cradle to cradle products innovation institute

CRADLE TO CRADLE CERTIFIED® VERSION 4.1

Product Standard

User Guidance

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Foreword

The Cradle to Cradle Products Innovation Institute (C2CPII) 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, C2CPII 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 4.1 was released on 2 May 2024.

The effective date of Version 4.1 is 1 July 2024. Products certified to prior versions of the standard are required to certify to Version 4.1 according to the transition policy on the C2CPII website.

Further information about C2CPII and the Cradle to Cradle Certified Product Standard is available at www.c2ccertified.org.

Inquiries regarding C2CPII and the Cradle to Cradle Certified Product Standard may be directed to info@c2ccertified.org.

1 // Introduction

1.1 User Guidance Overview

This document is designed to provide the information needed to implement Version 4.1 of the Cradle to Cradle Certified Product Standard.

The guidance in this document includes the following:

- **Version 4.1 Standard Requirements** (grey font): The requirements are listed in the same order as they appear in the Version 4.1 standard, with the same section numbers.
- **Further Explanation** (blue boxes): These sections provide guidance 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 guidance document 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 4.1

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*, and provide guidance in five key categories. 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 health and the environment, 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, new categories have been introduced in Version 4 to address other important environmental impact areas, including Environmental Policy & Management and Animal Welfare.

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 and reviewed by C2CPII 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 use, water and soil stewardship, and social fairness issues affecting their industry and production region. The company must also define optimization strategies and 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 3.3), 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).

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, assessment methodologies, program policies, and other guidance documents are available on the C2CPII 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 4.1 User Guidance.

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 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 C2CPII 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 C2CPII before submitting a certification application or beginning a product assessment. C2CPII 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 4.1 User Guidance.

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),
        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

   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).

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 US 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 US 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), and
f. Buildings,
g. Soil amendments (e.g., fertilizer, compost),
h. Nanomaterials (Note: Eligibility to be revisited once the Material Health Assessment Methodology is updated to more explicitly address the related human and environmental health issues.)

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 5.8 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. One of the following is required:
    a. Suppliers must be 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.
    b. All suppliers that provided chemical composition data, or other product-relevant data (e.g., amount of recycled content), for the prior certification must be contacted again prior to renewal and asked to provide updated data or to confirm that no relevant changes were made by them or their (sub-)suppliers.
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

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 C2CPII application forms and templates (e.g., the Version 4.1 Assessment Report Form, Bill of Materials forms, Supplier Bill of Materials Forms, Restricted Substance declarations, Circularity Data Report, 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 C2CPII-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 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 4.1 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.
- Circularity Data Report.
- 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 Section 8.3 Monitor & Verify Performance form(s).
- 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 4.1 User Guidance for Social Fairness Section 8.3 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 4.1.

3.2 Environmental Policy and Management

Intended Outcome(s)

Companies are committed to protecting the environment and are responsibly managing potential environmental impacts.

Requirements Summary

Requirement	Bronze	Silver	Gold	Platinum
3.2.1: Environmental policy based on an understanding of the company's environmental risk areas.	●	●	●	●
3.2.2: Environmental risks assessed for the company, final manufacturing stage facilities, and product.	●	●	●	●
3.2.4: Strategy for implementing the environmental policy. At recertification, progress toward achieving the strategy is measured.	●	●	●	●
3.2.5: Company executives demonstrate commitment to establishing and maintaining a culture for achieving high levels of environmental performance.	●	●	●	●
3.2.3: Environmental performance data are requested from high-risk tier 1 suppliers. At recertification, progress is made on supply chain data collection and corrective actions taken, if needed.		●	●	●

3.2.6: Management systems in place that support the implementation and oversight of the policy within company operations and at final manufacturing stage facilities.		●	●	●
3.2.7: A grievance mechanism permits stakeholders to obtain redress for negative environmental impacts.		●	●	●
3.2.8: Transparent governance and reporting including information on management of environmental risks and how adverse impacts are addressed.		●	●	●
3.2.6: Responsible sourcing management systems that support the implementation and oversight of the environmental policy within the product's supply chain.			●	●
3.2.7: A grievance mechanism permits contract manufacturer stakeholders to obtain redress for negative environmental impacts.			●	●
3.2.8: Stakeholder engagement and feedback incorporated into environmental risk management. Stakeholder feedback informs strategy and operations.			●	●
3.2.9: Environmental objectives incorporated into relevant employee performance evaluations. Incentives are provided to encourage senior management and employees to actively participate in achieving environmental goals.				●

3.2.1 Environmental Policy

Intended Outcome(s)
The applicant company has formally committed to protecting the environment through company policy approved at the executive level.

Applicable Achievement Level(s)
Bronze

Requirement(s)
Commit to protecting the environment through company policy.

The policy or policies must:

1. Establish expectations for the applicant company, the supply chain, communities, potentially affected groups, and other relevant stakeholders.
2. Include the company's commitment to address any high-risk environmental issues identified via the risk assessment, including any de facto high-risk issues. (If no high-risk issues were identified, the policy may address environmental protection in a general way.)

3. Define staff responsibilities for implementation.
4. Be formally approved by a duly empowered officer of the applicant company or by the Board of Directors.

Further Explanation

The requirements in this section apply to the applicant company.

All applicants are required to have a policy through which they have formally committed to protecting the environment. The policy is required to establish expectations for the applicant company, the supply chain, communities, potentially affected groups, and other relevant stakeholders. This may be achieved through a single company policy document that explicitly applies a broad scope. Alternatively, this may be achieved through a collection of policy documents (e.g., company policy, employee codes, and supplier codes).

The policy is required to include the company's commitment to address any high-risk environmental issues identified via the risk assessment, including any de facto high-risk issues.

Per Section 3.2.2 Assessing Environmental Risks and Opportunities, the following issues are de facto high risk for all large companies (defined as companies with ≥ 250,000 employees): a. Greenhouse gas emissions and contribution to climate change, b. Environmental pollution (air, fresh and marine water, soil), and c. Resource use and circularity, biodiversity, and ecosystems. This means that all large companies must explicitly commit to address environmental issues associated with these topics in their environmental policy.

The other de facto high-risk issues mentioned in Section 3.2.2 are applicable to final manufacturing stage facilities or to the product during use or end of use only. If meeting the policy requirement partially through a supplier code, such issues are not required to be included in the supplier code (unless final manufacturing facilities where the de facto high risks are applicable are owned by suppliers). Note that supplier codes of conduct are also relevant to achieving the responsible sourcing requirements for the Gold achievement level in Section 3.2.5 Environmental Management Systems.

The standard notes that if no high-risk issues were identified, the policy may address environmental protection in a general way. In this case, it is recommended to address environmental issues of common concern in manufacturing both in company policy and in a supplier code of conduct.

The policy is required to be formally approved by a duly empowered officer of the applicant company 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.

Required Documentation

Bronze level

Policy document(s) that:

- Set expectations for the applicant company, the supply chain, communities, potentially affected groups, and other relevant stakeholders.
- Explicitly include the company's commitments to address any high-risk issues identified in Section 3.2.2 Assessing Environmental Risks and Opportunities.
- Evidence of company size if the list of de facto high-risk issues is not all included in the policy (must be ≤ 250,000 employees, otherwise all de facto high risk issues must be included).
- Define staff responsibilities (this may be part of the policy or included in other relevant documents).
- Are approved (i.e., signed either physically/handwritten or digitally) by a duly empowered officer of the company or by the board of directors. Evidence of public disclosure of the policy or policies is accepted as an alternative to signature. Note: Brands that have legal and fiduciary responsibility may develop, sign, and submit their own unique policy (i.e., the policy may be different from the parent company's policy in this case).

3.2.2 Assessing Environmental Risks and Opportunities

Intended Outcome(s)
Opportunities for improvement are identified and understood as a result of an assessment of environmental risks.

Applicable Achievement Level(s)
Bronze

Requirement(s)
Identify environmental risks and opportunities for the applicant company, including all final manufacturing stage facilities and for the certified product.

The risk and opportunity assessment must include:

1. A company-level risk assessment, based on conducting desk research at a minimum, to scope and identify known, likely, and potential environmental risks associated with the applicant company's own operations, final manufacturing facilities, the product's supply chain, product use, product cycling and end of use, relevant communities, potentially affected groups, and other relevant stakeholders.

The following issues are de facto high risk for all large companies (defined as companies with ≥ 250,000 employees) and potentially high risk for all other companies:

a. Greenhouse gas emissions and contribution to climate change,
b. Environmental pollution (air, fresh and marine water, soil),
c. Resource use and circularity, biodiversity, and ecosystems.

The following issues are de facto high risk for final manufacturing stage facilities or for the product, as noted in the scenarios below:

d. Greenhouse gas emissions and contribution to climate change are high-risk issues for:
   i. Final manufacturing stage facilities with combined total scope 1 and 2 greenhouse gas emissions ≥ 10,000 metric tons CO2e/year.
   ii. Products requiring energy during the use phase (unless the product saves more energy than it uses).

e. Air pollution is a high-risk issue for:
   i. Final manufacturing stage facilities with on-site combustion power plants (including biomass combustion).
   ii. Final manufacturing stage facilities at which processes commonly known to be air-pollutant-intense take place.
   This includes (but is not limited to): Smelting metals, refining oil, producing cement, using high volumes of organic solvents, and incinerating waste.

f. Water availability is a high-risk issue for:
   i. Final manufacturing stage facilities purchasing and/or withdrawing ≥ 100,000 m3 of freshwater per year when located in medium- to high-stress location(s) (as defined per the Water & Soil Stewardship requirements).
   ii. Products requiring high volumes of water during the use phase (e.g., apparel that must be washed with water, a dishwashing machine).

g. Water and/or soil quality (i.e., pollution) are high-risk issues for:
   i. Final manufacturing stage facilities with pollutant-intense processes (as defined per the Water & Soil Stewardship requirements).
   ii. Final manufacturing stage facilities for which stormwater discharge is regulated per the corresponding regional regulatory permitting system. In regions where stormwater is not regulated, any facility within the specific categories of industrial activity that must be covered under the U.S. National Pollutant Discharge Elimination System is de facto high risk for this issue.
   iii. Products that are primary contributors to microfiber and microplastic pollution (i.e., textile and apparel products made from synthetic fibers that are wet processed and/or that require washing with water during the use phase, tires, and plastic pellets).

h. Waste generation is a high-risk issue for:
   i. Final manufacturing stage facilities in countries with highly inadequate waste management. This is defined as countries with open dumps.
   ii. Final manufacturing stage facilities for which hazardous waste is regulated per the corresponding regional regulatory permitting system (e.g., for facilities required to hold hazardous waste permits). In regions where hazardous waste is not regulated, any facility

producing waste that is listed or characterized as hazardous waste as defined by the European Union's Waste Framework Directive and associated List of Waste or the U.S. Environmental Protection Agency is de facto high risk for this issue.

