: For components and raw materials associated with high risk of child labor, forced labor, or support of conflict, specify or certify to a C2CPH-recognized certification (if available) or equivalent that verifies high performance on these issues.

For the Gold level:

1. High-risk components and raw materials are defined as:
 - a. Materials and components from source countries where there is reason to believe that child labor or forced labor is involved, and
 - b. Tin, tantalum, tungsten, and gold from conflict-affected and high-risk areas.
2. A C2CPH-recognized certification or an equivalent alternative to certification is required for all high-risk components and raw materials subject to review (as defined for Material Health), if a C2CPH-recognized certification exists and certified material is available.
3. At recertification, if a C2CPH-recognized certification does not exist, or certified material is not available, and the applicant has not been able to institute an alternative, the applicant must:
 - a. Undertake a traceability exercise with the goal of tracking the material from the direct supplier through all stages of processing to initial production or extraction,
 - a. Establish how to mitigate the negative human rights impacts, and
 - b. Participate in a stakeholder initiative actively working to address the issues.

Further Explanation

Identifying Materials and Components that are High Risk for Child and/or Forced Labor

For determination of *Materials and Components from source countries where there is reason to believe that child labor or forced labor is involved*, the most recent version of the [U.S. Department of Labor's List of Goods Produced with Child Labor or Forced Labor](#) must be used. This resource is updated annually in the spring and available on the U.S. Department of Labor's website.

Identifying Tin, Tantalum, Tungsten, and Gold from Conflict-Affected and High-Risk Areas

Determination of *Tin, tantalum, tungsten, and gold from conflict-affected and high-risk areas* must be based on the most recent version of the [OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas](#).

Note: The OECD does not provide a country-specific list, but it does require particular due diligence processes.

The OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High Risk Areas has a specific *Supplement on Tin, Tantalum and Tungsten* which is the appropriate reference material. It states that companies are recommended to "establish a system of internal control over the minerals in their possession (chain of custody or traceability) and establish on-the-ground assessment teams, which may be set up jointly through cooperation among upstream companies while retaining individual responsibility, for generating and sharing verifiable, reliable, up-to-date information

on the qualitative circumstances of mineral extraction, trade, handling and export from conflict-affected and high-risk areas". The Supplement is meant to apply to actors operating in a conflict-affected and high-risk area, or potentially supplying or using tin, tantalum, or tungsten from a conflict-affected or high-risk area. It defines the following red flags to trigger use of the OECD due diligence standards and processes:

"Red flag locations of mineral origin and transit:

- The minerals originate from or have been transported via a conflict-affected or high-risk area.
- The minerals are claimed to originate from a country that has limited known reserves, likely resources or expected production levels of the mineral in question (i.e., the declared volumes of mineral from that country are out of keeping with its known reserves or expected production levels).
- The minerals are claimed to originate from a country in which minerals from conflict-affected or high-risk areas are known to transit.

Supplier red flags:

- The company's suppliers or other known upstream companies have shareholder or other interests in companies that supply minerals from or operate in one of the above-mentioned red flag locations of mineral origin and transit.
- The company's suppliers' or other known upstream companies are known to have sourced minerals from a red flag location of mineral origin and transit in the last 12 months."

If a company in the supply chain is unable to determine whether the minerals in the company's possession come from a "red flag location of mineral origin or transit", it must be assumed that the material is from a high-risk area (and the OECD Guidance applied).

The OECD guidance for identifying red flag locations and suppliers for gold is essentially the same as for tin, tantalum, and tungsten, with this additional red flag:

- The gold is claimed to originate from recyclable/scrap or mixed sources and has been refined in a country where gold from conflict-affected and high-risk areas is known or reasonably suspected to transit.

The OECD defines upstream companies as inclusive of artisanal or small-scale producing enterprises, and not individuals or informal working groups of artisanal miners.

Utilizing C2CPH-recognized Certifications (or Equivalent) for High-risk Components and Raw Materials

For components and raw materials associated with high risk of child labor, forced labor, or support of conflict, a C2CPH-recognized certification (if available) or equivalent that verifies high performance on these issues is required.

C2CPH-recognized certifications for the purposes of this requirement are certifications that address these issues and also meet the C2CPH certification program requirements (per Appendix 2 in this manual). Please refer to [C2CPH-Recognized Certification Programs and Standards](#) for the current list of

recognized programs. Additional programs may be recognized and added to this list. Refer to Appendix 2 in this Certification Manual for requirements and the application process for recognition.

Note that certified organic does not ensure that human rights issues are adequately addressed and therefore is not listed. This is because organic standards are defined regionally, primarily address the environmental and chemical use aspects of production, and depend primarily on local law and enforcement of human rights. As noted in previous sections, it is important to understand if local labor laws do not align with international human rights standards, and/or if local labor laws lack adequate enforcement to ensure respect for human rights in relevant jurisdictions.

Equivalent alternatives to certification also receive credit but are not required. Equivalent alternatives must address the issue of concern (i.e., child labor, forced labor, or support of conflict) and meet the relevant C2CPII program requirements for equivalents (per Appendix 2 in this manual). Qualified third-party verification is required, or the applicant must demonstrate legitimate grounds for an alternative method of verification (such as community-based verification). Please refer to Appendix 2 for additional information.

When an Applicable Certification Does Not Exist (or Material is Unavailable)

If an applicable certification does not exist or certified material is otherwise not available (e.g., because supply is low), and an equivalent has not been implemented, applicants are required to undertake a traceability exercise, establish a plan for mitigating the negative human rights impact, and participate in an applicable stakeholder initiative working to address the issue(s) of concern. Mitigation plans may be similar to corrective actions taken with suppliers elsewhere in the supply chain and/or related to the responsible sourcing management system identified in Section 8.6. Additionally, it is important to note that the purpose of the traceability exercise is to determine which supplier lots and serial numbers were used in finished products, and how the applicant has tracked and traced raw materials from the origin through delivery to the supplier to customer, and all stages in between.

References

- [List of Goods Produced with Child Labor or Forced Labor](#) (US Department of Labor, 2020)
- [OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas](#) (OECD, 2016)
- *Supplement on Tin, Tantalum and Tungsten*, [OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas](#). (OECD, 2016)

Required Documentation

Gold Level

- List of high-risk components and raw materials and source location(s) and explanation regarding how this was determined. If source is unknown, this must be specified.
- Valid C2CPH-recognized certificate(s) or equivalent for all high-risk components and raw materials subject for review within the product (this applies to the supply chain of the certified product only),
OR,
- Evidence of research conducted to determine that an applicable certification does not exist, or evidence of attempts to obtain certified material that were not fruitful (e.g., email communications with potential suppliers).

Gold Level Recertification (if an Applicable Certification Does Not Exist, or Certified Material is Not Available)

- Evidence that an equivalent alternative is in place or that #3a-c have been implemented. See Appendix 2 in this Certification Manual for the evidence required for eligible alternatives to certification. Otherwise, the following are required:
 - Description of the traceability exercise, including supplier communication and results.
 - Description of what is required to fully mitigate the negative human rights impacts identified and plans for how the applicant company is working to mitigate those impacts. This may include reference to management decisions, management systems, responsible sourcing plans, and/or corrective action plans.
 - Membership details for the stakeholder initiative, including link to public references to the applicant's membership status and a payment slip indicating that member dues are current.

8.3 Grievance Mechanisms

Intended Outcome(s)

A mechanism is in place by which employees and other stakeholders may safely report negative effects of business activities and operations and other social fairness concerns to manufacturing facilities in order to obtain redress for those impacts.

Applicable Achievement Level(s)

Silver and Gold

Requirement(s)

Silver level: Make a grievance mechanism available to applicant-owned final manufacturing facility employees.

Gold level: Provide a grievance mechanism that permits final manufacturing facility employees and other stakeholders to obtain redress for negative human rights impacts.

For the Gold level, the applicant company or facility(ies) must have a grievance mechanism(s) for employees of the manufacturing facility and other stakeholders relevant to the facility that:

1. Is supported by a non-retaliation policy.
2. Is capable of addressing the risks to and potential adverse impacts on people.
3. Addresses concerns promptly, using an understandable and transparent process based on local best practices that is readily accessible by any affected stakeholder.
4. Provides feedback to those concerned, without their risking retribution.
5. Includes informing direct employees about the mechanism at the time of hire.
6. Does not impede or preclude access to judicial or administrative remedies that might be available under law or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements.
7. Includes written records and periodic reviews to identify and make necessary improvements.

For contract manufacturing and other supplier-owned facilities that are part of the final manufacturing stage, the grievance mechanism may be provided by the contract manufacturer or by the applicant.

Further Explanation

For the Silver level, it must be demonstrated that a grievance mechanism has been made available to employees of applicant-owned final manufacturing facilities. For the Gold level, grievance mechanism(s) must be in place at all final manufacturing facilities, accessible to employees and other stakeholders, and demonstrated to be functioning, and effective.

About Grievance Mechanisms

The UN Guiding Principles on Business and Human Rights (UNGPs) expect companies to implement operational grievance mechanisms for employees, non-employees, and communities that can be negatively affected by a company's operations and business activities. Businesses are expected to be able to receive, process, and provide adequate response or remedy to grievances raised. This includes defining procedures for:

1. Workers and individuals to file grievances,
2. Management investigations of grievances submitted by workers and non-workers to make remedy decisions,
3. Management communication of the outcomes after the investigation, and
4. Documenting and maintaining outcomes.

Grievance mechanisms can take many forms, including a suggestion box, talking to a supervisor or Human Resources staff person, internal hotlines, external hotlines, union or worker committees, or other forms. Grievance mechanism hotlines operated by an outside third party are an acceptable option that may be implemented by the applicant and/or contract manufacturer for cases where a functioning mechanism is not available.

Grievance mechanisms are only effective if workers know about, trust, and are confident using them.

Within a properly functioning grievance mechanism, a non-retaliation policy must ensure confidentiality or anonymity of the individual who raised the grievance and ensure he or she is protected from retribution (direct or indirect). Additionally, any person(s) bringing a complaint must be informed about the resolution of the investigation and any corrective action taken.

Cradle to Cradle Certified requires that grievance mechanisms be capable of addressing the risks and potential adverse impacts on people. The UNGPs outline eight criteria for effectiveness of grievance mechanisms, which have been summarized by Ergon Associates in their white paper "[Access to Remedy – operational grievance mechanisms](#)" for the Ethical Trading Initiative as the following:

1. Legitimate: *Fair and trustworthy.*
2. Accessible: *To all those they are designed for.*
3. Predictable: *In terms of process and available outcomes.*
4. Equitable: *Meaning fair and equal access to information, advice and expertise for both stakeholders raising a grievance as well as those managing the process.*
5. Transparent: *About the process and progress of responding to grievances.*
6. Compatible: *With internationally recognised human rights standards and local laws.*
7. A source of continuous learning: *For organisations to improve its system to best support its stakeholders' needs.*
8. Based on engagement with stakeholders: *With the affected stakeholders, and relevant experts when necessary.*

Grievance procedures are often utilized as part of remedy required when negative human rights impacts occur. The concept of remedy aims to restore individuals or groups that have been harmed to the situation they would have been in had the impact not occurred. Accordingly, grievance procedures should reflect the size and scale of company operations and the needs of its workers, and the communities affected by its business operations.

The standard requires that the mechanism *does not impede or preclude access to judicial or administrative remedies that might be available under law or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements.* This must be demonstrated via a company policy that does not allow for this. Further, employees must not be required to sign a legal waiver (i.e., a waiver to remove legal liability from the business for any adverse human rights impacts) as a condition of accessing the grievance mechanism.

The standard requires that direct employees be informed about the mechanism at the time of hire. Changes to the mechanism should also be communicated e.g., via periodic trainings or by updating employee handbooks.

A mechanism may be non-functioning (and therefore potentially not capable of addressing risks and adverse impacts) if:

- There are no grievances reported in the prior 12 months.
- There are no documented follow-up actions taken in response to grievance reports made.

- Actions taken are or appear to be insufficient to resolve the case.

For recertification: If there are no cases recorded within 12 months of grievance procedure operation (36 months for very small/micro companies defined per the EU Commission as < 10 employees and annual turnover < €10 million), then it must be assumed that the process is non-functioning. In this case, to achieve the Gold level, the applicant must assess the problem, identify barriers to effective functioning (if any), and take action to correct the issue(s). This may require intervention with contract manufacturer (as relevant).

Note: These requirements existed in Versions 4.0 and 4.1. Products transitioning to Version 5.0 from Version 4.0 or 4.1 must meet recertification requirements.

References

- [UN Guiding Principles on Business and Human Rights](#) (United Nations, 2011)
- [Access to Remedy – operational grievance mechanisms](#) (Ergon Associates for the Ethical Trading Initiative, 2017)

Required Documentation

Silver Level

Explanation and documentation of a company's own grievance mechanism available to employees of final manufacturing stage facilities.

Gold Level

Documentation of an existing grievance mechanism(s) available to employees and other stakeholders at all final manufacturing facilities that meets all points below. The mechanism may be provided by the applicant company or by contract manufacturers or suppliers (as relevant). If provided by the applicant to contract manufacturers or suppliers, evidence of communication to the contract manufacturer or supplier employees and other stakeholders that the mechanism is available for their use is required.

The numbers below align with the individual requirement numbers in this section.

1. A non-retaliation policy that ensures confidentiality or anonymity of the individual who raised the grievance, and that he or she is protected from retribution (direct or indirect). May be freestanding or incorporated into another policy.
2. Evidence that the grievance mechanism is **capable** of addressing the risks to and potential adverse impacts to people:
 - Description and documentation of the process by which a grievance is submitted, and the process by which management reviews, makes decisions, communicates outcomes, and provides remedy (where relevant). For example, screenshots of the interface used to file and track a grievance through the process and related explanations).

- Evidence demonstrating how it is ensured that grievances are evaluated in alignment with human rights definitions and internationally recognized standards (e.g., the UN Declaration of Human Rights and ILO Conventions), as well as with local labor laws. For example, a procedure that requires this.
 - Evidence that the grievance mechanism is used. For example, statistics on the number of grievances received and resolved, a log or summary of complaints received, or example(s) of specific case(s) and their resolution(s). **Note:** Confidential information including (but not necessarily limited to) the names of those involved in the grievance should be redacted. This piece of information **may be provided at recertification** given that systems are often newly implemented or modified to achieve these requirements.
3. Evidence that the process address concerns in a timely manner and is transparent, visible, and understandable to all stakeholders, including:
 - Evidence that parties raising grievances are informed about progress (e.g., the procedure, including standardized/required timelines or specific example cases demonstrating this).
 - Evidence that communication about the mechanism is provided in a language and format that is easily understood by intended users, including local language or dissemination verbally (where illiterate workers or stakeholders are present).
 4. Evidence provided for #1-3 above covers this point.
 5. Evidence of communication(s) provided to employees informing them about the grievance mechanism when they are hired. For example, information about the mechanism that is included in new hire training, an employee handbook, or on facility posters.
 6. Written policy(ies) that document the applicant's grievance mechanism is not a substitute for existing judicial or arbitration procedures or a substitute for resources provided through collective agreements. The process (as described and documented in #2) must not include a requirement to sign a legal waiver (i.e., to remove legal liability from the business for any adverse human rights impacts) as a condition of accessing the mechanism.
 7. Evidence that written records are kept and of the review process, including:
 - Record retention policy or procedure, usage statistics (e.g., the number of complaints filed and types of complaints or topics on which complaints are made), or a log of outcomes after evaluation of complaints, and what remedy has been provided. **Note:** All confidential information is expected to be excluded or redacted.
 - Documentation of procedures for assessing the grievance mechanisms' effectiveness and process for making improvements.

8.4 Responsible Sourcing Management Systems

Intended Outcome(s)

A responsible sourcing management system is in place, ensuring that necessary corrective actions are taken, actions are effective, and that performance on respecting human rights in the product's supply chain is ultimately improved.

Applicable Achievement Level(s)

Gold

Requirement(s)

Implement a responsible sourcing management system that supports respect for human rights within the product's supply chain.

For the Gold level, the responsible sourcing management system must include the following elements:

1. Designated staff with ethical sourcing responsibilities.
2. Designated oversight function and process.
3. Procedures to communicate to suppliers the company's human rights expectations on key human rights topics (see Section 8.1 #1; e.g., as expressed in a human rights policy for suppliers or supplier code of conduct) and any associated ethical sourcing business processes.
4. Supplier contractual requirements for human rights policy compliance and monitoring (e.g., supplier codes of conduct if defined as a contractual term). Contracts must require suppliers to extend social compliance expectations to their suppliers.
5. Evaluation of new suppliers prior to the awarding of contracts to determine if the supplier can meet requirements.
6. Policies and procedures for the prompt implementation of corrective and preventive actions.
7. Education for sourcing and/or procurement team(s) on responsible sourcing and/or human rights principles.
8. Business procedures for identifying and documenting the cause and resolution of human rights issues and/or impacts in the supply chain that arise as a result of audits/reviews or concerns raised by employees or other third parties.

For recertification at the Gold level, the policy, procedures, practices and/or programs must be reviewed to identify deficiencies and implement changes (if needed) that will lead to improved performance. Remedial activities (if needed) must be underway and seek to identify and address root causes.

Further Explanation

Consider the following when implementing a responsible sourcing management system:

Elements of a credible human rights management system for the supply chain include:

- Management communicates the importance of responsible sourcing throughout the company.
- The Chief Procurement Officer (or other relevant sourcing leader) is involved in management review and decisions to implement the company's human rights policy within its supply chain management.
- Job descriptions for sourcing managers include collaboration with compliance staff and business partners on responsible sourcing inputs.

- Specialized training is developed for staff with key roles responsible for implementing within the supply chain (e.g., responsible purchasing practices for procurement and merchants; training on specific human rights risks related to key sourcing markets).
- Annual performance reviews include accountability and key performance indicators for staff carrying out responsible sourcing practices.
- Supplier performance evaluation is utilized to drive compliance and corrective action where necessary.

Applicants are expected to communicate their human rights commitment to suppliers, and cascade implementation responsibilities to business relationships throughout the supply chain. Often, setting expectations with suppliers takes the form of communicating a Responsible Sourcing Policy or Code of Conduct, which suppliers are required to comply with as part of business terms. It is a Cradle to Cradle Certified requirement to ensure supplier contracts extend social compliance expectations to suppliers—this is commonly manifested in the supplier posting a Code of Conduct in facilities. However, note that embedding the Code of Conduct or similar human rights policy expectations in an actual business contract is different than required posting of the Code of Conduct in a supplier facility. Cradle to Cradle certification requires inclusion of supplier social compliance expectations in contract terms to ensure that an applicant's suppliers implement the company's expectations, and that these terms include penalty or termination clauses for upholding social compliance expectations where necessary. Including this term in the actual supplier contract demonstrates its importance and signals social compliance is expected to be treated on par with traditional business metrics such as cost, quality, on-time-delivery, etc. These expectations should be added to new business agreements before signed and can be incorporated into existing supplier terms during an onboarding process and/or in the cycle of contract renewal.

Once a supplier has received communication about social compliance expectations and committed to uphold these expectations through its contractual terms, monitoring of performance in the form of social compliance audits is typically conducted at three-, six-, 12-, or 24-month intervals depending on the buyer's specifications or requirements of the particular standard or certification used. The Gold level also specifies evaluation of new suppliers to confirm compliance prior to awarding contracts. This ensures the buyer understands the risks present for the supplier prior to orders being placed. Section 8.2 has detailed information about monitoring and verification. Monitoring results may show minor or major violations with the buyer's human rights expectations, which are expected to be remediated by the supplier and measured in corrective action plans over time. Credible corrective action plans define timelines for expected corrective actions, which may relate to the severity of the non-compliance. The supplier must also work to improve its performance and build capacity to prevent these violations in the future.

Responsible sourcing practices define responsibilities for the buyer, including functions such as Procurement, Purchasing, Sourcing, Design, Production, Planning, and Contract Management (e.g., Legal), among others. A company is expected to implement internal education about responsible sourcing practices and impacts on suppliers. This can include building knowledge about the following:

1. Performance pressures, as buyers feel pressure to meet production goals and tight margins which in turn can put pressure on suppliers to deliver faster and cheaper.
2. Competing priorities, as buyers frequently prioritize price, quality, and delivery above all else when rewarding or penalizing suppliers.
3. Unequal power that buyers hold over suppliers when it comes to financial and negotiating terms. Suppliers commonly feel pressure to make their customers happy in any circumstance for fear of losing business.

A company can inadvertently create negative impacts on the people who are employed by suppliers through its purchasing practices, and this should be prevented. For instance, a rush order, last minute design change, or reduced price can lead to longer working hours for less pay and in unsafe conditions or falsified records to hide unauthorized subcontracting or other violations with the buyer's human rights policy or Code of Conduct. Even simple changes a buyer makes, like a color or material change, can create a major difference in manufacturing requirement. When buyers make order changes, it is best practice for these changes to be accompanied by altered pricing or timeline shifts, especially in the midst or at the end of a production cycle. Without such treatment, minor changes can provide perverse incentives for a supplier to violate human rights commitments in order to meet other contract terms. Instead, it is important for buyers to consider how to integrate social compliance into traditional business metrics to prevent such occurrence. Buyers can also consider the impact of creating incentives for suppliers to manage social and labor issues responsibly—such as reduced social monitoring, rewards and recognition, future orders, and more favorable contract terms for suppliers who have strong social performance and continued improvement.

This section of the standard focuses on human rights (as defined by the International Bill of Human Rights and ILO Core Conventions) and so does not require that environmental issues be included in responsible sourcing management systems. However, it is highly recommended to include management of environmental issues (environmental permit compliance, addressing greenhouse gas emissions etc.) in the management system described above.

Note: These requirements existed in Versions 4.0 and 4.1. Products transitioning to Version 5.0 from Version 4.0 or 4.1 must meet recertification requirements.

References

- [Blueprint for Embedding Human Rights in Key Company Functions](#) (CSR Europe, 2016)
- [The Corporate Responsibility to Respect Human Rights: An Interpretive Guide](#) (United Nations, 2012)
- [Doing Business with Respect for Human Rights](#), see Chapter 3.2. (Shift, Oxfam, Global Compact Netherlands, 2016)
- [Responsible Sourcing Management Model](#) (ELEVATE, 2019)
- [Step-by-Step Guide to Reviewing and Improving Purchasing Practices](#) (Ethical Trading Initiative, 2010)

Required Documentation

Gold Level

The following information is required in order to demonstrate that the applicant company's responsible sourcing management system has been implemented. The numbers below align with the individual requirement numbers in this section.

1. Internal organizational charts and/or descriptions of the functions, business units, or staff responsible for social compliance and job descriptions for relevant positions. Must include details about which function and staff have responsibility for ethical sourcing (e.g., procurement, sustainability).
2. Description of who and what processes create accountability for social compliance in the product's supply chain. This might include oversight by a Chief Procurement Officer or Human Rights lead, with support from a cross functional committee of business units such as Sourcing, Compliance, Sustainability, Product Development, Design, Legal, Human Resources, etc. It could alternatively be a particular leader of the social compliance organization and description of the process by which social compliance is integrated into sourcing decisions and regular supplier reviews.
3. Written procedures and supplier requirements or guidance materials that set expectations for supplier compliance with a human rights policy or policies that address all topics listed in Section 8.1 Human Rights Policy (#1a-j). This may include the supplier code of conduct, and documentation in the form of steps for communication and adherence, such as emails or contract terms that specify required compliance.
4. A supplier contract template and/or excerpts of a valid supplier contract that include language requiring suppliers adhere to the applicant's ethical sourcing requirements as a condition of business and setting expectations for their suppliers to do the same. This could include a supplier code of conduct if the supplier is required to sign this as a contractual term. It is best practice to stipulate that suppliers will be monitored for social compliance.
5. Written procedures and/or guidance that stipulates how new suppliers are evaluated to determine if the supplier meets the applicant's responsible sourcing and/or social compliance requirements. Written procedures and/or guidance that explain how evaluation of social compliance is included in decisions to award contracts to new suppliers.
6. Written policies and procedures requiring corrective and preventive actions for suppliers if non compliances are identified in their production facilities.
7. Description of the training and/or a sample of training or education materials that explain key human rights issues and applicant procedures for sourcing and procurement team(s) to incorporate into their everyday activities to achieve responsible sourcing goals.
8. Written procedures for identifying and documenting human rights issues and/or impacts raised by employees or third parties. This could include escalation and/or remediation processes, including identification of issues and corrective actions in audit reports in the supply chain.

Gold Level Recertification

Evidence that the design and effectiveness of the management system (policies, practices, and programs) have been reviewed to identify deficiencies/changes required for improved performance. This may include regular internal management reviews (annual review is recommended) of the responsible sourcing system, where documentation is written records from management review meetings. This must include evidence that improvements identified in the previous review are underway.

8.5 Stakeholder Engagement

Intended Outcome(s)

The applicant company proactively identifies actual and potential negative human rights impacts and continuously improves performance.

Applicable Achievement Level(s)

Platinum

Requirement(s)

Incorporate stakeholder engagement and feedback into human rights risk management, using it to shape expectations for continuous improvement.

The applicant must have a robust process for accepting or soliciting, and responding to, stakeholder feedback. Input from stakeholders must be regularly obtained and used to refine human rights risk assessment. The oversight of supplier performance on corrective actions may be recalibrated by information received from stakeholders.

Further Explanation

Stakeholder feedback may come from investors, suppliers, other business partners, civil society, employees, workers within the supply chain, or community members and locally affected populations—and may be both positive and negative. Feedback may be received through formal and/or informal channels (in contrast to grievance mechanisms, which must be through formal defined processes).

For organizations new to stakeholder engagement, the [AccountAbility Stakeholder Engagement Standard AA1000SES](#) provides credible step-by-step guidance focused on steps to plan, prepare, engage, and review/improve.

AA1000SES advises organizations to plan for stakeholder engagement by first conducting stakeholder mapping to have a clear understanding who the relevant stakeholders are and how they can engage with the organization.

This includes understanding the following of individual and organizational stakeholders:

- “knowledge of the issues associated with the purpose and scope of the engagement,
- expectations of the engagement,
- existing relationship with the organisation (close or distant; formal or informal; positive or negative),
- dependence on the organisation,
- willingness to engage,
- level of influence,
- type (civil society, government, consumer, etc.),
- cultural context,
- geographical scale of operation,
- capacity to engage (e.g., language barriers, IT literacy, disability),
- legitimacy and representation, and
- relationships with other stakeholders.”

AA1000SES states that mapping can be “based on any of the criteria used to characterise the stakeholders, per above, and should focus on determining which groups and individual representatives are most important to engage with in relation to the purpose and scope of the engagement. Some considerations include evaluating stakeholder’s influence vs. willingness to engage, type of stakeholder vs. level of influence, or capacity to engage, and knowledge of issues against expectations. Setting clear criteria for mapping stakeholders better enables the owners of the engagement to steer the engagement away from being driven by non-strategic considerations such as the ‘noisiest’ stakeholders, the short-term focus of the media, or the comfort zone of managers. While initial profiling and mapping may take place without the systematic involvement of stakeholders, as engagement takes place and practice matures, relevant stakeholders should be involved in this process and outcomes adjusted accordingly.”

References

- [AccountAbility Stakeholder Engagement Standard AA1000 SES](#) (AccountAbility, 2015)
- [OECD Guidance for Responsible Business Conduct](#) (OECD, 2018)
- [UN Guiding Principles on Business and Human Rights](#) (United Nations, 2011)

Required Documentation

- A written process in place at the applicant company for accepting or soliciting, and responding to, stakeholder feedback. This could be a defined internal process and/or disclosed in an external document.
- Evidence that the stakeholder engagement process is being applied/used (e.g., a log of stakeholder feedback received, and actions taken in response and/or evidence of stakeholder feedback being applied more broadly to company-wide risk assessment and mitigation). Note that for newly implemented systems, this may be provided at recertification.

8.6 Collaborating to Solve Social Issues

Intended Outcome(s)

Industry-wide progress is made toward solving social issues that are widely recognized as being difficult and complex.

Applicable Achievement Level(s)

Platinum

Requirement(s)

Collaborate to develop and scale solutions to an intractable social issue within the value chain of the product.

Collaboration must be with a multi-stakeholder program or consortium working on a common goal to comprehensively address a social issue. The applicant must actively participate for the full certification period.

The initiative selected must:

1. Support implementation of the company's social strategy and policies.
2. Aim to drive progress within an industry or across multiple industries.
3. Ensure that ground rules for the partnership allow for adequate voice for all participants.
4. Include ongoing assessment of partnership impact.

Further Explanation

Multi-stakeholder programs or multi-stakeholder initiatives bring together businesses, governments, civil society, and/or other stakeholders to address issues of mutual concern. They do this through collective action, creating new market frameworks, serving as intermediaries, and overall focus on collaboration to address social (and environmental) issues. Their efforts can focus on advocacy, trade, public policy, new business incentives, certification schemes, supply chain alignment, agreements with worker organizations, and other topics at national, regional, or sector levels.

It is important to consider the objectives of multi-stakeholder initiatives in the purpose of solving a problem. Credible multi-stakeholder initiatives have well-established program governance, membership criteria, participation qualifications, and requirements for implementation. Many also require fees and can offer resources for engagement and to support the initiative's objectives and outcomes. Best practice is for multi-stakeholder initiatives to publicly communicate these elements. According to the World Economic Forum on Corporate Citizenship, there are seven success factors for effective partnership:

1. Openness, transparency, and clear communication to build trust and mutual understanding,
2. Clarity of roles, responsibilities, goals and "ground rules",
3. Commitment of core organizational competencies,

4. Application of the same professional rigor and discipline focused on achieving targets and deliverables that would be applied to governing, managing, and evaluating other types of business alliances,
5. Respect for differences in approach, competence, time frames, and objectives of different partners,
6. Focus on achieving mutual benefit in a manner that enables the partners to meet their own objectives as well as common goals, and
7. Understanding the needs of local partners and beneficiaries, with a focus on building their own capacity and capability rather than creating dependence.

Note: Groups where a single stakeholder group makes all decisions are not considered multi-stakeholder for the purposes of this requirement, even if stakeholders from other groups participate in the initiative.

It is insufficient for the applicant to simply sign on to an initiative; rather, there must be evidence of active participation and ongoing effort.

Participation in a multi-stakeholder initiative may include providing technical expertise, enrolling suppliers as participants in the initiative, participating in advocacy work or public campaigns, or other efforts that result in implementation of a program. Participation may also include financial support. Financial support may be cash, grants, in-kind products/services, or staff secondment.

Participation by signing on/committing and reporting annually (e.g., per the UN Global Compact) is not sufficient on its own for achieving this requirement. The intention is to give credit to actions that go beyond making commitments/signing on and reporting/disclosing. However, the UN Global Compact initiative does include and/or facilitate action that may be sufficient.