2. Identification of best practices employed to address the high risks. Note: These may be best practices that are already in place, best practices planned for future implementation, and/or best practices employed by others that could potentially be implemented by the applicant in future.
3. Information regarding the actual and potential impact(s) and importance of each of the risks identified.
4. Prioritization (based on severity and likelihood) of the risks and opportunities identified.

Further Explanation

The risk and opportunity assessment must be conducted by the applicant company. It must be completed in collaboration with the company or companies owning the final manufacturing stage facilities in cases where the applicant does not manufacture the product.

The requirements in this section of the standard are similar to those in Social Fairness Section 8.2 Assessing Risks and Opportunities, which requires a human rights risk assessment. Applicants may find the guidance for Section 8.2 helpful for this section as well. It is recommended to conduct the environmental and human rights risk assessments concurrently given that a clean, healthy, and sustainable environment is a human right, and the approaches are similar.

Definition of Final Manufacturing Stage Facilities

These are the facilities where the final production steps used to manufacture the product occur. The term 'final manufacturing stage' is used throughout the standard. For the definition of the final manufacturing stage by product type see the Cradle to Cradle Certified® Final Manufacturing Stage Process Definitions.

The processes that must be included in the final manufacturing stage typically align with the manufacturing stage as defined in product category rules, where available. For product types that are not yet listed in the Cradle to Cradle Certified® Final Manufacturing Stage Process Definitions, it is recommended to refer to existing product category rules (if any) as the starting place for defining final manufacturing. Please contact C2CPII in cases where the product category for an applicant product is not represented in the methodology.

Identifying Environmental Risks and Opportunities (Requirement #1)

Scope

The standard requires *conducting a company-level risk assessment, based on conducting desk research at a minimum, to scope and identify known, likely, and potential environmental risks associated with the applicant company's own operations, final manufacturing facilities, the product's supply chain, product use,*

product cycling and end of use, relevant communities, potentially affected groups, and other relevant stakeholders.

All of the following must be included in the scope of the research to identify risks: The applicant company's own (direct) operations (including all owned operations, functions, and divisions such as headquarters, sales offices, retail, transport, etc.), final manufacturing stage facilities (which may be contract manufacturing), the product's supply chain, product use, product cycling, relevant communities, potentially affected groups, and other relevant stakeholders. This is the same scope as required for the human rights risk assessment in Section 8.2.

Owned operations include operations controlled by the applicant company in both owned and rented facilities. Note that the applicant company is the company that signs the C2CPII certification agreement and the company listed on the Cradle to Cradle Certified certificate. However, if the applicant company is a subsidiary, requirements pertaining to the applicant company may be met by the subsidiary alone, by the holding company, or by a combination of the two.

Note that for the purposes of Cradle to Cradle Certified, the supply chain aspect of the risk assessment is expected to focus on the certified product at a minimum. This is what will be checked and verified as part of the certification process. However, applicants are encouraged to apply the broadest scope feasible (encompassing the full value chain relevant to all the company's products and operations) to ensure the risk assessment identifies all relevant risks. This broad scope is as required to fully align with what is required by the UN Guiding Principles and a variety of due diligence regulations and guidelines. Using a broad scope will also ensure the risk assessment has the highest possible value beyond ensuring that the Cradle to Cradle Certified requirements are met.

Risks may be identified based on desk research, and it is expected that information be obtained from a variety of sources. The risks identified are expected to include both actual and potential impacts the business has (or may have) on the environment. This is in alignment with the UN Guiding Principles on Business and Human Rights (UNGPs). Environmental risks will broadly fall into one or more of the following issue areas: Greenhouse gas emissions and contribution to climate change, Environmental pollution (air, fresh and marine water, soil), Resource use and circularity, Biodiversity, and Ecosystems. These issues must be considered and researched in all risk assessments. Applicants are encouraged to be as specific as possible, drilling down to the specific issues of concern, when identifying risks to ensure the highest possible value of the assessment.

In general, applicants are encouraged to focus not only on risks, but also on opportunities. While risks present opportunity, some opportunities may not be recognized risks. For example, a facility's roof or surrounding unused land area may present an opportunity to create valuable wildlife habitat, but not pose a risk.

De facto High Risks

In addition to the required research to identify risks, a list of de facto high-risk issues are also provided. The de facto high-risk issues are issues that must always be considered high risk if a company is large (≥ 250,000 employees), or if a facility manufacturing the product carries out the process or otherwise fits into the category described. Most of the de facto high-risk issues are relevant

to the applicant company or to final manufacturing stage facilities. However, several issues apply to other stages of a product's life cycle, as follows:

- Requirement #1.d.ii: *Products requiring energy during the use phase (unless the product saves more energy than it uses).* An example of this is an electronic window shade that adjusts automatically depending on indoor temperature and light conditions and that can be shown to reduce total building energy use in excess of the energy required to operate the shade.
- Requirement #1.f.ii: Products requiring high volumes of water during the use phase (e.g., apparel that must regularly be washed with water, a dishwashing machine). Additional examples include a clothes washing machine or a reverse osmosis water purification system. A specific definition of high volume is not provided. Performance relative to other similar products and total water use over the product use phase should both be considered if claiming this issue is not applicable for any product that uses or directly requires use of water during the use phase.
- Requirement #1.g.iii: *Products that are primary contributors to microfiber and microplastic pollution (i.e., textile and apparel products made from synthetic fibers that are wet processed and/or that require washing with water during the use phase, tires, and plastic pellets).*

Point e.ii: Final Manufacturing Facility – Using High Volumes of Organic Solvents

Point e.ii notes that air pollution is a de facto high risk issue for facilities that *use a high volume of organic solvents*. A definition of high volume is not provided in the standard. Facilities for which solvent emissions are regulated per the corresponding regional regulatory permitting system may be considered as high volume and therefore high risk. Stationary Sources of Air Pollution (United States Environmental Protection Agency) lists industries that are associated with this concern. This list and similar resources may be used to identify risks in regions that do not regulate solvent emissions. Note that facilities with solvent based coating operations and/or large scale printing operations are common sources of solvent emissions. If facility level solvent emissions data are publicly available for the given region, these data may be used to inform the risk assessment as well.

Supply Chain Risk Assessment

The standard requires identifying environmental risks associated with the product's supply chain. This encompasses the entire supply chain from direct suppliers to raw material extraction and production. Unlike in the Social Fairness category, the standard does not dictate exactly how risks in the supply chain must be identified (i.e., there are no de facto high risks applicable to supply chain noted in Section 3.2.2 as there are in Social Fairness Section 8.2). For supplier locations that are known, one option is to use a similar approach to that required in the Social Fairness category, which provides a list of de facto high risk locations. The de facto high risk locations are identified based on the World Bank's Worldwide Governance Indicators. These are indicators for voice and accountability, political stability, governance effectiveness, regulatory quality, rule of law, and control of corruption. These locations are associated with a relatively high risk of human rights issues occurring. It may reasonably be assumed that these locations are also associated with a high risk of having environmental

permitting systems that are not well developed and/or well enforced. Therefore, a supplier located in a de facto high risk location could reasonably be flagged for this concern. Regarding water related risks, a similar approach to that applied in the Water & Soil Stewardship category (Section 7.2) could be applied here as well. For example, suppliers located in regions with high water stress (as defined per the World Resources Institute's Aqueduct database) could be flagged as potentially high risk for water stress related issues (pending additional information e.g., data on actual volume of water used). Aqueduct provides risk levels on additional indicators that may also be useful in identifying water related risks based on location. Finally, the issues that are de facto high risk for all large applicant companies could also be considered high risk for large supplier companies. These suggestions could be applied to the entire supply chain once fully mapped (which is required in Social Fairness Section 8.2).

Note that even if supply chain mapping is not complete, risks associated with raw material extraction and/or production applicable to the certified product must also be assessed. As noted earlier, these risks may be identified based on desk research. Materials known to be energy, emissions, and/or water intensive to produce may be flagged as potentially high risk (pending data to the contrary). Note that the other categories of the standard aim to address environmental risks in the supply chain through requirements to, for example, quantify and address embodied greenhouse gas emissions, use responsibly sourced raw materials, and use positively assessed recycled materials. When identifying these risks, it may also be useful to review the material types for which it is required to use certified materials per the Product Circularity and Water & Soil Stewardship category requirements. The reasons these additional certifications are required is because the materials are considered high risk. (For example, see the Bronze level requirements in Product Circularity Section 5.3 Increasing Demand.)

Identifying Best Practices to Address the Risks (Requirement #2)

Once the full set of environmental risks and opportunities has been identified as described above (requirement #1), the next step is to identify best practices for addressing the risks. These may be practices that are already in place, planned for future implementation, or that have just been identified as part of the research conducted for Cradle to Cradle certification. In some cases, best practices may not yet be available (e.g., in the case of microfiber pollution from washing of synthetic textiles). In this case, applicants must identify the current status of the problem, including who is already working to solve the problem, research that has been conducted to identify solutions, and opportunities for engaging/collaborating.

Gathering Information Regarding the Impact and Importance of Identified Risks (Requirement #3)

This type of information may also be obtained from publicly available sources (e.g., regulatory commissions/ departments, non-governmental organizations, and the academic literature). It is also recommended that internal and external stakeholders be directly consulted. The information obtained on the impact and importance of risks may help to refine the risk assessment (requirement #1) and inform prioritization (requirement #4) as described below.

Prioritizing Risks (Requirement #4)

The process of prioritization described in Social Fairness Section 8.2 Assessing Risks and Opportunities must be followed. Severe and likely risks, including issues associated with the greatest negative environmental impact (or that would result in highly negative impact were they to occur), and any issues related to legal compliance, must be prioritized. Note: ISO 14001 refers to the risks that should be managed as the most significant environmental aspects.

Facilities with ISO 14001 Certification or Equivalent

Assessing environmental risks and opportunities for final manufacturing facilities is similar to cataloging environmental aspects and identifying those that can result in significant impacts as required for ISO 14001. This means that for facilities that are ISO 14001, some (if not all) of the risks relevant to the final manufacturing facility will have already been identified. **In some cases, the risk assessment for the facility will be complete.** However, it will always be necessary to review the list of de facto high-risk issues listed in the standard to ensure that these are included in the ISO management system. This is because ISO provides a process for use in identifying risks, but it is not prescriptive regarding what risks are identified – rather it is left to the ISO applicant to determine the scope.

Note that ISO 14001 may help with the facility portion of the risk assessment. However, the required scope of the assessment is much broader than the scope that a facility level management system certification addresses, and includes the applicant company, supply chain, product use, and cycling, etc.

Required Documentation

Bronze level

- Description of the risk assessment methods and results that demonstrates the risk assessment was conducted using the required scope, i.e., environmental risks associated with:
  - Applicant company's own operations, final manufacturing facilities, the product's supply chain, product use, product cycling and end of use, relevant communities, potentially affected groups, and other relevant stakeholders.
  - Greenhouse gas emissions and contribution to climate change, environmental pollution (air, fresh and marine water, soil), Resource use and circularity, biodiversity, and ecosystems.

- For any of the potentially de facto high risks that are determined to be not applicable evidence demonstrating this is the case. For example, product descriptions (e.g., to show the product does not use energy or water during use), process flow diagrams (e.g., to show absence of pollutant intense processes), manufacturing facility floor plans or site visit reports (e.g., to show absence of combustion power plants), the Clean Air & Climate Protection Form (to show total greenhouse gas emissions), and the Water & Soil Stewardship Form (to show water use), as relevant.
- List of relevant best practices for addressing the risks and opportunities identified.
- Description of the methods used to determine the importance of, and thereby prioritize, risks and opportunities.
- List of high-risk issues, indication of which are high priority, and why.
- References used, including any information obtained (either directly or indirectly) from stakeholders.

For facilities with ISO 14001 certification

- Valid ISO 14001 certificate and evidence that the list of de facto high-risk issues have been evaluated and included in the management system, if relevant. If all relevant de facto high-risk issues have been determined to be significant environmental aspects per ISO, the other documents and evidence listed above are not required for the specific facility.

3.2.3 Monitor & Verify Performance

Intended Outcome(s)
Performance on protecting the environment is monitored and verified for tier 1 suppliers, ensuring that corrective actions are taken when poor performance is identified and increasing the level of assurance that environmental risks are addressed.

Applicable Achievement Level(s)
Silver

Requirement(s)
Request data measuring performance against the environmental policy from tier 1 suppliers associated with high-risk issues as identified per the risk assessment. 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. Environmental performance data must be requested from all tier 1 suppliers providing components and materials that are subject to review (as defined in Material Health Section 4.3) that are associated with high-risk issues as identified per the Section 3.2.2 risk assessment.
2. If data are outdated or not available, the applicant must arrange for the data to be collected.
3. Data must be generated within the past 24 months.

4. Corrective actions must be planned or ongoing for any 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.
5. At recertification, progress must be demonstrated on requesting environmental data from additional high-risk suppliers, if any, identified through the supplier risk assessment. For suppliers that continually fail to provide data, the applicant must take remedial actions (i.e., steps to suspend or terminate the relationship) after a maximum of two years.

Further Explanation

The requirements in this section apply to the applicant company and its tier 1 suppliers (i.e., suppliers to the final manufacturing stage).

This section of the standard is similar to the Silver level requirements in Social Fairness Section 8.3 Monitor & Verify Performance. It is different from Social Fairness Section 8.3 in that it does not include a Bronze level requirement to monitor and verify performance at final manufacturing stage facilities. It also does not include a Gold level requirement applicable to environmental risks associated with components and raw materials. This is because the other environmental sections of the standard (i.e., Material Health, Product Circularity, Water & Soil Stewardship, and Clean Air & Climate Protection) already require this.

For the Silver level, *data must be requested from all tier 1 suppliers providing components and materials that are subject to review (as defined in Material Health Section 4.3) that are associated with high-risk issues as identified per the Section 3.2.2 risk assessment.* Please refer to Section 4.3 for information regarding how to determine what is subject to review. Note that there are no pre-defined (i.e. "de facto high-risk") issues applicable to suppliers noted in this section of the standard (as there are in Social Fairness Section 8.2 and 8.3). This means that whether there are any high risks (and the related environmental data that must be requested) is dependent on the applicant's risk assessment findings. If any of the high risks identified per the Section 3.2.2 risk assessment are applicable to tier 1 suppliers (i.e., suppliers providing materials to the final manufacturing stage), then data related to those risks must be requested. Please see Section 3.2.2 Further Explanation box for guidance and suggestions for conducting the risk assessment as it pertains to tier 1 suppliers and beyond (sub-section titled Supply Chain Risk Assessment).

Depending on the risks identified, relevant performance data to request may include (as examples) evidence of permit compliance status (e.g., permit and test data), energy usage (amounts and types), greenhouse gas emissions, water use, recycling, and discharges, evidence of best available technologies or techniques (BAT) implementation, and/or evidence of applicable certifications (e.g., ISO 14001 or 50001, FSC Certified).

For tier 1 suppliers in de facto high-risk locations, as defined in Social Fairness Section 8.3, social audit data must be requested. Such audits will typically include at least some environmental considerations (e.g., permit compliance). This information is relevant to these Section 3.2.3 requirements as well. If any environmental related corrective actions were required per the Section 8.3 social audit, tracking these issues for closure is required to occur as part of the requirements here in Section 3.2.3.

Because very similar requirements exist in the Social Fairness category (Section 8.3), it is also recommended that data requests required for this section be added to the Social Fairness data request as per Section 8.3. Data requests to suppliers are typically also necessary for achieving the Material Health (all levels) and Water & Soil Stewardship (Section 7.6 Gold level) requirements at a minimum. They may also be necessary for the other standard categories depending on (for example) if the final manufacturing stage includes any contract manufacturers or other suppliers and the degree of integration of the manufacturing process.

Required Documentation

Silver Level (minimum for initial certification):

- Evidence of communication requests (i.e., an example) to tier 1 suppliers associated with high risk of environmental issues as identified in Section 3.2.2 (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):

- Evidence that performance has been measured on the high risk issues within the past 24 months.
- Evidence of corrective actions taken or corrective action plans (if necessary/relevant).

Silver Level Recertification:

- Evidence of progress on obtaining environmental performance data from suppliers (i.e., data that have been obtained over the past three years).
- 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 relevant).
- 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.

3.2.4 Strategy for Environmental Policy Implementation

Intended Outcome(s)
A framework for monitoring and measuring progress toward achievement of environmental performance targets and for identifying areas for improvement is established.

Applicable Achievement Level(s)
Bronze

Requirement(s)
Develop a strategy for implementing the environmental policy and report on implementation progress at each recertification.

The strategy must:

1. Address priority risks and opportunities (per Section 3.2.1).
2. Include specific time-bound performance and impact objectives to guide decision making.
3. Define the scope of implementation.
4. Define the company's human, technical, and material resource allocation for implementation.

For recertification, environmental performance data must be collected and analyzed to measure progress toward achieving environmental targets and objectives, and areas for improvement must be identified. For any identified areas of poor performance, methods of improving outcomes must also be identified and evaluated and the strategy refined accordingly.

Further Explanation

The requirements in this section apply to the applicant company.

The environmental strategy is expected to reflect the commitments made in the environmental policy and demonstrate how the company will operationalize these commitments. This entails developing a framework for implementing the policy, defining the scope of implementation, identifying accountable parties and designated resources within the business, and a sound measurement system.

Priority Risks and Opportunities (Requirement #1): At a minimum, the strategy is expected to focus on the priorities determined per the risk and opportunity assessment (see Section 3.2.2). Note that prioritization per Cradle to Cradle Certified focuses on risk to the environment (severity and likelihood). See Social Fairness Section 8.2 for additional information regarding how this is different from the double materiality assessment required per the Corporate Sustainability Reporting Directive (CSRD).

Time-bound Performance and Impact Objectives (Requirement #2): The specific objectives and related targets included in the strategy will depend on the priority action areas identified in requirement #1. Examples of performance objectives and related targets include:

- Consistent compliance with all applicable environmental laws and regulations at all final manufacturing facilities with a target of zero instances of permit exceedance.