Applicants must demonstrate efforts to implement solutions and/or initiatives developed through the multistakeholder initiative or program into their own operations or value chain as applicable. In the case where that is not yet available, applicants are expected to advocate with appropriate stakeholders for systemic changes to be made.

References

- [Partnering for Success: Business Perspectives on Multi-stakeholder Partnerships](#) (World Economic Forum on Corporate Citizenship, 2005).
- [Increasing the effectiveness of multi-stakeholder initiatives through active collaboration](#) (World Bank Group, 2014)
- [Leadership, Accountability and Partnership: Critical Trends and Issues in Corporate Social Responsibility](#) (The Corporate Social Responsibility Initiative, Kennedy School of Government, 2004)

Required Documentation

Platinum Level

- Evidence of the applicant company's participation in the multi-stakeholder program, including timeline or dates of the participation. For example, a link to a list of members and/or a member certificate in the form of an approval for participation by the multi-stakeholder program, meeting minutes demonstrating participation, and/or evidence of the company implementing output of/learnings from the initiative.
- A description of the initiative and how it aligns with the applicant's social fairness strategy and policies.
- Evidence that the initiative involves at least one industry and is aiming to make progress on a shared social issue.
- Documentation of the initiative's bylaws or governance process that indicates how decisions are made. The documents must provide evidence that decision-making includes representatives from a variety of stakeholder groups and that no single stakeholder group predominates. For example, the bylaws include requirements for provision of equal access to decision-making structures and shared control of agenda setting.
- Project plans and/or applicant documentation indicating that a review of the program and activities occurs regularly. This documentation may be generated by the applicant to review the effectiveness of the program and its participation there within, or it may be generated by the multi-stakeholder program and distributed to participants.

If any of the required documentation is not publicly available from the multi-stakeholder initiative, the applicant must acquire documentation from the initiative, signed by a staff member. Signature by email is accepted.

8.7 Fostering a Culture of Social Fairness

Intended Outcome(s)

Socially fair business practices in its governance and management approach are applied by the applicant company. This is reflected by a diverse, inclusive, and engaged workforce and through training, remuneration, and payment of a living wage.

Applicable Achievement Level(s)

Platinum

Requirement(s)

Foster a diverse, inclusive, and engaged work environment in which social fairness operates as a core part of recruitment, training, remuneration, performance evaluation, and incentive structures.

The following are required:

1. Hiring and promotion processes must be evaluated and amended, if needed, to promote inclusivity and equal opportunity.
2. Access to training on key social issues (e.g., those included in human rights policies or identified via human rights risk assessment) must be provided to all executives and employees.
3. Awareness training on diversity and inclusion, gender equality, and anti-discrimination must be provided to all staff.
4. Social performance indicators must include ethnicity-, race-, sex- and age-disaggregated data on hiring, compensation, promotion, demotion, training and mentoring for employees of all levels. Exception: If applicable local laws do not permit collection of all or a portion of the required data, the pertinent portion of the requirement is waived.
5. Data must be evaluated for pay equity, including a comparison of the average wages by ethnicity, race, and gender for work of equal value, and the ratio of the compensation of the CEO or equivalent to the median and average wage of a full-time worker. The exception noted in #4 applies.
6. Pay equity data must be published externally and made publicly accessible. An explanation of differences that may be realized or quantified over time must be included. The exception noted in #4 applies.
7. Data on violence in the workplace, including gender-based violence, must be documented where it has occurred.
8. Performance assessments of any executives or employees with designated social responsibilities must include consideration of criteria or metrics derived from human rights policy and strategy.
 - a. Social performance results must be considered in compensation packages/incentive plans for top company executives and management with social management or oversight functions (i.e., from C-level executives to business unit and functional heads).
9. Diversity and equal opportunity employment must be included in the organization's social strategy and implementation. The company must:
 - a. Conduct an evaluation to understand why differences in representation by ethnicity, race, and gender exist in the boardroom, the workplace, and the first tier of the supply chain.
 - b. Develop and implement a plan for remedying any differences that are or may be attributable to unequal opportunity.
 - c. Investigate, encourage, and promote equal opportunities for women and racial, ethnic, religious, or economically disadvantaged minorities into supervisory and management roles in the workplace, particularly if they are under-represented in such roles.
10. Employees must be paid a living wage. This is defined as being paid sufficiently for a standard workweek (i.e., not including overtime) to afford a decent standard of living for their families, inclusive of: food, water, housing, education, health care, transportation, clothing, and other essential needs including savings for unexpected events and some disposable income.
11. Program(s) must be implemented to regularly engage employees (including other workers on the premises or under the supervision of the company) on the company's social vision and goals, and to identify actions that will help the company to achieve them.

Further Explanation

Hiring and Promotion (Requirement #1)

The standard requires that *hiring and promotion processes be evaluated and amended, if needed, to promote inclusivity and equal opportunity*. This goes beyond having an equal opportunity and/or non-discrimination policy. It means that applicants are actively taking steps to implement such policies. For example, this may include analyzing and amending job description language to ensure it is culturally sensitive and nondiscriminatory, recruiting through organizations serving populations that are currently underrepresented, and/or taking actions to reduce, and ideally remove, bias from the hiring process (e.g., blind recruitment and resume review).

Training (Requirements #2-3)

Trainings must occur annually at a minimum and (for Requirement #1) must focus on the topics included in human rights policies (e.g., topics listed in Section 8.1 Human Rights Policy), identified via human rights risk assessment, and specifically (for Requirement #3) on diversity and inclusion, gender equality, and anti-discrimination. It is recommended that trainings occur at the time of hire and also include details about how human rights policy is operationalized throughout business operations and partnerships. All employees are expected to understand the company's policy on human rights and know how it applies to their job and daily activities. Formal training may be complemented by coaching, mentoring, or networks for knowledge sharing on social fairness within the company.

Social Performance Indicators and Data Evaluation for Pay Equity (Requirements #4-5)

The standard requires that: *Social performance indicators must include ethnicity-, race-, sex- and age-disaggregated data on hiring, compensation, promotion, demotion, training, and mentoring for employees of all levels* (unless local laws do not allow for these data to be collected). The data must be appropriate to the local and national context. This means that the specific categories of minority or vulnerable groups being tracked will vary according to locality.

These data must be evaluated for pay equity. Pay equity means eliminating discrimination in the wage system. The standard requires that the evaluation include *a comparison of the average wages by ethnicity, race, and gender for work of equal value, and the ratio of the compensation of the CEO or equivalent to the median and average wage of a full-time worker*.

Public Disclosure of Pay Equity Data (Requirement #6)

The pay equity data that is collected per Requirement #5 must be publicly disclosed. Publishing pay equity data shows the organization's commitment to achieving equitable ratios.

Documenting Violence in the Workplace (Requirement #7)

Data on violence in the workplace, including gender-based violence, must be documented where it has occurred. Gender-based violence is defined as any form of—or threat of—physical violence, including slaps, pushes, or other forms of physical contact as a means to maintain labor discipline, or any form of

sexual harassment.

Performance Assessments (Requirement #8)

Performance assessments of any executives or employees with designated social responsibilities must include consideration of criteria or metrics derived from human rights policy and strategy. In addition, social performance results must be considered in compensation packages/incentive plans for top company executives and management with social management or oversight functions (i.e., from C-level executives to business unit and functional heads). Social fairness criteria or metrics must be evaluated in the same manner as traditional performance metrics and hold equal weight in these evaluations.

Examples: a Vice President in a management role may be evaluated on resource allocation that supports social fairness objectives, a Human Resources lead responsible for implementing employee programs may be evaluated on the number of trainings that contain social fairness topics, purchasing staff may be evaluated on the successful completion of due diligence procedures, and a legal professional may be evaluated based on the percentage of contracts that require compliance with the organization's human rights policy or code of conduct.

Diversity and Equal Opportunity as Part of Social Strategy and Implementation (Requirement #9)

Diversity and equal opportunity employment must be included in the organization's social strategy and implementation. This includes (a) conducting an evaluation to understand why differences in representation by ethnicity, race, and gender exist in the boardroom, the workplace, and the first tier of the supply chain, (b) developing and implementing a plan for remedying any differences that are or may be attributable to unequal opportunity, and (c) investigating, encouraging, and promoting equal opportunities for women and racial, ethnic, religious, or economically disadvantaged minorities into supervisory and management roles in the workplace, particularly if they are under-represented in such roles. An example of how a company could promote equal opportunity is to provide parental leave for both women and men, including when it is not legally obligated to do so, or provide a longer leave period than is legally mandated. This can provide an opportunity for women to not fall behind in their career trajectories because of childcare (a role traditionally reserved for and filled by women). Another example is providing childcare at the workplace and/or providing flexible schedules to employees.*

***Note:** 'First tier' refers to the direct suppliers of the applicant company, rather than to tier 1 to the final manufacturing stage of the products (i.e., 'first tier' is used differently here than in other sections of the standard).

Living Wage (Requirement #10)

Paying legally mandated wage levels is a standard expectation of remuneration and is required for the Bronze level. For the Platinum level, applicants must also implement a living wage. In many countries, few companies pay a living wage to all employees. It is also quite unusual for companies to have completed the necessary calculations to determine that a living wage is paid, as there is no internationally agreed definition for living wage. Cradle to Cradle Certified requires that applicants provide an explanation and supporting evidence (i.e., supporting wage data and an explanation of how

it was determined that a living wage is paid). One commonly used approach that meets the Cradle to Cradle Certified requirement is the [Anker Methodology](#). The Anker Methodology estimates cost of a basic but decent lifestyle for a worker and his/her family in a particular place and then determines if that estimated living wage is being paid to workers. The methodology requires transparency and detailed documentation and analysis to ensure that the living wage estimate is solid and credible, and requires considering not only gross cash payment, but also deductions from pay, overtime pay, bonuses, and in-kind benefits.

The Global Living Wage Coalition (GLWC) keeps a [resource library](#) of living wage calculations and case studies, by industry and country (some are in progress). For applicants that are not included in these industries or countries, documentation of the alternative methodology used and how it meets the Cradle to Cradle Certified requirements must be provided.

Some standards, such as Social Accountability International (SAI), include living wage in their requirements. SAI is the owner of the SA8000 standard and promotes the Anker Methodology as a founding member of the [Global Living Wage Coalition](#). However, SA8000:2014 requirements for implementing a living wage are not in cadence with Cradle to Cradle Certified requirements, as the SAI timeline is 18-24 months to achieve a living wage while Cradle to Cradle Certified applicants must have already demonstrated achievement of a living wage when applying for Platinum level. SA8000:2026 also does not require a living wage in all cases (i.e., when “contextual barriers” do not allow for this).

Employee Engagement (Requirement #11)

The standard requires that *Program(s) must be implemented to regularly engage employees (including other workers on the premises or under the supervision of the company) on the company’s social vision and goals, and to identify actions that will help the company to achieve them*. This may occur through formal trainings and events, or informally—for example, via town hall meetings, email communication, an associate portal, and/or video messages.

References

- [Women’s Empowerment Principles and Gap Analysis Tool](#) (United Nations, 2020)
- [Gender Equality in Codes of Conduct Guidance](#) (Business for Social Responsibility, 2017)

Required Documentation

Platinum Level

The following information is required for the applicant company’s own operations (although information about the first tier of the applicant’s supply chain is required in #9). The numbers below align with the individual requirement numbers in this section.

1. Procedures describing how hiring and promotion processes are evaluated and updated to promote equal opportunity, inclusion, and diversity.
2. Examples of internal human rights training for executives and employees focused on social issues as identified in human rights risk assessment and/or human rights policy (e.g., Section 8.1 topics). Provide examples of training materials and a training log to show completion of training. An example of a log is a schedule of training sessions and list of executive and employee participants.
3. Examples of training on diversity, inclusion, gender equality, and anti-discrimination as provided to executives and employees. Training KPIs and/or training attendee lists indicating all staff has received this type of training. Attendee lists must indicate the percentage of employees who have participated for the applicant's entire organization.
4. A list of social performance indicators specific to company operations that meet the requirements. If applicable laws prohibit data collection, evidence of legal prohibition (e.g., a link to the legislation or order).
5. A description of the process for collecting and evaluating pay equity data and data sheets with the information collected, including all of the indicator-specified wage comparisons. If applicable laws prohibit data collection, evidence of legal prohibition (e.g., a link to the legislation or order).
6. Evidence of public disclosure of pay equity data (e.g., a link to the web page or report where this information is disclosed). If applicable laws prohibit data collection, evidence of legal prohibition (e.g., a link to the legislation or order).
7. A process to document violence, including gender-based violence, in the workplace and current data as proof that such data are being actively collected.
8. Evidence of inclusion of human rights and/or social responsibility goals in annual performance objectives and assessments for executives and/or employees with designated social responsibilities. Metrics included in performance assessments may include implementation of employee training, risk assessment, sourcing decisions that include social performance evaluation, supplier management, evaluation of supplier non-compliances, etc. Provide a sample of performance reviews to demonstrate that social criteria are included. Description of compensation package terms for executives and management with social responsibility oversight, to confirm inclusion of social performance results/criteria. Where there are several executives and/or management team members with these responsibilities, provision of an example (i.e., one or two plan(s)) is sufficient.
9. Internal strategy documents and/or external documents that indicate diversity and equal opportunity employment is included in the organization's social strategy and activities. External documents may include relevant information provided by the applicant in an annual report or sustainability report.
 - a. Documentation of the process for evaluating differences that exist based on ethnicity, race, and gender. This may include evaluation of cultural norms or other factors. Documentation of recommendations for increasing diversity and equal opportunity where needed. The applicant must document its understanding of differences based on location, cultural, and legacy contexts in its submission. These factors may differ at each level of the organization—

e.g., boardroom, workplace, and first tier of supply chain; therefore, documentation must clearly identify applicability for different contexts (where the applicant has multiple entities or management processes within an organization). It is not enough to provide a statement that evaluation is considered and/or takes place. **Note:** In this case, 'first tier' refers to direct suppliers to the applicant company.

- b. Documentation of existing demographics in supervisory and management roles to compare to full employee population statistics as baseline information.
 - c. Documentation of activities for promotion of minorities in supervisory or management roles, where under-representation exists. Evaluation of the need to create an environment for promoting minorities into supervisory and management roles, which may include an analysis of existing management's willingness to change existing practices. Promotion activities could include developing processes and training provided for minority groups to encourage upward advancement such as training seminars, e-learning modules, mentoring circles, and/or programs.
 - d. Documentation of planning, training, or programs for upward advancement are required for both the applicant and first tier of the supply chain. **Note:** In this case 'first tier' refers to direct suppliers to the applicant company, rather than to tier 1 to the final manufacturing stage of the products.
10. Analysis for how a living wage has been calculated and implemented, including supporting evidence (e.g., specific wage data and evaluation of whether wages paid meet criteria for living wage). Documentation must include review of the applicant's lowest paid position compared to the living wage. If the Anker Methodology is not employed, the applicant must provide the following:
 - A detailed explanation regarding how the living wage was calculated and reference used.
 - The rationale for using this method rather than the Anker Methodology.
 - A list of other organization(s) that have used and/or support the method that the applicant has submitted.
 11. Examples of employee engagement on the applicant company's social vision and a description of how these communications have helped to support the company's social vision and goals.

8.8 Transparency

Intended Outcome(s)*

Product and manufacturing data are available to stakeholders, demonstrating the manufacturer's commitment to accountability for their impacts and encouraging ever-improving performance.