- Minimizing waste with a related target to increase recycling of manufacturing 'waste' by a certain percentage within a designated timeframe.
- Targets that communicate expectations and track efforts to manage emerging opportunities (e.g., addressing microfiber pollution).

In some cases, there may be some overlap with targets set per the other Cradle to Cradle Certified program category requirements (e.g., Section 6.3 Clean Air & Climate Protection Strategy).

Scope of Implementation (Requirement #3): This is a requirement to define the geographies and tier(s) of the applicant's operations and supply chain that are addressed by the strategy.

Defining Resources (Requirement #4): The human, technical, and materials resource allocation to support the plan's implementation must be defined. It is best practice to also define the financial resources allocated (or spend) for effective implementation. Resource allocation could, for example, include a description of relevant business units and staff experience assigned to implementation, agreements with external stakeholders or service providers who are or will be engaged to support implementation efforts, or a training plan and budget for supplier capacity building.

Preparing for Recertification: The framework for implementing the policy is required to identify how implementation will be monitored and measured. Measurement must include performance metrics to evaluate existing processes and outcomes, and define improvement areas. This is in preparation for achieving the recertification requirements that *environmental performance data must be collected and analyzed to measure progress toward achieving environmental targets and objectives.*

Recertification: *For any identified areas of poor performance, methods of improving outcomes must also be identified and evaluated and the strategy refined accordingly.* Examples of evaluation methods that can be used include:

- Management reviews at appropriate intervals
- Industry or competitor benchmarking
- Obtaining feedback from internal and/or external stakeholders

Facilities with ISO 14001 Certification or Equivalent

For prioritized issues applicable to facilities with ISO 14001 certification or equivalent, it may be assumed that the requirements in this section have been achieved if all of the high-risk issues identified per Section 3.2.2 are within the scope of the management system.

Required Documentation

Bronze level

- Strategy(ies) that includes the required points #1-4.
- Description of how implementation will be monitored and measured.

Bronze level recertification

- Evidence of performance data analysis specific to the defined objectives in the original strategy.
- List of areas of poor performance identified from the analysis conducted (if any).
- Description of plans to improve performance outcomes, and description of how the plan is selected/ developed and evaluated.
- Description of how the strategy has been updated to incorporate the need to improve poor performance.

For facilities with ISO 14001 certification (with prioritized risks):

Valid ISO 14001 certificate and evidence that the list of de facto high-risk issues have been evaluated and included in the associated management system. If all relevant de facto high-risk issues have been determined to be significant environmental aspects per ISO, the documents and evidence listed above for Bronze level (including for recertification) are not required for the applicable facility.

3.2.5 Demonstrating Commitment

Intended Outcome(s)
A culture that prioritizes environmental protection is established, promoted, and improved by company leadership.

Applicable Achievement Level(s)
Bronze

Requirement(s)
Demonstrate commitment and support for establishing and maintaining a culture whereby employees and business partners are able to achieve high levels of environmental performance.

The applicant's leadership team (i.e., C-level executive and/or Board of Directors) must demonstrate commitment and support by:

1. Communicating the company's environmental aspirations and strategy for protecting the environment internally and/or externally.
2. Defining a position to actively lead on protecting the environment, oversee implementation of the strategy, and drive continuous improvement efforts.
3. Ensuring there are defined procedures for escalating environmental risks and identified impacts to the executive team.

Further Explanation

The requirements in this section apply to the applicant company.

Who is Expected to Demonstrate Commitment

The applicant's leadership team (i.e., C-level executive and/or Board of Directors) must demonstrate commitment. In practice, positions with this responsibility can include:

- Board director or executive that has accountability for the environment (e.g., Head of Sustainability).
- Business unit functional head that has accountability and responsibility for environment. This could be a leader within procurement, purchasing, sourcing, risk management, compliance, sustainability, corporate responsibility, etc.

Communicating (Requirement #1): For the Bronze level, communication of the company's environmental aspirations, values, and strategy may be either internal or external. This may include, for example, sustainability reports and/or signed policy documents. See Required Documentation section for additional examples.

Defining a Position to Actively Lead on the Environment (Requirement #2): The position often has responsibility for the company's environmental management plan, internal and/or external progress reporting on implementation efforts, and/or KPIs to measure and assess progress. The designated position to lead on the environment may be full time or part time, as appropriate and feasible for company size.

Procedures for Escalating Risks and Impacts (Requirement #3): In assigning roles and responsibilities, the senior executive is expected to also have accountability for environmental risks and identified impacts that have been escalated to the executive team. Examples of escalation procedures can include internal monitoring and reporting procedures, employee hotlines, and/or procedures maintained by internal risk management departments. The escalation process should be included in training for key roles responsible for implementing environmental policy and demonstrating the organization's commitment to protect the environment.

Required Documentation

Bronze level

- Evidence that the applicant company is Communicating the company's environmental aspirations and strategy for protecting the environment internally and/or externally may include one or more of the following:
  - An environmental policy document with executive level signature that is publicly available and/or circulated internally to all employees,
  - A company press release on this topic,
  - A sustainability report, and/or
  - A transcript from a public speech given by a C-suite representative.
- Description of the designated position to lead on the environment.
- Defined processes and procedures for escalating and reviewing environmental risks and identified impacts by the executive team.

3.2.6 Environmental Management Systems

Intended Outcome(s)
An environmental performance management system is in place, ensuring that environmental performance of the applicant company and product is improved over time.

Applicable Achievement Level(s)
Silver and Gold

Requirement(s)

Silver level: For the applicant company and for all final manufacturing stage facility(ies), implement management system(s) that support achievement of the environmental policy commitments within company and facility operations.

Gold level: Implement a responsible sourcing management system that supports achievement of the environmental policy commitments within the product's supply chain.

For the Silver level, the management system(s) must include the following elements:

1. Designated staff with environmental compliance responsibilities.
2. Designated oversight function and process.
3. Procedures that support implementation of the environmental policy.
4. Education for staff with environment-related duties on environmental best practices.
5. Internal communication and employee involvement.
6. Procedures to measure and evaluate activities against the environmental policy.
7. Policies and procedures for the prompt implementation of corrective and preventive actions.

Further Explanation

The Silver level requirements in this section are to implement environmental management system(s) for the applicant company and at all final manufacturing stage facilities.

The requirements are similar to those in Social Fairness Section 8.6 Management Systems, which requires the applicant have a management system that supports achievement of the human rights policy commitments within company operations. The guidance for Section 8.6 may be useful towards achieving the company level requirements in this section as well.

For facilities, guidance on environmental management system implementation is widely available through other sources, for example for ISO 14001 or EMAS implementation (see references below).

Facilities with ISO 14001 Certification or Equivalent

For facilities with ISO 14001 certification or equivalent, it may be assumed that the applicable requirements in this section have been achieved if all of the high-risk issues applicable to final manufacturing as identified per Section 3.2.2 are within the scope of the management system.

References

- EU Eco-Management and Audit Scheme (EMAS)
- ISO 14001 (2015)
- Learn About Environmental Management Systems, US EPA

Required Documentation

Silver level

The following information is required to demonstrate that the management systems have been implemented. The numbers below align with the individual requirement numbers in this section.

Applicant company:

1. Internal organizational charts and/or descriptions of the functions, business units, or staff responsible for environmental compliance, including job descriptions for relevant positions.
2. Description of who and what processes create accountability for environmental compliance and policy implementation. For example, this might include oversight by an Environmental, Health and Safety lead, with support from a cross functional committee of business units.
3. Detailed information about how the environmental policy is integrated into the organization – this may be through written procedures, description of processes, reference to several standard operating procedures, and/or intra-department collaboration for managing the policy implementation or processes.
4. Examples of any training for individuals with environmental related duties. Provide examples of training materials and a training log to show completion of training.

5. Internal communication to employees about the company's environmental commitments and activities. Examples include reference to the environmental policy in an employee handbook or internal emails announcing progress on goals.
6. Key performance indicators or example progress reports to evaluate the effectiveness of implementation plans and the management system. This may include documentation for processes to review compliance with the environmental policy and also compliance with local laws. If third-party assessments of activities and/or reports have been conducted by an external stakeholder, provide this information to document supporting implementation of different activities.
7. Written policies and procedures that outline requirements for implementation of corrective and preventive actions if risks and/or impacts are identified.

Facilities:

Provide the same set of documents described above as they pertain to the applicable facilities.

Silver level recertification:

Provide the following for the applicant company and for all applicable facilities (the exceptions noted above apply):

- Evidence that the design and effectiveness of the management systems (policies, practices, and programs) have been reviewed to identify deficiencies/changes required for improved performance. This must include regular internal management reviews (annual review is recommended) of the environmental management system and written records from management review meetings.
- Evidence that improvements identified in the previous review are underway.

Documentation exceptions for facilities (applicable to both initial certification and recertification):

- For very small/micro companies and for any other company with only one location that includes both headquarters offices and manufacturing, one set of documents is accepted if the documents pertain to both the company overall and the applicable facility. Very small/micro companies are defined per the EU Commission as < 10 employees and annual turnover < €10 million.
- For very small/micro companies that are suppliers to or contract manufacturers of the applicant company and for which no high-risk issues were identified per the risk assessment: If the applicant has achieved the Gold level responsible sourcing management system requirements and demonstrates the system is being applied specifically to the supplier facility, it is not required to provide a separate set of management system documentation for the applicable supplier. The applicant's documentation is accepted as evidence that environmental issues are sufficiently managed at the supplier or contract manufacturer facility.
- **For facilities with ISO 14001 certification:** Provide a valid ISO 14001 certificate and evidence that the list of de facto high-risk issues have been evaluated and included in the associated

management system. If all relevant de facto high-risk issues have been determined to be significant environmental aspects per ISO, the documents and evidence listed above are not required.

Gold level: Implement a responsible sourcing management system that supports achievement of the environmental policy commitments within the product's supply chain.

For the Gold level, the responsible sourcing management system must include the following elements:

1. Designated staff with responsible sourcing responsibilities.
2. Designated oversight function and process.
3. Procedures to communicate to suppliers the company's environmental policy and any associated sourcing business processes.
4. Supplier contractual requirements for environmental policy compliance and monitoring (e.g., supplier codes of conduct if defined as a contractual term). Contracts must require suppliers to extend environmental 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 best practices.
8. Business procedures for identifying and documenting the cause and resolution of environmental issues and/or impacts in the supply chain.

For recertification at the Silver or 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. (Note: This applies to the company-level and facility-level management system(s) at the Silver level and also to the responsible sourcing management system at the Gold level.)

Further Explanation

The requirements in this section apply to the applicant company.

This section of the standard is very similar to the Gold level Social Fairness requirements in Section 8.6 Management Systems. See Section 8.7 for guidance.

Applicants may submit a single set of documents for achieving these and the similar Social Fairness responsible sourcing requirements if their responsible sourcing management system addresses both human right and environment (which is expected to be the norm).

Required Documentation

Gold level

The following information is required to demonstrate that the 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 responsible sourcing, including job descriptions for relevant positions.
2. Description of who and what processes create accountability for environmental compliance in the product's supply chain. For example, this might include oversight by a Chief Procurement Officer, with support from a cross functional committee of business units such as sourcing, compliance, sustainability, product development, design, etc.
3. Written procedures and supplier requirements or guidance materials that set expectations for supplier compliance with the environmental policy. 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 responsible 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 environmental compliance requirements. Written procedures and/or guidance that explain how evaluation of environmental 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. Credible corrective action plans define timelines for expected corrective actions, which may relate to the severity of the non-compliance.
7. Description of the training and/or a sample of training or education materials that explain key environmental 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 environmental 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.

3.2.7 Grievance Mechanisms

Intended Outcome(s)

A mechanism is in place by which stakeholders may safely report negative effects of business activities and operations and other environmental concerns to the company in order to obtain redress for those impacts.

Applicable Achievement Level(s)

Silver and Gold

Requirement(s)

Silver level: Provide a grievance mechanism that permits stakeholders to obtain redress for negative environmental impacts. For any contract final manufacturing stage facilities, request that a grievance mechanism be made available.

Gold level: For contract final manufacturing stage facilities, ensure that a grievance mechanism is available that permits stakeholders to obtain redress for negative environmental impacts.

For the Silver and Gold levels, the applicant company must have a grievance mechanism for stakeholders that:

1. Is supported by a non-retaliation policy.
2. Is capable of addressing the risks to and potential adverse impacts on the environment.
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.
7. Includes written records and periodic reviews to identify and make necessary improvements.

For the Gold level, the grievance mechanism may be provided by the contract manufacturer or by the applicant.

Further Explanation

The requirements in this section of the standard apply to the applicant company at the Silver level and to contract manufacturers at the Gold level. The Gold level requirements may be met via an applicant provided mechanism if the mechanism is made available to the contract manufacturer and its stakeholders.

This section of the standard is very similar to the Silver and Gold level Social Fairness requirements in Section 8.7 Grievance Mechanisms. See Section 8.7 for guidance. In general, applicants that have fulfilled the Section 8.7 requirements will have fulfilled the requirement in Section 3.2.7 as well if the applicable mechanism can accept and address both human rights and environmental related grievances. Separate mechanisms for addressing human rights vs. environmental issues are not required. Further, it probably is not possible to fully segregate these into two distinct types of grievances. Reason: The United Nations has defined the right to a clean, healthy, and sustainable environment as a human right. See (for example) The Right to a Health Environment, a User Guide (United Nations, 2024), for additional information.

Required Documentation

The Required Documentation listed below is almost entirely the same as what is required for Social Fairness Section 8.7 (with one difference as noted in #2, third bullet). If a single grievance mechanism can accept and address both environmental and human rights grievances, only one set of documents is required to verify both Section 3.2.7 and Section 8.7. However, for Section 3.2.7 it must be demonstrated that environmental grievances specifically can be accepted and addressed as follows:

- The documentation for requirement #2 and/or #7 may show that both types of grievances have already been accepted and processed. This is helpful evidence that should be provided if available, but not absolutely required (because it is possible no environmental grievances have yet been filed).
- The process (per the description requested for requirement #2) must not include explicit restrictions on accepting environmental grievances.
- The process (per the description requested for requirements #2) may show that there is a separate work stream (e.g., separate review teams with the appropriate expertise) for addressing environmental vs. human rights grievances that are not tied to environmental issues. This is helpful evidence, but not absolutely required given that there may be no differences in the process (which is also acceptable).
- There must be evidence that if an environmental grievance is received that it will be evaluated in alignment with local environmental law at a minimum. Evidence of evaluation in alignment with international environmental laws/treaties and applicable human rights definitions (as applicable) should also be provided if possible. This may also be evident as part of the process description requested for requirement #2.

Silver Level

Documentation of a company's own grievance mechanism available to employees and other stakeholders that meets all points below. If any contract manufacturers are used for the final manufacturing stage of the product, evidence that the applicant has requested that they provide a grievance mechanism of their own (e.g., copy of email communication to the supplier).

Gold Level

Documentation of an existing grievance mechanism available to employees and other stakeholders at contract final manufacturing facilities (if any) that meets all points below. The mechanism may be provided by the applicant company or by the contract manufacturer. If provided by the applicant, evidence of communication to all contract manufacturer employees and stakeholders that the mechanism is available for their use is required.

1. A non-retaliation policy that is either freestanding or incorporated into another policy. The nonretaliation 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).
2. Documentation that the grievance mechanism is legitimate, predictable, and rights compatible (i.e., capable of addressing the risks and potential adverse impacts) as follows:
    - Evidence that the grievance mechanism is used by the intended audience, as demonstrated in a log or summary of complaints received. Note: the summary should exclude all confidential information including (but not necessarily limited to) the names of those involved in the grievance.*
    - 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) about the grievance. Documentation may include, for example, screenshots of the interface used to file and track a grievance through the process.
    - Evidence that grievances are evaluated in alignment with local environmental laws at a minimum, and with international environmental laws and applicable human rights definitions, if applicable. NOTE: This is the one point that is different from the set of required documents for Social Fairness which requests evidence 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.

3. Documentation demonstrating that the process is transparent, visible, and understandable to all stakeholders and that grievance procedures include a defined timeline for responses to occur, including:

    - 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).
    - Evidence that parties raising grievances are informed about progress.
    - Evidence of regular communication about the overall mechanism's performance to build confidence in its use.*

4. Examples of how the applicant has engaged individuals who have used the mechanism to provide feedback/outcomes from the review. * If the applicant does not have an example, they must provide procedures of how it would respond in the event an issue is raised.
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 for complaints, concerns, or suggestions received, including:
    - Usage statistics for the grievance mechanism to demonstrate that records are maintained and reviewed. This may include data such as the number of complaints filed and types of complaints or topics on which complaints are made, 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 processes to make improvements.

*For mechanisms that are newly implemented (i.e., implemented one year ago or less, or two years or less for companies with < 10 employees and annual turnover < €10 million), this piece of evidence may be provided at recertification.

All evidence is expected to exclude information that may be confidential (e.g., the names of those filing the grievance and of those involved in the complaint).

3.2.8 Transparency and Stakeholder Engagement

Intended Outcome(s)
The applicant company is held accountable for any negative environmental impacts, encouraging ever-improving performance.

Applicable Achievement Level(s)
Silver and Gold

Requirement(s)

Silver level: Use open and transparent governance and reporting, making information on how environmental risks are managed and adverse impacts are addressed publicly available.

Gold level: Incorporate stakeholder engagement and feedback into environmental risk management, using it to shape company strategy and operations.

For the Silver level, the applicant must make the following information publicly available:

1. The environmental policy, objectives, and progress toward achieving objectives (i.e., activities and outcomes), and
2. A description of adverse impacts on the environment and how they are addressed.

For the Gold level, 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 shape the strategy for implementing the environmental policy, management systems, and related operations.

Further Explanation

The requirements in this section apply to the applicant company.

This section of the standard is very similar to the Silver and Gold level Social Fairness requirements in Section 8.9 Transparency and Stakeholder Engagement. See Section 8.9 for additional guidance.

For the Silver level requirement #2, the applicant is required to make information about adverse impacts on the environment that are connected to its business activities publicly available. This must include information regarding how the impacts are addressed, including measures adopted to mitigate the impacts. **The applicant must disclose how it is connected** – e.g., whether it has caused, contributed to, or is linked to – the adverse impact. Please refer to the Further Explanation box for Section 8.9 for guidance on determining how a company is connected to an adverse impact.

Required Documentation

All or some of the information required may, for example, be published in the applicant company's Sustainability Report, website, Human Rights Report, or Modern Slavery Act statement. Provide links to all relevant documents/information.

Silver Level

Evidence that the applicant company makes the following information publicly available must be provided.

- The environmental policy, objectives, and activities.
- A description of adverse impacts on the environment connected to the company's business activities and how they are addressed/mitigated. Note that adverse impacts can reflect the issues found in the environmental policy or risk assessment (see Section 3.2.1 and 3.2.2) and may include adverse impacts that are reported through monitoring, verification, or corrective actions taken (see Section 3.2.3 as well as all other environmental focused categories of the standard); or uncovered through grievance mechanisms (see Section 3.2.7). The publicly available information must include how the company is connected – e.g., whether it has caused, contributed, or is linked – to the adverse impact. If no adverse impacts were identified, this must be disclosed.

Gold Level

- 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). Note that for newly implemented systems, this may be provided at recertification.