Applicable Achievement Level(s)*

Bronze, Silver, Gold, and Platinum

Requirement(s)*

Publicly disclose information and/or data consistent with the product's level of achievement in the Social Fairness category, as defined by the requirements in the Cradle to Cradle Certified Transparency Requirements reference document.

***Note:** At the time of publishing the Version 5.0 standard, all Social Fairness disclosures are recommended and not required. Please see the most recent version of the Transparency Requirements reference document for the applicable requirements, as this reference document may be updated periodically even if the standard version has not changed.

Further Explanation

For additional information and documentation requirements please refer to the [Transparency Requirements](#) reference document and Transparency Report Form. The Form is available to Cradle to Cradle Certified Conformity Assessment Bodies.

9 // Packaging for Certified Products

The requirements in this section apply to the packaging of a product seeking certification. At a minimum, the packaging for a product seeking certification is subject to the requirements listed in this section.

Alternatively, packaging may be:

1. Certified as a separate product – In this case, the product must meet all standard requirements, the same as other products. Note that standard Sections 2.3 and 5 include requirements specific to single-use plastic packaging when certified as a separate product.
2. Assessed separately from the product in the Material Health and Product Circularity categories only – In this case, the achievement levels for these two categories are assigned to the packaging separately, and are separately stated on the product's certificate and in the Cradle to Cradle Certified Products Registry. If this option is selected, the packaging is not certified in its own right and is not subject to the Clean Air & Climate Protection, Water & Soil Stewardship, or Social Fairness requirements.

Further Explanation

For packaging that will be certified as a separate product (per #1 above), the certification may apply to the entire packaging system or to portions thereof. However, if only a portion of an entire packaging system is certified, the Cradle to Cradle Certified mark (i.e., logos) may not be printed on the packaging.

If applying #1 above, the product inside the packaging is not required to be certified. However, note that packaging for any product type that is contrary to the intent of the Cradle to Cradle principles is not eligible for certification. See Section 2 for additional information on eligibility. Note that #1 and #2 are alternatives to achieving the packaging requirements below. If applying #1 or #2, the packaging may achieve lower level(s) of certification than the product inside the packaging.

Intended Outcome(s)

Product packaging meets material health and product circularity requirements at the entry level of certification, ensuring alignment with the Cradle to Cradle principles for these typically non-circular product types.

Applicable Achievement Level(s)

Bronze/Silver and Gold/Platinum

Requirement(s)

For product packaging, design the packaging for cycling, incorporate cycled content, and ensure access to cycling.

Scope

The following types of product packaging materials must comply with the Material Health and circularity requirements in this section:

1. Product packaging materials that are contained in one sales unit as it is offered to the end user or consumer at the point of purchase and not added exclusively for shipping, and
2. Product packaging materials that are intended to be used with the product or for the application or dispensing of the product.

Examples of product packaging materials that are contained in one sales unit as it is offered to the end user or consumer at the point of purchase include the box for a smartphone, a tube for cosmetic lotion and the sales unit box it is contained in, a paint can, a plastic clamshell and the cardboard backing for a set of kitchen knives that has not been added exclusively for shipping.

Examples of product packaging materials that are intended to be used with the product or for the application or dispensing of the product include a mascara tube and brush applicator, a twist-up tube for lipsticks or glue sticks, and a paper towel or toilet paper core.

The following types of product packaging materials are not subject to the requirements in this section:

1. Materials used exclusively for shipping the product, such as a box, pallet, or shrink/plastic wrap.
2. Packaging materials for products that are sold exclusively as material inputs for other products (i.e., packaging for intermediate products that are intended to be used at subsequent manufacturing facilities, rather than being sold to the general public or to professional users such as construction workers/builders).

Material Health Requirements

Homogeneous materials present within product packaging in scope at a concentration of $\geq 0.1\%$ (≥ 1000 ppm) are subject to review. In addition, any homogeneous material that comes into routine and direct human contact during the normal use of the product (excluding inks, adhesives, and labels) is subject to review at any concentration.

Homogeneous materials subject to review in packaging must comply with:

1. The Bronze level chemical restrictions aligned with leading regulations for packaging materials, as listed in the Cradle to Cradle Certified® Restricted Substances List reference document (Section 4.2.1), and
2. The Bronze level restrictions on per- and polyfluoroalkyl substances (PFAS) and halogenated polymers (Section 4.2.2).

Circularity Requirements

One of the following (1, 2, 3, or 4 below) is required for products certifying at the Bronze or Silver levels, and two of the following (1, 2, 3, or 4 below) are required for products certifying at the Gold or Platinum levels:

1. The sum of post-consumer recycled and renewable content must be $\geq 20\%$ or equal to the percentage of recycled and renewable content required for the Silver level per Section 5.3 Increasing Demand: Incorporating Cycled and/or Renewable Content.

2. At least 90% of the packaging materials (by weight) meet one of the following:
 - a. Compliance with the Silver level requirements in Sections 5.2 Preparing for Active Cycling and 5.4 Material Compatibility for Technical and/or Biological Cycles, or
 - b. Compliance with b. i, ii, and iii below:
 - i. The packaging is compatible for municipal cycling systems,
 - ii. Plastic materials are:
 1. A type that is commonly recycled or composted via curbside pickup (i.e., PET, HDPE, PP), and
 2. Accepted by municipal cycling programs in the region(s) where the product is sold.
 - iii. Materials that are intended for composting are fully compostable per a C2CPII recognized compostability standard consistent with the intended cycling pathway(s).
3. The packaging is reusable/refillable, is part of a refill system (e.g., refill pouches), and/or the packaging has a product-specific take-back program.
4. The applicant has reduced the amount or weight of the packaging materials for the certified product without decreasing the compatibility for cycling (as defined in 'b.' above) or has met the Gold level requirements in Section 5.5 Circular Design Opportunities and Innovation.

Requirements #1-4 above may be met using a weighted average compliance score considering options #1-4 as applicable. A total compliance score of 100% is required for Bronze and Silver levels, and 200% for Gold and Platinum. The weighted average approach may be applied to packaging for individual products, or across all packaging within a product group.

Further Explanation

The requirements in this section apply to the packaging of a certified product. There are requirements for product packaging at two achievement levels (Bronze level and Gold level). The Bronze level packaging requirements must be achieved for certification at the Bronze or Silver level overall. The Gold level packaging requirements must be achieved for certification at the Gold or Platinum level overall.

Materials in Scope

In general, packaging is defined as material(s) used to contain, wrap, protect, and/or dispense the product. This includes, but is not limited to, primary packaging materials as defined in the Definitions section. Packaging also includes materials used to identify and/or promote the product as part of the packaging (e.g., labels). Note that this also includes materials that may not commonly be identified as packaging, such as leaflets, brochures, user instruction manuals, and hangtags.

Materials Inseparable from the Certified Product are Part of the Product and not Packaging

In cases where packaging materials are inseparable from the certified product, they are considered part of the product and are subject to the requirements for the product. For example, if the certified product is a roll of paper towels and a glue is used to attach the last towel(s) to the inner cardboard roll, the glue

is considered part of the product if it remains on the last towel(s) once they have been removed from the roll for use. The inner roll is otherwise considered packaging.

Materials Required for the Functioning of the Product are Part of the Product and not Packaging

A reusable bag or case intended to store the product when not in use is considered packaging. In cases where a product cannot function without the case (e.g., a charging case for in-ear headphones), the case is considered part of the product. For liquid formulations (e.g., in cosmetics and cleaning products), the structures used to contain and dispense the formulation (e.g., aluminium spray cans, mascara brush) are considered packaging.

Packaging for Professional Use Products Shipped Directly to Building Sites

Packaging for products sold exclusively to professional users (e.g., construction workers and builders) and shipped directly to the installation or building site are typically out of scope. This refers to product packaging that is removed and disposed of or recycled prior to installation. However, packaging that is used together with the product during installation remains in scope.

Examples of product packaging materials for professional use products shipped directly to building sites that are in scope include a caulking tube and a quick-set cement bucket.

Sales unit packaging for professional use products that are also sold in stores (e.g., home improvement shops) that remains with the product on the sales floor or shelf are in scope.

Note: Please refer to the Final Manufacturing Stage Process Definitions document to determine the packaging *processes* that are in scope for the final manufacturing stage.

Materials that are not in Scope

As noted, packaging and other materials used exclusively for shipping the product (e.g., polybags, boxes, pallets, shrink wrap) are out of scope. However, if these materials are used to contain, wrap, or protect the product at the point of sale, they are then in scope, as they are not exclusively added for shipping.

In addition, packaging for products that are sold as inputs to other products is also out of scope. Labels, stickers, hangtags, and similar that are added by retailers (rather than by the brand or manufacturer) also are not subject to these requirements.

Complying with the Material Health Requirements

Homogeneous materials subject to review in packaging must comply with:

1. *The Bronze level chemical restrictions aligned with leading regulations for packaging materials, as listed in the Cradle to Cradle Certified® Restricted Substances List reference document (Section 4.2.1), and*
2. *The Bronze level restrictions on per- and polyfluoroalkyl substances (PFAS) and halogenated*

polymers (Section 4.2.2).

Restrictions for product packaging materials are listed in the [Cradle to Cradle Certified® Version 5.0 Restricted Substances List \(RSL\)](#) reference document. Several commonly used product packaging materials (i.e., plastic, glass, paper, and paperboard) are subject to the restriction lists in RSL spreadsheet tabs 4.2.1 Packaging RSL (for Requirement #1) and 4.2.2 PFAS (for Requirement #2). Packaging materials not covered in the Packaging RSL (e.g., metals, textiles) are subject to the restrictions in the 4.2.1 Core List tab. Additionally, product packaging materials may not contain halogenated polymers, per the Bronze level Requirement #4 in Section 4.2.2.

Compliance with Material Health Requirements #1 and #2 may be verified through product packaging supplier declarations confirming that the material complies with the specified restrictions above. The C2C Certified Restricted Substances Declaration (available through Cradle to Cradle Certified assessors) may be used for product packaging materials. Declarations must be collected for all packaging components subject to review including labels, inks, adhesives, and minor parts such as pumps. Product packaging material suppliers may alternatively use their own declaration format provided that it meets the requirements in the Restricted Substances Declaration.

Note: For product packaging subject to the source regulations in Section 4.2.1 (e.g., REACH), Requirement #1 may alternatively be met through a regulatory compliance statement.

Additional Requirements for Recycled Content Materials

For recycled content materials from sources that cannot be fully defined (i.e., post-consumer sources and many pre-consumer sources as well), additional evidence is required to confirm compliance.

- Pathway #1, Analytical Testing: The recycled content material meets Bronze level analytical testing requirements per the [Recycled Content Materials Assessment Methodology](#) and related [list of analytes](#). Refer to the Recycled Content Materials Assessment Methodology (linked above) for additional information.
- Pathway #2, Expanded Declaration: The recycled content material supplier submits a declaration that confirms compliance with the Material Health requirements, including consideration of any contaminants that may be introduced from the recycling stream.
 - The Version 5.0 Restricted Substances Declaration includes an option to specify that the declaration covers unintentionally added substances in product packaging materials that contain recycled content.
 - As with all declarations, the supplier must have sufficient knowledge to substantiate the declaration (and attests to this). For this pathway, declarations may be informed by past analytical testing or knowledge of the specific recycled content stream.

Exemptions for Material Health Requirement #2: Restrictions on PFAS and Halogenated Polymers

There are several exemptions noted in Section 4.2.2 that may also be applied to product packaging. The exemptions are as follows:

A homogeneous product packaging material may be exempt from meeting this requirement if any of the following conditions are met:

- 1. It is present at < 1% of all product packaging materials by weight. Materials that are surface coatings applied to foodservice ware or textiles, including apparel, carpets, and furnishings do not qualify for this exemption. (**Note:** Foodservice ware includes any product intended to be used for cooking, serving, distributing, holding, packaging, and/or transporting food.)*
- 2. It is contained in a part that is < 1% of all product packaging materials by weight.*
- 3. The use of a halogenated organic substance or functionally related chemical of concern in the material is required to meet regulatory requirements (e.g., fire standards). To claim this exemption the following conditions must be met:*
 - a. alternative methods of meeting the regulatory requirement must not exist, and*
 - b. the applicant must conduct ongoing research into alternative ways of complying with the regulation without the use of the substance or other x-assessed substance.*

Exemptions 1 and 2 may be claimed for homogeneous materials that in sum make up no more than 5% by weight of all packaging materials.

Per condition #1, “all product packaging materials” refers to all product packaging materials that are in scope of the packaging requirements for a single product. It does not refer to all packaging materials used for all products within a group of certified products.

Note: These exemptions may not be used for direct contact product packaging materials. Per the Standard, *any homogeneous material that comes into routine and direct human contact during the normal use of the product (excluding inks, adhesives, and labels) is subject to review at any concentration.* This means that direct contact product packaging materials (such as finishes and coatings) may not use the exemptions above to meet Material Health Requirement #2.

Complying with the Circularity Requirements

To certify a product at the Bronze or Silver level, its packaging must meet one of the circularity requirements. To certify a product at the Gold or Platinum level, its packaging must meet two of the circularity requirements. For products in the same group (i.e., that are applying under a single Cradle to Cradle Certified certificate), or for applicants with more than one certificate, individual packaging types may achieve the circularity requirements differently, as long as at least one or two of the circularity requirements (as applicable for the desired achievement level) have been achieved for the packaging of each certified product. For products that have more than one packaging types in scope (e.g. a cardboard box and a plastic bottle including bottle label and bottle cap), the individual packaging types may achieve the circularity requirements differently if they belong to separate cycling systems, are intended to be separated before cycling and are communicated as such. For example, the cardboard box achieves Requirement #1 while the plastic bottle (including bottle label and bottle cap) achieve Requirement #2b. Municipal paper recycling and municipal plastic packaging recycling are considered separate systems. The bottle label and bottle cap may not achieve the requirements separately from the bottle itself, thus all three components need to be assessed together, since they all belong to a single

unit intended for the same cycling system (e.g., municipal plastic packaging recycling). Packaging components, and packaging in a product group may also meet circularity requirements based on a weighted average compliance score as described at the end of this section.

Achieving the Required Percentage of Post-Consumer Recycled and/or Renewable Content (Requirement #1)

Requirement: *The sum of post-consumer recycled and renewable content must be $\geq 20\%$ or equal to the percentage of recycled and renewable content required for the Silver level per Section 5.3 Increasing Demand. (Note: This excludes the Alternative Compliance Path in Section 5.3, which allows for conducting a feasibility analysis and reporting the limitations of achieving the required percentages. This is not an option for packaging.)*

The definition of renewable content in the standard Definitions section applies: *Renewable content – Material derived from a living, natural resource (agriculture, aquaculture, or animal- derived) that can be continually replenished. Material must be legally harvested, as defined by exporting and receiving country. If the material is wood, or another material associated with extensive evidence of ecosystem destruction due to land conversion and/or poor management practices, to count as renewable the material must be certified by a C2CPH-recognized program as responsibly sourced. If the material is a biologically derived plastic or liquid formulation, material only counts as renewable if its bio-based content has been quantified using radiocarbon dating or through chain of custody documentation showing derivation from natural resources.*

This means that for wood-based paper made from virgin wood pulp to count as renewable it must be certified to a C2CPH-recognized responsible sourcing standard. In other words, for paper made from 100% virgin wood pulp, at least 20% must be responsibly sourced per an applicable standard to achieve this requirement. See standard Section 5.3 Increasing Demand: Incorporating Cycled and Renewable Content and the list of [C2CPH-Recognized Certification Programs and Standards](#) for additional information on C2CPH-recognized responsible sourcing standards.