3.2.9 Environmental Protection Incentives

Intended Outcome(s)
Company management is motivated to take action to protect the environment as relevant to company operations.

Applicable Achievement Level(s)
Platinum

Requirement(s)
Incorporate environmental performance results into relevant employee and executive performance evaluations and incentive structures.

The following are required:

1. Performance assessments of any executives or employees with designated environmental responsibilities must include consideration of metrics derived from the environmental policy and strategy.
2. Environmental performance results must be considered in compensation packages / incentive plans for top company executives and management with environmental management or oversight functions (i.e., from C-suite executives to business unit and functional heads).

Further Explanation

The requirements in this section apply to the applicant company.

This section of the standard is very similar to the Platinum level Social Fairness requirement #8 in Section 8.11 Fostering a Culture of Social Fairness. See Section 8.11 for additional guidance.

Performance Assessments (Requirement #1):

Environmental criteria or metrics must be evaluated in the same manner as traditional performance metrics and hold equal weight in these evaluations. Examples include the following:

- A Vice President in a management role may be evaluated on resource allocation that supports environmental objectives.
- A Human Resources lead responsible for implementing employee programs may be evaluated on the number of trainings that contain environmental topics.
- A legal professional may be evaluated based on the percentage of contracts that require compliance with the organization's environmental policy or code of conduct.

Required Documentation

- Evidence of inclusion of environmental goals in annual performance objectives and assessments for executives and/or employees with designated environmental responsibilities. Metrics included in performance assessments may include implementation of employee training, risk assessment, sourcing decisions that include environmental performance evaluation, supplier management, evaluation of supplier non-compliances, etc. Provide a sample of performance reviews to demonstrate that environmental criteria are included.
- Description of compensation package terms for executives and management with environmental responsibility oversight to confirm inclusion of environmental 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.

3.3 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)

At recertification, demonstrate that at least one measurable improvement has been made in at least one of the five program categories since the prior certification.

The measurable improvement required is in addition to any actions already required in individual program categories (e.g., progress on strategies and optimization plans).

Further Explanation

Examples of measurable improvements:

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 4.11).

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 purchase of RECs or GoOs relative to total electricity use (i.e., increased percentage).
- Increased purchase of carbon offsets relative to total emissions (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 & 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.

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).

Note: The measurable improvement requirement was new to Version 4.0 and is also included in Version 4.1. For initial certifications to Version 4.1, including for certifications that are transitioning from Version 3.1 to Version 4.1, demonstrating measurable improvement is not required.

Required Documentation

- Description of the measurable improvement made and supporting quantitative data.

4 // Material Health Requirements

Category Intent

Chemicals and materials used in the product are selected to prioritize the protection of human health and the environment, 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 in compliance with leading chemical regulations.	●	●	●	●
4.2: Product does not contain organohalogen substances of special concern, or functionally related, non-halogenated classes of equivalent concern, above relevant thresholds.	●	●	●	●
4.3: Product is 100% characterized by generic material.	●	●	●	●
4.3 and 4.4: Product is ≥ 75% assessed (complete formulation information collected for 100% of materials released directly into the biosphere).	●	●	●	●
4.5: Strategy developed to phase-out or optimize all x-assessed or grey-rated chemicals.	●	●	●	●
4.3 and 4.4: Product is ≥ 95% assessed (complete formulation information collected for 100% of materials released directly into the biosphere).		●	●	●
4.2: Product does not contain materials with > 1% carbon-bonded halogens by weight, or recognized PBTs or vPvBs. Product does not contain EU CLP Cat.1 and 2 CMRs or substances causing an equivalent level of concern, or exposure is unlikely or expected to be negligible.		●	●	●
4.7: Product has low VOC emissions (required for products permanently installed in buildings).		●	●	●
4.8: Product complies with VOC content limits (required for liquid and aerosol consumer and construction products).		●	●	●

4.3 and 4.4: 100% of homogeneous materials subject to review are assessed (i.e., none have a grey rating due to insufficient data).			●	●
4.6: Product is optimized for Material Health (i.e., all x-assessed chemicals replaced or phased out).			●	●
4.5: Strategy developed to either increase the percentage of preferred (A/a and/or B/b assessed) materials and chemicals in the product or optimize the chemistry in the supply chain.			●	●
4.7: Product has very low VOC emissions or is inherently non-emitting (required for products permanently installed in buildings).			●	●
4.4 and 4.6: 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.				●
4.6: > 50% of the product is assessed as A/a or B/b.				●
4.9: ≥ 75% of the product's input materials or chemicals have a C2C Certified Material Health Certificate at the Gold or Platinum level or ≥ 50% of the product's input materials or chemicals are Cradle to Cradle Certified at the Gold or Platinum level or equivalent. A strategy is developed to increase percentages over time. 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 Material Health optimization strategy is developed based on the results.				●

4.1 Compliance with Leading Chemical Regulations

Intended Outcome(s)

In alignment with leading regulations that aim to protect human health and the environment, the use of well-known toxic chemicals in the product is avoided.

Applicable Achievement Level(s)
Bronze

Requirement(s)
The product complies with leading chemical regulations.

Note: In addition to the chemical restrictions in this section, products seeking certification are also subject to the applicable chemical restrictions in Sections 4.2 and 4.6.

The product and its homogeneous materials subject to review comply with leading chemical regulations, as defined by the applicable Bronze level regulatory restrictions in the Cradle to Cradle Certified® Restricted Substances reference document. The Bronze level regulatory restrictions include restrictions that apply to all products, restrictions that apply to children's toy products, and restrictions that apply to cosmetics and personal care products. See Section 4.3 for more information on how to define homogeneous materials subject to review in a product seeking certification.

For textile chemical formulations, the product may alternatively comply with the most recent version of the Zero Discharge of Hazardous Chemicals (ZDHC) Manufacturing Restricted Substances List (MRSL) or equivalent.

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 Leading Chemical Regulations

Compliance with Section 4.1 must be demonstrated via one of the following pathways:

1. **C2CPII Regulatory Compliance Declaration Form** (default pathway)**:**
    - Suppliers may declare regulatory compliance using the C2CPII Version 4.1 Supplier Regulatory Compliance Declaration. In this declaration, suppliers disclose information on any chemicals or substances listed in the Section 4.1 spreadsheet tabs in the Cradle to Cradle Certified® Restricted Substances reference document that are or may be present in the product, including chemical name, CAS #, and concentration. The supplier includes a signature and attests to any information provided in the form.
        - If any listed chemicals or substances are disclosed, the chemicals must be below allowable thresholds as defined by the applicable regulatory citations.
2. **Statement of regulatory compliance:**
    - Compliance with leading chemical regulations can be demonstrated via a regulatory statement of compliance for the regulatory citations applicable to the product or material under consideration as described in the Version 4.1 Restricted Substances reference document. Please see the C2CPII Version 4.1 Supplier Regulatory Compliance Declaration for guidance on required information for regulatory statements of compliance.

- Note that this pathway can be used at the product level to demonstrate regulatory compliance for the entire product, where applicable.

3. **Supplier statement of conformance** (alternate compliance pathway for suppliers who are unable to sign the C2CPII Regulatory Compliance Declaration)**:**
    - Uses a supplier's statement of conformance in their own format.
    - Must include the same information requested in the C2CPII Regulatory Compliance declaration. See the checklist provided in the Cradle to Cradle Certified® Version 4.1 Supplier Regulatory Compliance Declaration.
4. **Material Health Assessor Verification** (alternate compliance pathway for suppliers who are unable to sign ANY Regulatory Compliance Declaration)**:**
    - For this pathway, suppliers provide a signed and attested Version 4.1 Supplier Bill of Materials Form indicating that the composition information is complete and represents all intentional inputs and known contaminants to the Cradle to Cradle Certified Material Health Assessor, who reviews the composition, confirms regulatory compliance, and signs the C2CPII Supplier Regulatory Compliance Declaration.
    - For this pathway, the supplier can provide a signed and attested Bill of Materials using:
        - C2CPII Version 4.0 or Version 4.1 Supplier Bill of Materials Form

          OR,
        - A Bill of Materials form in the supplier's own format. Note that the supplier Bill of Materials must include the same information requested in C2CPII's Bill of Materials.

Determining Regulatory Compliance - Alloys

Mill certificates (i.e. test reports) will be accepted for full chemical composition and may be used to demonstrate Section 4.1 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.

Verification may be demonstrated through:

- Pathway #2 or #3 (Supplier submits regulatory compliance declaration via C2CPII form or company letterhead).
- Pathway #4 (MH Assessor reviews the mill certificate and any additional information, confirms Section 4.1 compliance, and signs the C2CPII Regulatory Compliance Declaration Form).

See Section 4.3, Further Explanation for more information on defining metal alloys.

Determining Regulatory Compliance – Low-concentration Input Materials

If an input material is present at less than 100 ppm in a single material, the Material Health Assessor may sign the Regulatory Compliance Declaration using the material Safety Data Sheet (SDS) for composition information. Full composition disclosure is not needed.

Determining Regulatory Compliance – Supplier Tiers

Declarations must be signed by an entity with sufficient knowledge of the material's chemical composition 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 4.1 compliance.

Determining Regulatory Compliance – Analytical Testing

If all other compliance pathways cannot be used, Section 4.1 compliance may be demonstrated through Silver level analytical testing. See the Recycled Content Materials Analyte List, available on the C2CPII website, for more information on which analytes must be tested.

Note: Silver level analytical testing alone is not sufficient to meet the full chemical composition requirements under Section 4.3. Materials using this pathway to demonstrate regulatory compliance may not be added to the "Defined" percentage calculated in Section 4.3.

C2CPII Supplier Regulatory Compliance Declaration

A Supplier Regulatory Compliance Declaration template and checklist for suppliers providing their own statement of conformance is available to Cradle to Cradle Certified assessors. It is recommended that declarations (Section 4.1 Regulatory Compliance; Section 4.2 Organohalogens and OPFRs; and Section 4.6 CMRs & SVHCs) and full chemical composition information are requested from suppliers at the same time.

Defining Homogeneous Materials Subject to Section 4.1 Restrictions

Substances listed on the Section 4.1 spreadsheet tabs in the Cradle to Cradle Certified® Restricted Substances reference document are restricted in all homogeneous materials subject to review. 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. Additional detail regarding the homogeneous material definition as well as interpretations regarding how to apply it to specific product and materials can be found in the Methodology for Defining Homogeneous Materials.

See Section 4.3 for exemptions to fully defining certain homogeneous materials in the product, which are also relevant to Section 4.1 compliance. In addition, see the Geological, Biological, and Recycled Content Assessment Methodologies for information on analytical testing that may be required for verifying Section 4.1 compliance.

Restricted Substances Updates and Transition Period: As noted in the Background section of the Restricted Substances reference document, *This reference document will be updated annually to reflect additional restrictions that are added to the source regulations over time. With each document update, a transition period will be implemented 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.

Complying with the ZDHC MRSL (Textile Chemical Formulations)

Refer to the ZDHC documentation for guidance on how to comply:

- ZDHC Programme
- MRSL (see most recent active version(s))

Note that there are several levels of conformance defined by ZDHC. For the purposes of Cradle to Cradle Certified, Level 1 conformance is required at a minimum.

C2CPII-Recognized Standards

See the most recent version of C2CPII-Recognized Certification Programs and Standards, available on C2CPII's website, for the list of recognized standards that restrict the use of well-known toxic substances. Refer to Appendix 2 in this guidance document for requirements and the application process for recognition.

Required Documentation

For **all** homogeneous materials in the product, **including materials for which full chemical composition information has been collected,** the following is required:

- A declaration (or declarations) regarding any substances on the C2C Certified Restricted Substances reference document, spreadsheet tabs "4.1 All Products" and, if applicable, "4.1 Electronics (RoHS)", "4.1 Children's Toy Products", and/or "4.1 Cosmetics & Personal Care", that are present in the material, signed by an entity with sufficient knowledge of the material's chemical composition to substantiate the declaration.
    - Note: A Supplier Regulatory Compliance Declaration template is available to Cradle to Cradle Certified assessors.

OR

- A regulatory statement of compliance from the supplier (see Supplier Regulatory Compliance Declaration for guidance on required information for these statements).

OR

- Silver level analytical testing demonstrating compliance with Section 4.1 restrictions.

All declarations and statements of compliance must be submitted in English.

For biological, geological, and recycled content materials, the following is required:

- Analytical testing reports demonstrating that any Section 4.1 restricted substances with the potential for being present in the material are below relevant restriction limits
    - Test reports must be conducted within two years prior to the start of the application.
    - Biological, geological, and recycled content materials require both analytical testing **and** a Regulatory Compliance Declaration or regulatory statement of compliance. Analytical testing for these materials does not include all Section 4.1 restricted substances.
    - If a biological, geological, or recycled content material does not contain any intentionally added inputs (e.g., additives, finishes, coatings, pesticides) or known contaminants, the supplier may provide a statement attesting as such in lieu of providing a Regulatory Compliance declaration or statement of compliance.

For exempt metallic components (as defined per Section 4.3 Material and Chemical Inventory), the following is required:

- Evidence of Restriction of Hazardous Substances (RoHS) compliance.

For textile chemical formulations (e.g., a textile dye formulation), a ZDHC ChemCheck report or equivalent report or declaration verifying ZDHC MRSL compliance may be used to demonstrate Section 4.1 compliance. The report or declaration must demonstrate conformance to ZDHC level 1 at a minimum. If this compliance pathway is used, a Regulatory Compliance declaration is not required.

For other product types, evidence of certification to a C2CPII-recognized certification (i.e., a valid certificate) may be used to demonstrate Section 4.1 compliance.

4.2 Avoidance of Organohalogens and Functionally Related Chemical Classes of Concern

Intended Outcome(s)

Organohalogens, a class of substances associated with toxicity concerns in multiple use-cycle stages, are progressively avoided, beginning with high organohalogen content materials, classes of special concern, and functionally related, non-halogenated classes of equivalent concern (e.g., organophosphate ester flame retardants being used in lieu of halogenated flame retardants).

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 special concern, or functionally related, non-halogenated substances of equivalent concern (i.e., per- and polyfluoroalkyl substances (PFASs), halogenated flame retardants (HFRs) and organophosphate ester flame retardants (OPFRs), halogenated polymers, halogenated organic solvents, and other highly halogenated, carbon-based materials), above relevant thresholds. Certain exemptions apply.

Silver level: Homogeneous materials subject to review do not contain organohalogen substances in exceedance of 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 or lower if specific concentration limits are defined).

Note: In addition to the chemical restrictions in this section, products seeking certification are also subject to the applicable chemical restrictions in Sections 4.1 and 4.6.

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 Bronze level, the applicable restrictions for organohalogen substances of special concern 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 or brominated 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 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 regulatory restrictions on specific HFRs (see Section 4.1), carbon-bonded 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 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 restricted by the applicable regulations in Section 4.1 (e.g., TCEP). In addition to the applicable regulatory restriction(s) on specific OPFRs in Section 4.1 (e.g., TCEP), 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, halogenated organic solvents, and other highly halogenated, carbon-based materials: Any material containing a sum total of 10% or more of carbon-bonded fluorine, chlorine, and/or bromine by weight is considered a highly halogenated carbon-based material and is thus not permitted for use (except in exempt materials/parts as noted below).

Alternatively, the product may be certified to a C2CPII-recognized standard that restricts the use of organohalogen substances of special concern, or functionally related, non-halogenated substances of equivalent concern (i.e., per- and polyfluoroalkyl substances (PFASs), halogenated flame retardants (HFRs) and organophosphate ester flame retardants (OPFRs), halogenated polymers, halogenated organic solvents, and other highly halogenated, carbon-based materials).

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 ≥1) and molecules with one or more -$C_nF_{(2n+1)}$ moiety (with n ≥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.

[1.] Kwiatkowski et al., Scientific Basis for Managing PFAS as a Chemical Class. Environ. Sci. Technol. Lett. 2020, 7, 8, 532–543. https://pubs.acs.org/doi/full/10.1021/acs.estlett.0c00255

PFASs "are of concern because of their high persistence (or that of their degradation products) and their impacts on human and environmental health that are known or can be deduced from some well-studied PFAS. Currently, many different PFASs (on the order of several thousands) are used in a wide range of applications".

PFASs commonly found in consumer products include non-stick, stain, and scratch-resistant coatings (e.g., coatings containing polytetrafluoroethylene (PTFE)). A non-exhaustive list of products that may contain PFASs may be found here.

The Cradle to Cradle Certified® Restricted Substances reference document contains supplementary information to aid in the identification of PFASs. See spreadsheet tab "4.2 PFASs", which includes links to several resources that describe and list PFASs.

Note: Any PFAS finish or coating on a textile must be assessed as a separate material. Materials with a PFAS finish or coating may not be considered one homogeneous material.

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 may be found here.

See the Cradle to Cradle Certified® Restricted Substances reference document, spreadsheet tab "4.2 HFRs" for a non-comprehensive list of substances classified as HFRs that are restricted per the requirements in Section 4.2. Any chemicals present on this list are subject to restriction, regardless of function in the material.

Note: Substances that meet the Cradle to Cradle Certified® definition of an HFR but are not listed in the Restricted Substances reference document are also 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*. Toxicity concerns associated with organophosphate ester flame retardants may be found here.

See the Cradle to Cradle Certified® Restricted Substances reference document, spreadsheet tab "4.2 OPFRs" for a non-comprehensive list of substances that are subject to the OPFR restriction in Section 4.2. Any chemicals 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 document, 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, Halogenated Organic Solvents, and Other Highly Halogenated, Carbon-based Materials (Bronze Level Restriction #4)

As noted in the standard: *Any material containing a sum total of 10% or more of carbon-bonded fluorine, chlorine, and/or bromine by weight is considered a highly halogenated carbon-based material and is thus not permitted for use (except in exempt materials/parts as noted below)*. An example of a highly halogenated polymer is polyvinyl chloride (PVC). Highly halogenated materials 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.

The example calculations below demonstrate how to calculate carbon-bonded halogen weight in a chemical.

Example: The solvent tetrachloroethylene (C_2Cl_4, CAS number 127-18-4, molecular weight 165.82 g/mol) has four carbon-bonded chlorine atoms. The combined weight of the four carbon-bonded chlorine atoms is 141.8 (i.e., 35.45 g/mol x 4). The percentage of carbon-bonded chlorine within this substance is therefore 85.5% (i.e., 141.8/165.82). This is greater than the allowable < 10%, which means that this substance is not eligible for certification at the Bronze level. In addition, if this substance was present within an otherwise non-halogenated formulation/material above 11.7% (i.e., 85.5% x 11.7% = 10%), the formulation/material would not be eligible for the Bronze level.

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

Verifying Compliance with the Bronze and Silver level Restrictions

For the Bronze level of certification, certain classes or substances are restricted as described in restrictions #1-4, while for the Silver level all organohalogenated substances are restricted. For Silver level, *materials in the product do not contain organohalogen substances in exceedance of 1% by weight.*

This restriction applies to each material rather than to the product overall. See the Exceptions section for exceptions to this rule.

As noted in the standard, *the percentage of organohalogen substances within a homogeneous material is equal to the percentage by weight of all carbon-bonded halogen atoms (Cl, Br, F, and I) within the material.* 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.