Applicants may achieve these requirements on a per package basis (e.g., summing across all packaging components that are in scope for a certified product) or based on the weighted average amount of postconsumer recycled and renewable content in a product group over the prior year (for new certifications) or prior three years including any extensions of the prior certificate (for recertifications). If meeting the requirement based on the weighted average, a signed commitment to tracking and maintaining compliance over the next three years is also required. An example is provided at the end of this section.

For this requirement (Section 9), the amounts of post-consumer recycled and renewable content may be verified via a declaration from the applicant. Verification per chain of custody documentation, either as part of the Cradle to Cradle certification process or via use of a C2CPH-recognized recycled content certification, is recommended. See the Required Documentation section below for additional information on chain of custody.

Achieving this requirement per Section 5.3: As noted in the standard, an alternative to achieving $\geq 20\%$ post consumer recycled or renewable content is to achieve the Silver level percentages per Section 5.3. Refer to the reference document titled [Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type](#) (see P1 Product-level percentages or P2 Packaging & Single Use Products tab) for Silver level requirements by product or material type. For cycled content, post-consumer is required (using Silver level percentages) although Section 5.3 does not require post-consumer content at the Silver level. However, pre-consumer recycled biological materials do not require post-consumer status to receive credit in Section 9. See the “Instructions for Use” tab in the Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type reference document for further information on how to calculate the required percentage of cycled and renewable content.

Achieving the Compatibility Requirements (Requirements #2)

Requirements: At least 90% of the packaging materials (by weight) meet one of the following: (a.) Compliance with the Silver level requirements in Sections 5.2 Preparing for Active Cycling and 5.4 Material Compatibility for Technical and/or Biological Cycles, OR (b.) comply with #i, ii and iii below:

- i. *The packaging is compatible for municipal cycling systems.* Refer to the guidance for standard Section 5.4 Material Compatibility for Technical and/or Biological Cycles (see the guidance for Section 5.4, Bronze level Requirement #3) for a list of compatibility requirements by material type. **Note:** For plastic packaging, all requirements of the reference guidelines in Section 5.4 #3 must be met for 100% of the packaging (rather than for 90%). This is because the guidelines are written to apply to the packaging as a whole and minor components may impact the recyclability of the entire package.
- ii. *Plastic materials are (1.) A type that is commonly recycled or composted via curbside pickup (i.e., PET, HDPE, or PP) **and** (2.) Accepted by municipal cycling programs in the region(s) where the product is sold.* This means that only PET (polyethylene terephthalate), HDPE (high-density polyethylene), and PP (polypropylene) are eligible to meet this requirement. These materials may automatically be assumed to be accepted by municipal programs in the European Union, Switzerland and United Kingdom. PET and HDPE may automatically be assumed to be accepted in the United States and in other regions. For PP, it must be demonstrated that the material is accepted in the states (for the United States) or country (outside of the EU, United Kingdom, and Switzerland) where the product is sold to receive credit. Per Section 5.2, 60% or more of product sales must be covered. For other material types, please use Requirement #2a.
- iii. *Materials that are intended for composting are fully compostable per a C2CPH-recognized compostability standard consistent with the intended cycling pathway(s).* Refer to the guidance for standard Section 5.4 Material Compatibility for Technical and/or Biological Cycles (see Section 5.4, Bronze level Requirement #4.c Further Explanation box) and the list of [C2CPH-Recognized Certification Programs and Standards](#) for recognized compostability tests and standards.

Note: Paper materials in packaging of a certified product are only subject to Section 9 requirements and not subject to the Section 5.1 requirement requiring select paper products to always be

intended for the biological pathway, unless the packaging itself is also a certified product.

Refill/Reuse and Product Specific Take-back Program (Requirements #3)

For Refill/Reuse additional guidance is provided. Refer to the Required Documentation section below.

For a Product Specific Take-back Program with an intended cycling pathway(s) other than Reuse, at least 90% of the packaging material(s) by weight must be compatible with the intended cycling pathway(s).

Note for reusable packaging, this requirement is considered met.

1. It must be possible to cycle the packaging via the intended pathway(s), at least at the pilot scale (e.g., at small-scale under "normal" processing conditions). Refer to the guidance for standard Section 5.1 Defining the Product's Technical and/or Biological Cycles, Further Explanation box.
2. Homogenous materials that need to be separated in order to be cycled must be separable by the entity implementing the intended cycling pathway with given instructions and no additional special knowledge. Refer to Section 5.4 Material Compatibility for Technical and/or Biological Cycles, Further Explanation box, Separability and Extractability (Bronze level), Requirement #1.
3. For solid materials intended for the biological cycle, the applicable requirements in Section 5.4 Material Compatibility for Technical and/or Biological Cycles, Requirement #4, must be met.

Weight Reduction (Requirements #4)

Requirement: *The applicant has reduced the amount or weight of the packaging materials for the certified product without decreasing the compatibility for cycling (as defined in 'b.' above) or has met the Gold level requirements in Section 5.6 Circular Design Opportunities and Innovation.* Paraphrasing from standard Section 5.6 Circular Design Opportunities and Innovation, weight reductions receive credit when they have led to at least a 10% decrease in material weight compared to packaging used for the same or a similar product type, or for packaging that requires at least 10% less material than the average package of the same type and function. The reduction or elimination of packaging components, such as forgoing plastic films that were previously used, also counts as weight reduction. Applicants may achieve these requirements on a per package basis (e.g., summing across all packaging components that are in scope for a certified product).

A suitable sample size (e.g., 10 different samples are accepted) should be used to calculate the weight of an average package of the same type and function. For liquid formulations, packages of the same type and function may be demonstrated by having the same product type and volume (e.g., ml of product per package). When comparing liquid formulation products with different volumes or concentrations, a ratio considering a suitable functional unit (e.g., ml of product) must be used as the basis for comparison.

Weight per functional unit reduction (%)

$$= \frac{\frac{\text{Weight before reduction}}{\text{Functional unit before reduction}} - \frac{\text{Weight after reduction}}{\text{Functional unit after reduction}}}{\frac{\text{Weight before reduction}}{\text{Functional unit before reduction}}} \times 100$$

To compare packaging for the same or similar product (same functional unit value), the functional unit may be omitted by setting it to 1 in the formula above. A weighted average based on units sold may also be used, please see example at the end of this section.

Refer to Section 5.6 Circular Design Opportunities and Innovation for design opportunities and innovations that also receive credit (i.e., as alternatives to weight reduction).

Meeting Circularity Requirements Using a Weighted Average Compliance Score

Requirements #1-4 above may be met using a weighted average compliance score considering options #1-4 as applicable. A total compliance score of 100% is required for Bronze and Silver levels, and 200% for Gold and Platinum. The weighted average approach may be applied to packaging for individual products, or across all packaging within a product group. The circularity requirements may be met either per package, or using a weighted average compliance score across packaging components and packaging types in a product group per year. Please see the example below. If meeting the requirement based on the weighted average compliance score, a signed commitment to tracking and maintaining compliance over the next three years is also required. This means that there may be packaging components, packaging types, and/or months in a year where no requirements are met. This is acceptable as long as the yearly weighted average compliance score is 100% for Bronze and Silver, and 200% for Gold and Platinum.

- Packaging components that belong to the same unit (e.g., PET bottle, bottle cap and sleeve) intended for the same cycling system must be assessed together when complying with Requirement #2 (compatibility) or Requirement #3 (product-specific take back). For example, the entire bottle must meet compatibility requirements, or the entire bottle is part of a take-back program.
- For requirements #2 and #3, the whole packaging unit (e.g., the PET bottle, bottle cap and sleeve) is either compliant (100%) or not. There is no partial compliance score possible. The score may not be > 100%.
- For requirements #1 (renewable or post-consumer content) and #4 (weight-reduction), partial compliance scores or compliance scores > 100% are possible.

Table – Example of Weighted Average Compliance Score Calculation

Packaging	Sales volume (total in year)	Component	Type	Weight per unit	Total weight (in a year)	Compliance pathway	Compliance %	Weighted Average Compliance %
A	100	A1	LDPE Bag	10	1000	No requirements met.	0%	0%
		A2	Paper instruction Manual	10	1000	#1: 40% renewable	200%	$(1000 \div 22000) * 200\% = 9\%$
B	200	B1	Bottle cap (PE)	5	20000	#2b: Compatibility	100%	

		B2	Bottle label (PE)	2		requirements for packaging met (Section 5.4 Bronze)*		$(20000 \div 22000) * 100\%$
		B3	Bottle (main body, PET)	93				= 91%
Total					22000	Total		100%

*All bottle components must be assessed together because they belong to the same cycling system.

Required Documentation

- Description of product packaging.

For compliance with the Material Health restrictions (requirements #1 and #2):

- Restricted Substances Declaration covering Section 4.2.1 and Section 4.2.2 (PFAS and halogenated polymers only) for all packaging components/materials subject to review.
- If using recycled content materials, analytical test results (i.e., as specified for Bronze level in the [Recycled Content Materials Assessment Methodology](#) and related [list of analytes](#)), or an expanded declaration that includes all substances in the recycled content (i.e., including any contaminants).
- If Section 4.2.2 Exemption #3 is claimed for any materials in the product packaging to meet Requirement #2, evidence per Section 4.2.2, Required Documentation.

For compliance with the post-consumer recycled and renewable content requirements (circularity Requirement #1):

- C2CPII Bill of Materials Form (or similar) for the packaging with the columns applicable to use of cycled and renewable content (Section 5.3) complete.
- Signed declaration from the applicant stating the percentage of post-consumer and recycled content in the packaging, source(s) of renewable content, and explaining how the percentages have been verified by the applicant. Recommended: Chain of custody documentation (per the Product Circularity Section 5.3, Required Documentation) or C2CPII-recognized recycled content certification certificate.
- Explanation regarding how any renewable content meets the definition of renewable per the standard Definitions section. For wood-based packaging such as virgin wood-based paper, C2CPII-recognized program certificate and evidence of purchase.

For compliance with the compatibility requirements (circularity Requirement #2):

- C2CPII Bill of Materials Form (or similar) for the packaging with the columns applicable to compatibility (Section 5.4) complete.
- Explanation regarding how each of the requirements has been achieved. Referring to the applicable sections of the Product Circularity section (i.e., Section 5.4 Bronze level):
 - For packaging intended for technical municipal cycling, and for the compatibility

requirements pertaining to material composition, supplier declaration(s) indicating that the relevant requirements have been met along with safety data sheets and/or other publicly available material composition data are accepted. For packaging that is fully certified, please refer to documentary requirements in Section 5.4.

- For PP, evidence that the material is accepted by municipal recycling programs in the region(s) accounting for at least 60% of sales.
- For Requirement #2a, additional documentation as required in Section 5.2 Silver level.

For compliance with the reusable/refillable or part of take-back program requirement (circularity Requirement #3):

- Photos of packaging and explanation of how the refill or reuse system functions and is communicated to customers (e.g., links to relevant website and/or photos of this information as included on the packaging itself).

And/or,

- Description of the product-specific take-back program, partnerships involved (if any), and evidence regarding how the program is communicated to customers (e.g., links to relevant website and/or photos of this information as included on the packaging itself).
- For product-specific take-back programs with intended pathway(s) other than reuse:
 - Description on how at least 90% of the packaging material(s) by weight can be recycled via the chosen intended pathway(s), including a description of at least pilot scale recycling for the packaging, and indication of the entity(ies) intended to carry out the process. For technical materials that are intended for a recycling pathway and are commonly known to be recyclable (i.e., steel, aluminum, copper, paper, and grades of HDPE, PET, and PP used for packaging), a short comment is sufficient. For solid materials intended for the biological cycle, an explanation on how the applicable requirements in Section 5.4 Material Compatibility for Technical and/or Biological Cycles, Requirement #4 are met.
 - Description on how homogenous materials that need to be separated to be recycled can be separable by the entity implementing the intended recycling pathway with given instructions and no additional special knowledge.

For compliance with the weight reduction or other design opportunity requirements (Circularity Requirement #4):

- Description of the weight reducing design and how it has enabled the use of less material (i.e., at least 10% less) compared to packaging used for the same or similar product type. Data and calculations showing how the packaging weight changed compared to a previous design not older than six years, **or** compared to an average, as applicable. Evidence that compatibility for recycling did not decrease with the weight reduction, referring to Section 5.4 Compatibility requirements.

Or,

- Required documentation per Section 5.5 Circular Design Opportunities and Innovation if a different opportunity is selected.

If meeting Circularity Requirements #1-4 using a weighted average:

- Data and calculations demonstrating how the weighted average compliance score of the packaging or packaging in a product group has been 100% (Bronze and Silver) or 200% (Gold and Platinum) over the prior year (for new certifications) or prior three years including any extensions of the prior certificate (for recertifications) and signed commitment to maintaining this percentage over the next three years at a minimum. As a product transitions from Silver to Gold at recertification, a compliance score of 200% is required for the prior year before recertification. The earlier certification duration may have a compliance score of 100%.

10 // Animal Welfare Requirements

Several animal material types may not be used in certified products (see eligibility restrictions in the Certification Manual). The requirements in this section apply to animal materials and substances derived from animal materials that are eligible for certification. The eligible materials and substances to which the requirements in this section apply are:

1. By-products of meat production and fishing (e.g., leather, sheepskin, down, fish skin—excluding fur), or
2. Material sourced from animals that do not have to be killed or live-plucked in order to harvest the material (e.g., sheep's wool).

For substances derived from by-products (e.g., substances derived from fat, skin, bone): The requirements in this section apply only if these substances are inextricably tied to the product's core functionality (e.g., products made entirely from gelatin, collagen, chondroitin, squid ink, or tallow, and products containing these substances, if tied to core functionality).

Note: These requirements do not apply to material from invertebrates for which clear evidence of sentience does not exist.

Intended Outcome(s)

The welfare of the animals is protected during all production phases when material from animals is used in a certified product.

Applicable Achievement Level(s)

Bronze, Silver, and Gold

Requirement(s)

Bronze level: For products containing animal material, commit to protecting animal welfare through company policy. For recertification, demonstrate progress toward implementing the policy, including a mechanism that aims to ensure adherence to the policy.

Silver level: Use a minimum of 50% materials and substances certified to a C2CPII-recognized animal welfare certification program, or equivalent alternative. Alternatively, publicly disclose an explanation of the limitation(s) preventing achievement of the required percentage.

Gold level: Use materials and substances certified to a C2CPII-recognized animal welfare certification program, or equivalent alternative.

For the Bronze level, the applicant must have a policy in place that forbids animal abuse at all facilities where the animals are raised and/or slaughtered (including any facilities in the supply chain), and during transport.

The policy must:

1. Address the Five Freedoms:

- a. Freedom from hunger and thirst
- b. Freedom from discomfort
- c. Freedom from pain, injury, and disease
- d. Freedom to express normal behavior
- e. Freedom from fear and distress
2. Prohibit specific practices of high concern for the animal-derived material type in question (e.g., mulesing of sheep).
3. Include provisions to immediately address cases where it becomes known that animal abuse is occurring (e.g., a provision to immediately cease doing business with affected suppliers until the issue is resolved).

The mechanism for implementing the policy must include:

1. Regular on-site surveillance of all relevant facilities by individuals knowledgeable of animal health and welfare issues to verify implementation of the policy.
2. A method of tracking material from farm to certified product in any case where the farm is not the final manufacturing stage.

For the Silver and Gold levels:

1. The animal welfare certification or alternative must address all required points of the policy (per the Bronze level requirements) and include regular site surveillance of all relevant facilities by third-party auditors knowledgeable of animal health and welfare issues. Regular site surveillance is defined as at least one on-site audit every two years including an allowance for conducting unannounced audits.
2. If using an equivalent alternative to certification, qualified third-party auditors without a conflict of interest (i.e., no other paid services provided to the applicant) must verify equivalency and policy implementation.

Alternative to Meeting Required Percentage of Certified Material: Feasibility Analysis

For the Silver level: A feasibility analysis may be applied as an alternative to meeting the required percentage of certified material in any case where an applicant is unable to meet the requirement. **Note:** This is not an option at Gold or Platinum levels.

The following are required:

1. An explanation of the limitation(s) preventing the incorporation of the target amount of certified material and how, based on these limitation(s), the amount of certified material currently used represents the maximum that is currently feasible.
2. The explanation must be reported publicly.
3. A strategy/plan for addressing the identified limitation(s) and increasing the amount of certified material over time must be developed. The strategy must include discrete objectives and an associated timeline.
4. For recertification:
 - a. The applicant must demonstrate progress toward achieving the objectives.
 - b. A description of progress made must be reported publicly.

Further Explanation

Eligibility

As noted, only by-products of meat production or fishing, and material from animals that do not have to be killed or live plucked to obtain the material, are eligible. In addition, per Section 2.1 of the standard, all fur is ineligible, including when it is a by-product and regardless of whether it has been removed from the hide or skin. Material from cephalopods is also ineligible. The animal welfare requirements currently do not apply to silkworms, although production typically does require killing moth larvae, pupae, and adults. A recommended best practice for silk is to specify silk for which moths are allowed to emerge prior to utilizing the cocoons. The animal welfare requirements also do not apply to bees (e.g., when using bee wax). See Section 2.1 of the standard for additional information on eligibility.

The following material types are commonly understood to be by-products of meat production: Cow leather and hides, sheepskin, and down. However, for any animal material, third-party verification that a material is indeed a by-product may be requested by C2CPII should the application audit surface concerns about whether this is the case.

Bronze Level: Welfare Policy

Applicants are required to conduct research into the issues applicable to the animal material(s) used in the product to gain an understanding of the specific issues relevant to ensuring the five freedoms are provided for the animal species used. Practices of high concern must also be investigated. As noted, the policy must apply to animal husbandry and to practices occurring during transport and in the slaughterhouse, the latter of which are more easily overlooked, as they are often outside the control of the farmer/grower. The policy must explicitly include commitments to ensuring that any practices of high concern identified via the research are avoided. For example, mulesing of sheep (as noted in the standard) is of concern for wool and sheepskin, as is live plucking of birds for down. It is recommended that the policy also commit to ensuring specific husbandry techniques known to enhance the welfare of the species being used, regardless of whether these techniques are currently required by law or by animal welfare certifications.

Recertification: *Progress toward implementing the policy, including a mechanism that aims to ensure adherence to the policy, must be demonstrated.*

It is important to note that the Bronze level of certification is only applicable for up to six years (i.e., two three-year certification periods), after which applicants are required to advance to the Silver level. Refer to standard Section 1.3.3 for additional information.

Silver and Gold Level: C2CPII-Recognized Welfare Certifications

Currently recognized animal welfare certification programs include the Responsible Wool Standard and the Responsible Down Standard. Please refer to the [C2CPII-Recognized Certification Programs and Standards](#) document for a complete list of recognized standards. Additional programs may be recognized and subsequently added to this list. Refer to Appendix 2 in this guidance document for

requirements and the application process for recognition. Appendix 2 also lists requirements for 'alternative equivalents to certification'.

Note that organic certification does not fulfill the Silver level animal welfare requirements.

Gold Level: All Animal Material Used in the Product Must Comply with the Requirements

At the Gold level, the standard requires *"Use materials and substances certified to a C2CPH-recognized animal welfare certification program, or equivalent alternative."* This means that all animal material used in the product must comply with the requirements.

Required Documentation

Bronze Level

- Explanation regarding how it can be ensured that the material is a by-product (if applicable) and, for down, that live plucking does not occur.
- Summary of practices that will enhance animal welfare during all production phases for the species used (farming/growing, transport, slaughter), identification of any issues of high concern, and references used.
- Company policy that includes all required points. This must include a zero tolerance stance for mulesing and live plucking, as applicable.
- Procedure for addressing any policy non-compliances identified.

Bronze Level Recertification

- Description of the mechanism for ensuring policy implementation including required points #1-2 (i.e., surveillance and tracking).
- Progress report on policy and mechanism implementation (must demonstrate progress unless already implemented at initial certification).

Silver and Gold Level

- Animal welfare certification certificate.
- If the certification was obtained by a supplier of the applicant, evidence of purchase of the animal material from the certification holder/supplier (e.g., purchase order, receipts).
- Calculations showing that the amount purchased is equal to the total amount of animal material used in the product(s).

Silver Level (Alternative)

- If unable to meet the required percentage of certified material, an explanation of the limitation(s) and a strategy for addressing the identified limitation(s).
- Evidence of public disclosure of the limitations (may be via C2CPH's product registry).
- Recertification: Evidence of progress towards achieving the strategy.

If using an equivalent alternative to certification

- Evidence of auditor certification to conduct animal welfare audits: The certification must verify the auditor's readiness to perform animal welfare certification audits and confirm their compliance with industry-established standards for the relevant species.
- Auditor conflict of interest statement: The auditor's statement must affirm that there is no conflict of interest with the applicant. The statement must indicate that the auditor is solely engaged for the purpose of conducting audits and does not provide any other paid services to the organization.
- Detailed audit protocol: A comprehensive document detailing the audit protocol employed by the auditor for conducting animal welfare audits. This document must outline the methodology, steps, and criteria for assessing animal welfare practices for the relevant species.
- Biennial audit cycle assurance: Evidence of a process to ensure biennial audits occur.
- Unannounced audit inclusion: The audit protocol must incorporate provisions for unannounced audits (i.e., audits without prior notification).
- Animal welfare audit report. The report is required to elucidate the audit process, findings, and recommended corrective actions (if any).

11 // Private Label Product Requirements

A private label product is a product that is identical in every way to another product that is currently Cradle to Cradle Certified (i.e., the parent product), except for brand name and packaging.

Companies applying for a private label product certification must meet the following requirements:

1. Complete and sign a Private Label Verification Form stating that the product is identical to the certified parent product.
2. For the Silver level and above: If necessary for the achievement level in the Product Circularity category met by the parent product, make a connection to the original equipment manufacturer's or parent product company's take-back program(s) or other cycling initiatives in order for the product to be cycled as intended.
3. For the Platinum level: Unless meeting all company-level requirements, disclose in the Cradle to Cradle Certified Products Registry that the private label certification holder has not been assessed to determine conformance with the company-level requirements. It will also be stated on the registry entry that the product manufacturer (i.e., the parent product certification holder) has met the company-level requirements.

All other program requirements will have been met by the parent product company rather than by the private label company.

For further information about private label certifications, see the Policy for Certification of Private Label Products within the Cradle to Cradle Certified® Certification Scheme.

Required Documentation

- C2C Certified Private Label Verification Form.
- Explanation regarding how the Product Circularity requirements have been met (e.g., if the original manufacturer has achieved the requirements through a product specific take-back program, describe how the private label product will also be recycled through this pathway).
- Platinum level: Agreement to disclose on C2CPII's web registry that the company-level requirements have been met by the manufacturer and the certification holder has not been assessed to meet them (this may be done on the Private Label Verification Form) or evidence that all applicable company level requirements have been met.

12 // Definitions

Anaerobic digestion – The process by which microorganisms biologically decompose material into carbon dioxide, methane, water, inorganic compounds, and/or biomass in an anaerobic environment (absence of oxygen), within a limited time period.

Applicant company – The company(ies) responsible for being in conformance with the standard requirements (e.g., the company that signs the C2CPII certification agreement) and is listed on the Cradle to Cradle Certified certificate.

Baseline water stress – Measures the ratio of total water withdrawals to available renewable surface and groundwater supplies. Water withdrawals include domestic, industrial, irrigation, and livestock consumptive and non-consumptive uses. Available renewable water supplies include the impact of upstream consumptive water users and large dams on downstream water availability. Higher values indicate more competition among users. [Reference: WRI Aqueduct, 2019.]

Benign minerals – Inorganic salts that contain cations and anions that are considered compatible with or beneficial to biological life processes.

Biodegradable material – A material that can undergo near-complete biological decomposition into carbon dioxide, water, inorganic compounds, and biomass in a natural medium (soil, water, or anaerobic environments) within a limited time period, thereby efficiently returning nutrients from the material back to the earth.

Bioenergy credit multiplier – A unitless factor used to calculate the bioenergy credit. The bioenergy credit multiplier is equal to: $[1 - (\text{adjusted Biogenic Assessment Factor for the eligible fuel})]$.

Biogenic assessment factor – A unitless factor that represents the net atmospheric biogenic CO₂ contribution associated with using a biogenic feedstock at a stationary source, taking into consideration biogenic landscape and process attributes associated with feedstock production, processing, and use at a stationary source, relative to the amount of biogenic feedstock consumed. This term represents a ratio of the net biogenic carbon cycle effects from all stages of the growth, harvest/collection, processing, and use of a biogenic feedstock relative to the carbon content of biogenic feedstock used at the point of assessment and resulting in stack emissions at a stationary source. [Reference: U.S. Environmental Protection Agency, Office of Air and Radiation, Office of Atmospheric Programs, Climate Change Division. Framework for Assessing Biogenic CO₂ Emissions from Stationary Sources, November 2014.] BAFs modeled using future anticipated baselines developed for fuels most similar to those eligible for credit per the standard were selected. The BAFs were adjusted up by 10% as a conservative approach, or in the case of landfill gas and similar, set to zero rather than giving a credit greater than the carbon dioxide emissions produced.

Biological cycle – The cycle by which materials or parts are released to, and ideally reprocessed in, the environment via composting, biodegradation, or other biological metabolic pathways.

Biologically derived material – A material that is a biological material or that was originally derived from a biological material through one or multiple chemical transformations.

Biological material – A material that is extracted from a plant or animal source without significant chemical processing.

Chemical substance (or “substance”) – Matter of constant composition best characterized by the entities (molecules, formula units, atoms) it is composed of. Physical properties such as density, refractive index, electric conductivity, melting point, etc., characterize the chemical substance.

Child labor – Work that deprives children of their childhood, their potential, and their dignity, and that is harmful to physical and mental development. A child is anyone under the age of 18. The minimum working age is 15 years, or statutory school-leaving age, whichever is higher. This age can vary by country. [Key References: United Nations Convention on the Rights of the Child, International Labor Organization (ILO) Convention 138 – Minimum Age, ILO Convention 182 – Worst Forms of Child Labor.]

Collective bargaining – All negotiations which take place between an employer, a group of employers or one or more employers’ organizations, on the one hand, and one or more workers’ organizations, on the other, for: (a) determining working conditions and terms of employment; and/or (b) regulating relations between employers and workers; and/or (c) regulating relations between employers or their organizations and a workers’ organization or workers’ organizations. [Key References: International Labor Organization (ILO) Convention 98 – Right to Organize and Collective Bargaining, ILO, ILO C154 - Collective Bargaining Convention.]

Component (“Part”) – A single functional grouping of contents. A part is an optional categorization to identify a portion of a product that is used modularly. A part will still be comprised of one or more homogeneous materials.

Compostable material – Characteristic of a product, packaging, or associated component that allows it to biodegrade, generating a relatively homogeneous and stable humus-like substance within a limited time period.

Cycling – The processing of material, parts, or whole products toward a new use cycle via a technical or biological cycling pathway that includes at least one of the following: reuse, remanufacturing, refurbishing, recycling, nutrient extraction/anaerobic digestion, composting, or biodegradation.

Cycled content – Material or parts that have been reclaimed, recycled, salvaged, or otherwise captured from a pre-consumer or post-use phase of a previous cycle.

Cycling pathway – A specific method, system, or other means of processing a material at the end of its use phase. Examples include municipal recycling, home composting, aerobic biodegradation in wastewater (i.e., at municipal treatment plant), take-back and repair/remanufacture by the manufacturer.

Destructive disassembly operations – Disassembly processes that deal with the partial or complete destruction of obstructing components. In these cases, components or irreversible fasteners (e.g., welds) are destroyed using destructive tools such as a hammer, crowbar, or grinder.

Direct discharge – Effluent is discharged to surface or groundwater instead of to an externally owned and operated wastewater/effluent treatment facility.

Discrimination – Unequal treatment, directly or indirectly, on various grounds including race, ethnicity, sex, language, religion, political or other opinion, national or social origin, property, and birth, or other

status (such as sexual orientation or health status, for example, having HIV/AIDS). [Key References: Universal Declaration of Human Rights – Article 2, 7, 23; International Labor Organization (ILO) Convention 111 – Discrimination; International Convention on the Elimination of All Forms of Racial Discrimination; International Convention on the Elimination of All Forms of Discrimination against Women.]

Diversity – The inclusion of different types of people (such as people of different races or cultures) in a group or organization.

Due diligence – The process through which enterprises can identify, assess, prevent, and/or mitigate and account for how they address actual and potential adverse impacts in their own operations, supply chains and business relationships, as recommended in the OECD Due Diligence Guidance for Responsible Business Conduct [<https://mneguidelines.oecd.org/OECD-Due-Diligence-Guidance-for-Responsible-Business-Conduct.pdf>].

Effluent – Wastewater that is discharged from a facility either to a treatment plant or directly to the environment. Stormwater is not considered wastewater/effluent for the purposes of the standard requirements.

Excessive working hours – More than the maximum working hours of eight hours per day, or 48 hours per week. Overtime is the number of hours worked beyond the maximum allowed by week, and international standards limit this to 60 hours per week. Rest days are a continuous period of at least 24 hours each week. National laws can vary from international standards. [Key References: International Labor Organization (ILO) Convention 1 – Hours of Work (Industry); ILO Convention 30 – Hours of Work (Commerce, Offices); ILO Convention 116 – Reduction of Hours of Work; ILO Convention 14 – Weekly Rest. Additional references: ILO C001 - Hours of Work (Industry) Convention, 1919 (No. 1), Art. 6; and ILO R116 - Reduction of Hours of Work Recommendation, 1962 (No. 116), Article 19.]

Fast-moving consumer goods – Non-durable consumer products that are purchased frequently, consumed rapidly, and sold quickly at a relatively low cost. Examples include household goods such as cosmetics, personal care, cleaning products, and office supplies.

Final manufacturing stage – The processes that constitute the final manufacturing stage are defined by industry category in the Cradle to Cradle Certified® Final Manufacturing Stage Process Definitions.

Final manufacturing stage facility – A facility at which final manufacturing stage processes occur. Final manufacturing stage processes are defined in the Cradle to Cradle Certified® Final Manufacturing Stage Process Definitions.

Forced labor – Situations in which persons are coerced to work through the use of violence or intimidation, or by more subtle means such as accumulated debt, retention of identity papers, or threats of denunciation to immigration authorities. [Key References: International Labor Organization (ILO) Convention 29 – Forced Labor and ILO Convention 105 – Abolition of Forced Labor.]

Formulated consumer product – A product whose function is determined primarily by its chemical composition (rather than shape, surface, or physical design). Typically, it is a single homogeneous chemical mixture such as a liquid, gel, paste, cream, powder, tablet, or bar.

Freedom of association – The fundamental human right of peaceful assembly and association, including the right to form and to join (or not join) trade unions and other organizations for the protection of their interests. [Key References: United Nations Declaration on Human Rights, Articles 20 and 23; International Labor Organization (ILO) Convention 87 – Freedom of Association and the Protection of the Right to Organize; ILO Convention 98 – Right to Organize and Collective Bargaining.]

Generic material type – The general class a homogeneous material belongs to. The generic material type is the common term that would be used to describe a material in commerce. Examples of generic material types include: aluminum, polyethylene, steel, cotton, and medium-density fiberboard.

Grievance mechanism – A formal, judicial or non-judicial, complaints process that can be used by individuals, workers, communities and/or civil society organizations that are being negatively affected by certain business activities and operations. A wide variety of grievance mechanisms exist at the project, company, sector, national, regional, and intergovernmental levels. Operational level grievance mechanisms meet the core criteria of legitimacy, accessibility, predictability, equitability, compatibility with the OECD Guidelines for Multi-national Enterprises, transparency, and being dialogue-based. Legal processes such as prosecution, litigation, and arbitration are common examples of state-based mechanisms that enable remediation. Examples of non-judicial state-based mechanisms are specialist government bodies, consumer protection agencies, regulatory oversight bodies, environmental protection agencies and the National Contact Points to the OECD Guidelines for Multi-national Enterprises. For more information, see Questions 51, 52, 53, and 54 of the OECD Guidance for Responsible Business Conduct [pp. 89- 91] and Section I of the OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector [p. 95].

Harassment and abuse – Includes but is not limited to, violence, corporal punishment, harsh or degrading treatment, sexual or physical harassment, mental, physical, verbal, or sexual abuse. [Key References: Universal Declaration of Human Rights; International Covenant on Civil and Political Rights; Declaration on the Protection of all Persons from Being Subjected to Torture and Other Cruel, Inhumane or Degrading Treatment or Punishment; International Labor Organization (ILO) Convention 190 – Violence and Harassment.]

High-value cycling – The cycling of high-quality materials as defined by the Gold level requirements for “high-value cycling potential” in Section 5.4.

Homogeneous material (or “material”) – A material of uniform composition throughout that cannot be mechanically disjointed, in principle, into different materials. Coatings and finishes such as plating, powder coats, enamels, etc., are considered unique homogeneous materials (see Cradle to Cradle Certified [Methodology for Defining Homogeneous Materials](#) for details).

Human rights – Rights inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status. Human rights include the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education, and many more. Everyone is entitled to these rights, without discrimination.

Inclusion – The act or practice of including and accommodating people who have historically been excluded.

Industrial Symbiosis – The process by which wastes or by-products of an industry or industrial process become the raw materials for another.

Intended cycling pathway – See “Cycling pathway.”

Intermediate product – A product sold exclusively as an input to be used in another product and not sold to the general public. Note: Products intended for professional use (e.g., construction worker use) are not considered intermediate products. A building is not a product. Products sold as inputs to be used in other products that are also sold to the general public are not considered intermediate products.

Key material – A material that is typically manufactured using a pollutant-intense or high-volume water use process (see the Cradle to Cradle Certified® Water & Soil Stewardship – Key Materials reference document).

Living wage – The remuneration received for a standard workweek by a worker in a particular place sufficient to afford a decent standard of living for the worker and her or his family. Elements of a decent standard of living include food, water, housing, education, health care, transportation, clothing, and other essential needs including provision for unexpected events. [Key References: Global Living Wage Coalition, Anker Methodology.]

Long-use phase product – A product with a use phase time that is typically greater than four years.

Material – See “Homogeneous material.”

Minimum wage – The compensation to be paid to an employee or worker, based on wage levels of individual countries. Nearly all countries have a national body that determines minimum wages nationally, or for sectors or occupations. In most jurisdictions, overtime must be paid at a premium. Wages and premiums vary by country. [Key References: International Labor Organization (ILO) Convention 26 - Minimum Wage; ILO Convention 131 - Minimum Wage Calculation; ILO Convention 100 – Equal Remuneration.]

Nutrient extraction – Applying biomass conversion processes and equipment to produce low-volume but high-value chemical products.

Performance improvement – In the context of energy conservation and efficiency projects, this term refers to the percentage change in energy consumption from a baseline period to a reporting period. Depending on the methodology employed, one or both of these values will be adjusted (i.e., normalized) to account for differences in production, weather, etc., between the baseline and reporting period. This adjustment allows for a comparison of two consumption amounts that correspond to consistent conditions. Note that performance improvements do not necessarily correspond with or lead to total energy use reductions, particularly if production has greatly increased.

Post-consumer cycled content – Material that has been reprocessed from waste from end-users. End-users can be individuals or entities such as households, or commercial, industrial, and institutional facilities in their role as end-users. This includes returns of material from the distribution chain.

Pre-consumer cycled content – Material that has been reprocessed from waste material diverted from the manufacturing process. Excluded is reutilization of material such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated.

Further Explanation

Pre-consumer recycled content material that is sourced internally (e.g., from within the same facility) is considered pre-consumer recycled content if it is put through a separate process allowing for it to be used again (rather than simply put back into the same process without additional steps required). For example, if polymer cut off waste from edge banding is turned back into pellets and then put into the same process, this is considered pre-consumer content.

The “separate process” must be additional and not be part of the manufacturing processes required to turn (non-waste) raw material into the product, i.e., they are conducted with the primary aim of cycling waste materials. Size reduction processes, e.g. to produce regrind, do not count as a “separate process”.

Scrap, regrind, and rework that can be introduced into the same process (to make the same or a similar product) at a different location is still scrap, regrind, and/or rework (and is not considered pre-consumer recycled). However, if used in an entirely different product, the material may be considered pre-consumer material without an additional manufacturing step required.

A “process” in this context could include several subprocesses. For example, the Forest Stewardship Council (FSC) recycled material standard 40-007 excludes rework, regrind, or scrap used within a paper mill to be claimed as recycled, although there are many different processes involved, such as pulping, pressing, sheeting, etc. This is because dry paper trimmings, mill broke, faulty paper, etc. can all be reused in that manufacturing process.

By-products are not considered waste and thus do not qualify as pre-consumer recycled content. A material is considered a by-product if all of the following points are met (EU Directive 2008/98/EC):

- Further use of the substance (or material) is certain.
- The substance (or material) can be used directly without any further processing other than normal industrial practice.
- The substance (or material) is produced as an integral part of a production process.
- Further use is lawful, i.e., the substance (or material) fulfils all relevant product, environmental, and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

Examples of by-products include: [Sawdust from the primary manufacture of logs](#) from virgin roundwood, [rapeseed meal](#) (from rapeseed oil production), dried distillers grains (from ethanol distillation), [blast furnace slag and flue gas desulphurization gypsum](#).

These definitions of pre- and post-consumer recycled content are aligned with ISO Circular economy — Product circularity data sheet. For additional guidance on defining pre-consumer recycled content see: [Interpreting pre-consumer recycled content claims](#), UL, 2020.

Primary packaging materials – The materials that physically contain, envelop, or hold the certified product, and typically come into direct contact with the product. Any materials or components that are

attached to the materials that physically contain, envelop, or hold the certified product (such as inks, adhesives, labels, nozzles, pumps, and caps) are also considered to be part of the primary packaging.

Process chemical – Any substance that comes into direct contact with the product or any of its material constituents during any of the processes that constitute the final manufacturing stage of the product. It is used as an intentional part of any of these processes to fulfill a specific function or achieve a specific effect in the product or any of its material constituents. Within this definition, process chemicals are limited to pure chemical substances and chemical substances present in a mixture at a concentration of 1,000 ppm or above. Mixtures include liquids, sprays, gases, aerosols, solids, etc. The concentration threshold applies to process mixtures directly as received by the supplier and prior to any dilution that may take place at the manufacturing site. This definition does not include maintenance agents for machinery, effluent, or wastewater treatment chemicals, chemicals used in steam boilers, or cleaning agents used for the production area, offices, and/or lavatories. Distilled water, tap water, and ambient air in their unaltered state are excluded from the assessment.

Further Explanation

As noted in the definition, process chemicals include substances used as an intentional part of any of the final manufacturing stage processes to fulfil a specific function or achieve a specific effect in the product or any of its material constituents. This is interpreted broadly to include essentially any chemical that is present during the final manufacturing stage of the product that fulfils a specific function or is used to achieve a specific effect, regardless of whether the substance is traditionally considered a process chemical per common industry parlance. The definition includes intermediates (e.g., monomers) as well as intentional product inputs that may not be subject to review in the final product due to low concentration (e.g., because they may be partially washed out or burned off during the process). In the context of the Water & Soil Stewardship requirements in Section 7.7 Assessing and Optimizing Product Relevant Chemicals in Effluent and Sludge, if an intentional product input is not subject to review in the Material Health category because it is present below subject to review limits within a single material, but the substance does enter (or potentially enter) effluent and/or sludge, it must be assessed as a process chemical. In this case the 1000 ppm subject to review limit for process chemical mixtures noted in the definition of process chemical applies. Further, for any process chemical that is present in an intentional product input material, the 1000 ppm subject to review limit for process chemical mixtures may be applied.

Product – A physical item that can be routinely and individually purchased from the applicant by other entities. A product is composed of one or more components, homogeneous materials, and/or chemical substances. A product may function as a component or material in another product. For the purpose of the standard requirements, any item that is sold along with the product, other than the packaging, is considered part of the product. This includes spare parts if it is not possible to purchase the product without these.

Product as a Service – A material or product designed to provide a service to the user without conveying ownership of the materials.

Product use phase time – The typical time of use of a product starting at the point the product is received by the user or customer, and ending at the time the product is cycled (this includes refurbishment, remanufacturing, reuse, and recycling, but not repair).

Rapidly renewable – Material derived from a natural resource (agriculture or animal-derived) that has a maximum 10-year regeneration cycle. Note: This term is used in the Clean Air & Climate Protection category while the term “renewable” is used in the Product Circularity category.

Rare and endangered species – Any species listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora ([CITES](#)) appendices and/or in the International Union for Conservation of Nature ([IUCN](#)) Red List as Near Threatened, Vulnerable, Endangered, or Critically Endangered.

Recycled content – proportion of pre-consumer or post-consumer materials, by mass, of recycled material in a product or packaging.

Recycling – The process by which a material, after serving its intended function, is processed into a new material via mechanical or chemical transformation and then added to a new material formulation in a different context.

Refillable – A characteristic of a product or packaging that can be filled with the same or similar product more than once, in its original form and without additional processing except for specified requirements such as cleaning or washing. Programs must exist to facilitate refilling and reuse to support a refillable claim.

Refurbishing – The process of returning a product to good working condition by replacing or repairing major components that are faulty or close to failure, and making cosmetic changes to update the appearance of a product, such as cleaning, changing fabric, painting, or refinishing.

Remanufacturing – The process of disassembly and recovery at the subassembly or component level. Functioning, reusable parts are taken out of a used product and rebuilt into a new one. This process includes quality assurance and potential enhancements or changes to the components.

Renewable content – Material derived from a living, natural resource (agriculture, aquaculture, or animal derived) that can be continually replenished. Material must be legally harvested, as defined by exporting and receiving country. If the material is wood, or another material associated with extensive evidence of ecosystem destruction due to land conversion and/or poor management practices, to count as renewable the material must be certified by a C2CPII-recognized program as responsibly sourced. If the material is a biologically derived plastic or liquid formulation, material only counts as renewable if its bio-based content has been quantified using radiocarbon dating or through chain of custody documentation showing derivation from natural resources.

Responsibly sourced renewable content – Material that is certified by a C2CPII-recognized standard that verifies sustainable, environmentally friendly forest or vegetation management. These recognized standards have criteria that address: 1) Compliance with all applicable laws and regulations of the country in which farming or harvesting operations occur; 2) Operations that respect land rights and land use

rights, and are unlikely to cause displacement of food production; 3) Planning, monitoring, management, and continuous impact assessment for the farming and/or harvesting of material; 4) Maintenance, conservation, or enhancement of biodiversity in the forest/vegetation or other ecosystem; 5) Maintenance or enhancement of the productive function of the forest/vegetation or other ecosystem area and efficient use of harvested materials (e.g., rate of harvest does not exceed rate of regrowth in the long term); 6) Maintenance or enhancement of the health and vitality of the forest/vegetation or other ecosystem and its protective systems (soil and water).

Reusable – Characteristic of a product or packaging that has been designed to be used in more than one use cycle for the same purpose for which it was originally conceived.

Further Explanation

Reusable is further defined for packaging per the single-use packaging directive (Directive (EU) 2019/904) and any relevant amendments. Per the proposal for a Regulation of the European Parliament and of the Council on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC (Article 10),

packaging shall be considered reusable where it fulfils the following conditions:

- (a) it has been conceived, designed, and placed on the market with the objective to be re-used or refilled;
- (b) it has been conceived and designed to accomplish as many trips or rotations as possible in normally predictable conditions of use;
- (c) it can be emptied or unloaded without damage to the packaging, which prevents its re-use;
- (d) it is capable of being emptied, unloaded, refilled, or reloaded while ensuring compliance with the applicable safety and hygiene requirements;
- (e) it is capable of being reconditioned in accordance with Part B of Annex VI, whilst maintaining its ability to perform its intended function;
- (f) it can be emptied, unloaded, refilled, or reloaded while maintaining the quality and safety of the packaged product and allowing for the attachment of labelling, and the provision of information on the properties of that product and on the packaging itself, including any relevant instructions and information for ensuring safety, adequate use, traceability, and shelf-life of the product;
- (g) it can be emptied, unloaded, refilled, or reloaded without risk to the health and safety of those responsible for doing so;
- (h) it fulfils the requirements specific to recyclable packaging when it becomes waste set out in Article 10.

Risk-based due diligence – Due diligence is based on risks when the nature and extent of due diligence is commensurate to the severity and likelihood of adverse impacts. Companies can prioritize risks by using

the parameters of scale, scope, and irremediable character. See the [OECD Due Diligence Guidance for Responsible Business Conduct](#) for additional information.

Separable – The ability of removing one homogeneous material from another one it is physically attached to.

Science-based targets – Greenhouse gas emissions reduction targets as defined per the Science Based Targets initiative (SBTi). Per SBTi, targets are considered science-based if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement—limiting global warming to 1.5°C above pre-industrial levels. [Reference: <https://sciencebasedtargets.org>, accessed 16-November, 2023].

Scope 1 emissions – Emissions from operations that are owned or controlled by the reporting (i.e., applicant) company.

Scope 2 emissions – Indirect emissions from the generation of purchased or acquired electricity, steam, heat, or cooling consumed by the reporting (i.e., applicant) company.

Short-use phase product – A product with a use phase time that is typically less than four years.

Single-use plastic product – Any disposable plastic product, made wholly or partially from plastic, that is designed and conceived to be used only once (i.e., is not reusable or refillable) Note: This definition includes biodegradable plastics. Note: Plastic is defined per Directives (EU) 2019/904 and (EC) No 1907/2006, Article 3 #1 and Article 3 #5 respectively.

Further Explanation

Per (EU) 2019/904 'plastic' means a material consisting of a polymer as defined in point 5 of Article 3 of Regulation (EC) No 1907/2006, to which additives or other substances may have been added, and which can function as a main structural component of final products, with the exception of natural polymers that have not been chemically modified.

Single-use products and single-use packaging that contain plastic components that do not serve as the main structural component, and have a mass fraction of all plastic components less than 5% by weight (excluding labels, varnishes, paints, inks, adhesives, and lacquers), are exempt from requirements for single-use plastic products. This 5% threshold aligns with the criteria for a material to be considered an insignificant part of packaging per (EU) 2025/40.

Single-use products and single-use packaging that are explicitly covered by (EU) 2019/04 are subject to the requirements for single-use plastic products regardless of the level of plastic content. Refer to Part A-G of the Annex in (EU) 2019/04.

Sludge – Solid waste produced by an effluent treatment plant.

Stakeholder(s) – Individuals or groups who are or could be directly or indirectly affected by the actions of an enterprise and its business relationships. An affected stakeholder in the context of the Social Fairness requirements is an individual or group whose human rights have been affected by an enterprise's operations, products, or services.

Stakeholder engagement (meaningful) – Meaningful stakeholder engagement is characterized by two-way communication and depends on the good faith of the participants on both sides. It is also responsive and on-going and includes, in many cases, engaging with relevant stakeholders before decisions have been made. For more information see the [OECD Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractive Sector](#).

Subcontracting – Business arrangement by which one firm (the contractor or "principal"), contracts with another firm (the "subcontractor"), for a given production cycle, one or more aspects of production design, processing, manufacture, construction, or maintenance work. See [EU SMEs and subcontracting](#), EU Commission, 2009.

Subject to review – A homogeneous material or chemical substance that is subject to review must be evaluated to determine whether it complies with the applicable requirement. A homogeneous material or chemical substance that is not subject to review is not required to demonstrate compliance with the applicable requirement. Please see Section 4.1 for additional information.

Substance – See "Chemical substance."

Supply chain – A set of organizations linked by flow(s) of products, services, finances, or information from a source to a customer.

Technical cycle – The cycle by which a product's materials or parts are reprocessed for a new product use cycle via recycling, repair, refurbishment, remanufacturing, or reuse.

Tier 1 supplier – For the purposes of Cradle to Cradle certification, this term refers to direct suppliers to the final manufacturing stage of the product. For cases where the applicant company uses contract manufacturing, tier 1 suppliers are the suppliers of the contract manufacturer. Distributors are considered suppliers.

Value chain – Interlinked value-adding activities that convert inputs into outputs which, in turn, add to the bottom line and help create competitive advantage. A value chain typically consists of inbound distribution or logistics, manufacturing operations, outbound distribution or logistics, marketing and selling, and after-sales service. These activities are supported by purchasing or procurement, research and development, human resource development, and corporate infrastructure [Reference: Businessdictionary.com (Accessed June, 2021) and www.ifm.eng.cam.ac.uk/research/tools/value-chain/.]

13 // Appendix 1 – Manufacturing Facility Site Visit

Further Explanation

For all levels of certification, a final manufacturing facility site visit(s) must be conducted to verify that the standard requirements have been met. Required site visits must occur prior to certification and prior to recertification. Site visit(s) must also occur prior to interim assessment reviews if there have been significant process changes. Site visits may be on site (i.e., in person) or remote as outlined in #1-4 below. Note that examples of events requiring an interim assessment review include product line extensions, change of achievement level, a change in material or product composition, and/or a change in the manufacturing process. Interim Assessment Reviews are further described in the Fee Schedules which are available on C2CPII's website.

Frequency and Type of Site Visit

The requirements below apply to all standards (i.e., Cradle to Cradle Certified Product Standard (Full Scope), C2C Certified Material Health Standard, and C2C Certified Circularity Standard) unless otherwise noted.

1. Requirements applicable to all certifications and recertifications:

- a. Remote site visits are permitted only in cases where it is possible to verify all required points listed in the Site Visit Checklist.
- b. An on-site visit may be required (including for cases where an on-site visit is not required per #2-4 below) if the application review raises concerns that cannot otherwise be satisfactorily resolved. For example, an on-site visit may be required if significant inconsistencies (i.e., conflicting information) are identified in the submitted evidence for the required documentation for achieving certification.
- c. Exceptions may be made to the on-site (i.e., in person) visit requirements on a case-by-case basis if there is a significant health and safety risk involved in conducting an on-site visit (e.g., conflict or unrest in the region, pandemics), or if travel restrictions, stay-at-home orders, or lockdowns prevent an on-site visit from being conducted. However, it is then mandatory to undergo an on-site visit verification in the subsequent year.

2. Requirements for products not previously certified to Version 3.1:

- a. First certification to Versions 4.0, 4.1, or 5.0: An on-site or remote visit is required.
- b. First recertification: An on-site or remote visit is required. An on-site visit is required if a remote visit was conducted at the first certification. If an on-site visit was conducted at the first certification, a remote visit may be conducted instead.
- c. Subsequent recertifications: An on-site or remote visit is required.

3. Requirements for products previously certified to Version 3.1:

- a. First certification to Versions 4.0, 4.1, or 5.0: A site visit (either on-site or remote) is recommended but is not required. Exception: If the manufacturing process has changed significantly, an on-site or remote visit is required. Significant changes are defined as follows:

- i. For the Full Scope and Material Health standards, significant changes include, but are not limited to, cases where a process step, as defined in the [Final Manufacturing Stage Process Definitions](#) document, is added or removed, a process that was previously dry is altered so that effluent is produced, and/or if there is a major product redesign.
 - ii. For the Circularity standard, significant changes include, but are not limited to, cases where a process step, as defined in [Final Manufacturing Stage Process Definitions](#), is added or removed and/or if there is a major product redesign.
 - b. First recertification (post transition from Version 3.1): A site visit is required. An on-site visit is required if a remote visit (or no visit) was conducted for the first certification to Versions 4.0, 4.1, or 5.0. If an on-site visit was conducted at the first certification, a remote visit may be conducted instead.
 - c. Subsequent recertifications: An on-site or remote visit is required.
4. **Requirements for all Interim Assessment Reviews (IARs):**
- a. If significant process changes (as defined in point #3a above) have occurred since the most recent certification: An on-site or remote visit is required.
 - b. If a Material Health certificate is added to a Circularity certificate (and vice versa) during an interim assessment review (and the product does not already have Full Scope certification): An on-site or remote visit is required.
 - c. If significant process changes (as defined in point #3a above) have not occurred since the most recent certification: A site visit is not required.

Table – Summary of Site Visit Requirements for Certification to Versions 4.0, 4.1, or 5.0

The requirements below apply to all standards (i.e., Full Scope, Material Health, and Circularity) unless otherwise noted. Please refer to the text above for additional details.

Certification phase	Site visit requirement
Requirements for products not previously certified to Version 3.1	
First certification to Versions 4.0, 4.1, or 5.0 (no previous certificate)	On-site or remote
First recertification	On-site if an on-site was not conducted at the first certification. Otherwise, remote accepted.
Subsequent recertifications	On-site or remote
Interim assessment reviews	Significant process changes: On-site or remote No significant process changes: Not required
Requirements for products previously certified to Version 3.1	
First certification to Versions 4.0, 4.1, or 5.0	- Significant process changes: On-site or remote - No significant process changes: Not required

	<u>Exception:</u> For Circularity, if transitioning from a standalone Version 3.1 Material Health Certificate, the requirements for products not previously certified to Version 3.1 apply.
First recertification (post-transition to Versions 4.0, 4.1, or 5.0 from Version 3.1)	On-site if an on-site was not conducted at the first certification to Versions 4.0, 4.1, or 5.0. Otherwise, remote accepted.
Subsequent recertifications	On-site or remote
Interim assessment reviews	Significant process changes: On-site or remote No significant process changes: Not required

Location(s)

Cradle to Cradle Certified Product Standard (Full Scope Standard) and C2C Certified Material Health Certificate Standard

At a minimum, a site visit must be conducted at the main final manufacturing facility. A site visit must also be conducted at any additional facility involved in the select manufacturing processes for which chemical exposure concerns are considered exceptionally high (per [Final Manufacturing Stage Process Definitions](#)). The product, a representative product (for product groups), or a similar product (i.e., with similar inputs and manufacturing processes), must be on the production line(s) during the site visit(s).

If there is more than one final manufacturing facility, the “main” facility is defined as the facility that is the most representative of the majority of certified products sold and that accounts for the majority of production volume. If there are significant differences in processes between facilities, sites must be visited that are representative of all processes included in the final manufacturing stage. If there are multiple facilities where chemical exposure concerns are considered exceptionally high and the exact same processes are used at each of them, representative facility(ies) may be selected for the site visit.

When there is more than one manufacturing site and data are available regarding the sites’ history of failing regulatory emissions permit limits or of having occupational safety and health violations, this must be taken into consideration when selecting sites to visit. In a scenario where such data are available for all sites producing the product(s), and one site has a history of multiple failures, that site should be selected for conducting the visit. However, in cases where such data are not available for all sites producing the product(s), the verifier(s) must use their best judgment regarding which facilities are of greatest risk of material misreporting or being out of compliance with certification requirements in combination with the other rules (above and below for de facto high-risk locations) in deciding which sites must be visited.

References for determination of compliance (a non-exhaustive list):

- China - [IPE database](#)
- US - [OSHA database](#)

In cases where the same processes and similar production volumes occur at multiple facilities and there is one or more sites in de facto high-risk locations (defined in the Further Explanation section of the Certification Manual for Social Fairness Section 8.2 Monitor & Verify Performance):

- Site(s) that are in de facto high-risk locations must be selected over low-risk locations for conducting the site visit. Note that if high-risk sites are added at recertification, new on-site visits may be required per the rules below.
- If there is more than one site in a de facto high-risk location, the number of high-risk sites that must be visited is equal to the square root of $n + 1$, where n = the total number of sites in high-risk locations.

This results in the following requirements:

# of de facto high-risk sites	# of sites to visit
1	1
2	2
3-6	3
7-12	4
13-20	5

- When it is time to repeat the site visits (based on the required frequency), a different set of sites must be visited until a site visit has been conducted at all facilities in high-risk locations.
- Exception: Sites with ISO 14001, 45001, or similar certifications may be excluded from the total number of sites in high-risk locations when determining the number of site visits necessary (i.e., if all high-risk sites are ISO 14001 certified, one site visit may be sufficient depending on what constitutes the main facility and compliance history, if available). Similar means that the certifications include environmental and/or occupational health and safety management systems to address risks. ISO 9001 and Good Manufacturing Practice (GMP) certificates are not considered 'similar'.
- Lacking information on sites that have a history of non-compliance, the specific sites selected for the visits must be chosen randomly from the full list of de facto high-risk sites. One simple method of choosing randomly from a numbered list of sites is to use a random number generator to order the sequence of numbers and to then select the numbers (and sites) at the top of the random sequence to visit (up until the required number of sites has been selected based on a $\sqrt{n+1}$ sample size). <https://www.random.org/sequences/>

More than one site visit may be necessary for the same facility if applicants choose to certify multiple products over time that are made using different processes. However, if a new product group is certified that is made using a process that was already observed and verified, a new visit will not be necessary as long as the frequency requirements have been met.

Please refer to Social Fairness Section 8.2 Monitor and Verify Performance regarding when and where a third-party social audit is required in addition to the site visit(s) described above.

C2C Certified Circularity Standard

At a minimum, a site visit must be conducted at the main final manufacturing facility. The product, a representative product (for product groups), or a similar product (i.e., with similar inputs and manufacturing processes), must be on the production line(s) during the site visit(s).

If there is more than one final manufacturing facility, the “main” facility is defined as the facility that is the most representative of the majority of certified products sold and that accounts for the majority of production volume. If there are significant differences in processes between facilities, sites must be visited that are representative of all processes included in the final manufacturing stage.

In cases where the same processes and similar production volumes occur at multiple facilities and there is one or more sites in de facto high-risk locations (defined in Social Fairness Section 8.2):

- Site(s) that are in de facto high-risk locations must be selected over low-risk locations for conducting the site visit.
- If there is more than one site in a de facto high-risk location, the number of high-risk sites that must be visited is equal to the square root of $n + 1$, where n = the total number of sites in high-risk locations.

This results in the following requirements:

# of de facto high-risk sites	# of sites to visit
1	1
2	2
3-6	3
7-12	4
13-20	5

- When it is time to repeat the site visits (based on the required frequency), a different set of sites must be visited until a site visit has been conducted at all facilities in high-risk locations.
- The specific sites selected for the visits must be chosen randomly from the full list of de facto high-risk sites. One simple method of choosing randomly from a numbered list of sites is to use a random number generator to order the sequence of numbers and to then select the numbers (and sites) at the top of the random sequence to visit (up until the required number of sites has been selected based on a $\sqrt{n+1}$ sample size). www.random.org/sequences/

More than one site visit may be necessary for the same facility if applicants choose to certify multiple products over time that are made using different processes. However, if a new product group is certified

that is made using a process that was already observed and verified, a new visit will not be necessary as long as the frequency requirements have been met.

Required Documentation

- Completed Cradle to Cradle Certified® Site Visit Verification Checklist and Report (available to Cradle to Cradle Certified assessors).

14 // Appendix 2 – Process for Becoming a C2CPH-Recognized Program

Further Explanation

C2CPH-Recognized Programs

Several requirements in Version 5.0 of the Cradle to Cradle Certified Product Standard reference C2CPH-recognized certification programs, standards, or testing methods that may be used to comply with the requirement. A program, standard, or testing method must meet the following requirements to receive C2CPH recognition:

1. The program, standard, or testing method includes the technical requirement(s) and otherwise addresses the issues and intent as defined in the Version 5.0 requirement, and
2. The system administering and developing the certification program/standard or testing method includes the framework and process elements based on the ISEAL Credibility Principles listed in the C2CPH Recognized Program Application Form.

Note: System requirements for recognition are subject to change. Decisions to recognize programs, standards, and testing methods are made in C2CPH's sole discretion.

Note: Programs/standards that do not issue certifications are not eligible for recognition (e.g., ISO 26000 and similar provide guidelines rather than a certification standard).

Exemptions

Certain organizations may be exempt from demonstrating compliance through the application process based on global use and recognition of their respective programs, standards, and testing methods or where C2CPH has directly determined compliance with the C2CPH system requirements (Requirement #2 above). Such organizations include:

- National and international standard development organizations (e.g., ISO, OECD, ASTM)
- National, international, and state government entities
- Programs that are ISEAL Code Compliant (isealalliance.org)

Note: Programs with systems supported by ISO/IEC 17065 accreditation or equivalent may be used to demonstrate compliance with the applicable C2CPH system requirements covered by the accreditation scheme.

Applying for C2CPH Recognition

To apply for recognition as a C2CPH-recognized program, the [C2CPH Recognized Program Application Form](#) must be completed and submitted to C2CPH. An application processing fee applies. C2CPH staff will review the application to determine if the recognition requirements have been met. If it is determined that the requirements are met, the program, standard, or testing method will be added to

the relevant lists(s) of C2CPII-recognized programs for the applicable requirement(s) in the [C2CPII-Recognized Certification Programs and Standards](#) document.

Recognition as an Alternative to Certification

Some requirements in Version 5.0 allow for the use of an “alternative to certification” in cases where a certification does not exist for the product type or for other reasons. To receive credit as an alternative to certification, the approach used must meet the same requirements listed above for becoming a C2CPII-recognized certification program or standard. Qualified third-party auditors without a conflict of interest (i.e., no other paid services provided to the applicant) must be used to verify compliance or the applicant must demonstrate legitimate grounds for an alternative method of verification (such as community-based verification). Pre-approval from C2CPII regarding the alternative approach to be used is required. Alternative approaches will be reviewed and accepted on case-by-case basis at C2CPII’s sole discretion.

Required Documentation

- Completed C2CPII Recognized Program Application Form.

15 // Change Log

Section	Change Summary	Date
-	Initial release for Version 5.0	13 March 2026
-	Non-substantive changes (proofreading and copy editing)	24 March 2026