Bronze Level:

- For restrictions #1, #2, and #4: Compliance may be established based on elemental analysis. A material is in compliance with all three of these restrictions if the elemental concentration of Cl and Br are cumulatively below 1,000 ppm and the elemental concentration of F is also below 1,000 ppm of the material by weight. (Note: Although the limit for restriction #4 is much higher than 1,000 ppm (i.e., < 10% for carbon-bonded fluorine, chlorine, and/or bromine), the elemental analysis as described would ensure compliance with all three of these restrictions combined.)
- For restriction #4: Compliance may alternatively be established by a Material Health assessor based on general information available for the material on the Safety Data Sheet (SDS) or elsewhere.
- For restrictions #1-3: Compliance may be established by a Material Health assessor based on full chemical composition obtained from the supplier (see Section 4.3) or a declaration from the supplier stating that:
  - HFRs and PFASs are not present in the material at 1,000 ppm or above by weight of carbon-bonded Cl+Br and F, respectively.
  - OPFRs are not present in the material at 1,000 ppm by weight or above.

Suppliers may declare Section 4.2 compliance using the Cradle to Cradle Certified® Version 4.1 Supplier Organohalogens and OPFRs Declaration, available to Cradle to Cradle Certified assessors. Note: It is recommended that declarations (Section 4.1 Regulatory Compliance; Section 4.2 Organohalogens and OPFRs; and Section 4.6 CMRs & SVHCs) and full material disclosure information are requested from suppliers at the same time.

Compliance for restrictions #1-3 may not be established based on the information available on the SDS since substances present at concentrations < 1% in a material may not be reported on SDSs.

Silver Level:

Compliance may be established based on elemental analysis. If the elemental concentration of Cl, Br, F, and I are cumulatively below 1% of a material by weight, the material automatically is in compliance with this requirement. If the elemental concentration of Cl, Br, F, and I are cumulatively found to be

above 1% of a material by weight, 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 (Cl, Br, F, and I) within the material is below 1%.

To determine the concentration of carbon-bonded halogens by weight based on chemical composition information, it is necessary to know the molecular weight, structure, and concentration of all organohalogen compounds present in a material.

Example: A homogeneous material contains 2% of the organohalogen pigment Phthalocyanine Green G, by weight. From the molecular structure it can be seen that there are 16 Cl atoms in the molecule, each of them 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% × 16 × 35.45 g/mol ÷ 1056.28 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.

Compliance may also be established based on a declaration from the material supplier that the material does not contain organohalogen substances in exceedance of 1% by weight (see Supplier Organohalogens and OPFRs Declaration, available to Cradle to Cradle Certified® assessors.

Gold Level Restriction

The standard notes that *materials in the product do not contain organohalogen substances above subject to review limits (i.e., 100 ppm or lower if specific concentration limits are defined).* In addition, it is noted that *The percentage of organohalogen substances within a homogeneous material is equal to the percentage by weight of all carbon-bonded halogen atoms (Cl, Br, F, and I) within the material.* Per the Cradle to Cradle Certified Material Health Assessment Methodology, a RED hazard rating is assigned when a chemical contains a carbon to halogen (fluorine, chlorine, bromine, or iodine) bond. The carbon-halogen bond must be present in the finished product (i.e., not hydrolyzed in the production/manufacturing process). This rating applies when a substance is present at ≥ 100 ppm within a homogeneous material. In addition, conducting an exposure assessment for this endpoint is not allowable. Therefore, for the Gold level, the 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.

C2CPII-Recognized Standards

See the most recent version of C2CPII-Recognized Certification Programs and Standards, available on C2CPII's website, for the list of standards recognized for achieving the Section 4.2 requirements. Refer to Appendix 2 in this guidance document for requirements and the application process for recognition.

Exemptions

For the Bronze and Silver levels, a homogeneous material that is subject to review may be exempt from meeting this requirement 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 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 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 of the Version 4.1 User Guidance, 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 are 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

Exemptions

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 are not able to claim this exemption and are therefore not able to achieve this Bronze level requirement. The result is that these product types are not able to 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 of the exemptions may be claimed for materials in the product as long as 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 User Guidance, 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.

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 (i.e., at the Silver level, substances may not be classified or listed as a CMR or SVHC per Section 4.6; at the Gold level, substances may not be X/x-assessed following material health assessment. Note that these restrictions apply to the concentration in the homogeneous material, **not** the final product.)

Required Documentation

For each homogeneous material in the product, one of the following is required (this may be provided on the Bill of Materials template or through an alternate equivalent format):

- Accepted for all achievement levels: Complete chemical composition information for the material (i.e., list of substances present at 100 ppm or above). At a minimum, concentrations or concentration ranges need to be provided for all listed organohalogen compounds. Requirement fulfillment must be verified by the Material Health assessor in this case. Calculations to determine the concentration of carbon-bonded halogens by weight in each material must be provided.
- Accepted for the Bronze level restriction: A declaration from the material supplier that the material is not highly halogenated (carbon-bonded Cl+Br+Fl < 10% by weight) and that no PFAS, HFRs, or OPFRs are used intentionally or otherwise present in the material above the thresholds prescribed in the standard. Suppliers may declare Section 4.2 compliance using the Cradle to Cradle Certified® Version 4.1 Supplier Organohalogens and OPFRs Declaration.
- Accepted for the Silver level restriction: A declaration from the material supplier that the material does not contain organohalogen substances in exceedance of 1% by weight. Suppliers may declare Section 4.2 compliance using the Cradle to Cradle Certified® Version 4.1 Supplier Organohalogens and OPFRs Declaration.
- Accepted for all achievement levels: An analytical test report that demonstrates the restrictions are met. The report must be from an ISO 17025 accredited laboratory and document total halogen (elemental concentration only) or carbon-bonded halogen concentrations for Cl, Br, F, and I in the material. In addition, a declaration from the material supplier that OPFRs are not present in the material at 1,000 ppm by weight or above (Note: This can be documented via the Supplier Organohalogens and OPFRs Declaration).
    - Test reports must be conducted within two years prior to the start of the application.
- Accepted for the achievement level(s) noted in the most recent version of C2CPII-Recognized Certification Programs and Standards: Evidence of certification to a standard that is recognized by C2CPII for Section 4.2 compliance (i.e., a valid certificate).

- Calculations and/or other evidence that the conditions for any claimed exemptions are met.

Note: Declarations must be signed by an entity with sufficient knowledge of the material's chemical composition 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 compliance.

If a company is claiming exemption #3 for one or more materials in the product (as accepted at the Bronze and Silver levels), the following additional evidence is required:

- The text of the regulatory requirement that cannot be met without the use of a halogenated organic substance in the exempt material.
- An explanation of the halogenated organic substance's role in complying with the regulation and why the regulatory requirement cannot currently be met without the use of a halogenated organic substance.
- A summary of due diligence conducted by the applicant and assessor to verify that competing manufacturers of similar products in the same market are also all using a halogenated organic substance in order to comply with the regulatory requirement.
- For initial certification, a strategy, including concrete planned actions and timeline for these actions (must include actions within the next three years), for how the company intends to work towards complying with the regulation without the use of the halogenated organic substance (this may include assessment and performance tests of non-halogenated alternatives, lobbying efforts to get the regulation amended, etc.).
- For recertification, a summary of research or other concrete actions that took place over the course of the previous certification period to advance this strategy.

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.

4.3 Material and Chemical Inventory

Intended Outcome(s)

An increasing percentage of the product's material and chemical composition is known so that possible risks the materials and chemicals may pose to human health and the environment can be assessed and strategies for using safer chemistry can be developed.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirement(s)

Bronze level: Characterize all homogeneous materials in the product by concentration and generic material type or category/name. In addition, fully define the chemical composition of products that are released directly into the biosphere as part of their intended use (e.g., soaps, paints). For other product types, collect the chemical composition information necessary to assess at least 75% of the product.

Further Explanation

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.

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 C2CPII if in doubt.

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.

Silver level: Fully define the chemical composition of products released directly into the biosphere as part of their intended use (e.g., soaps, paints). For other product types, collect the chemical composition information necessary to assess at least 95% of the product.

Gold level: Fully define the chemical composition of all homogeneous materials subject to review within the product.

Platinum level: Fully define the chemical composition of 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 material requires disclosure of its full chemical composition from the supplier(s)/formulator(s) controlling the chemical composition. A homogeneous material is considered fully defined when the chemical names and chemical identifiers are known for all chemicals subject to review.

Homogeneous Materials Subject to Review

Homogeneous materials present at a concentration ≥ 0.01% (≥ 100 ppm) in the applicant product are subject to review, with the following exceptions:

1. Finishes (coatings, plating, paints) are subject to review at any concentration when the part these are relevant to is itself present at ≥ 0.01% in the product.
2. 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 Restricted Substance Compliance, Section 4.2 Avoidance of Organohalogens and Functionally Related Chemical Classes of Concern, Section 4.3 Material and Chemical Inventory, and Section 4.4 Assessing Chemicals and Materials, unless exemptions apply. Homogeneous materials that are not subject to review, are not required to meet these requirements.

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 ≥ 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 regulatory restrictions in the Cradle to Cradle Certified® Restricted Substances reference document (see Section 4.1), 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. Exemption: A 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 are in compliance with the Restriction of Hazardous Substance (RoHS) directive.
    b. Non-metallic components are in compliance with the applicable Bronze level regulatory restrictions in the Cradle to Cradle Certified® Restricted Substances reference document (see Section 4.1).
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.

Note: For the Bronze and Silver levels, the percentage assessed is calculated using the methodology in Section 4.4.

Further Explanation

Defining Chemical Composition/Obtaining Full Chemical Composition

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. 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 does not apply only to intentionally added substances. Rather, it applies to all substances present that are subject to review. Since the lists of exceptions to the subject to review threshold (listed above in sub-section 'Fully Defining the Chemical Composition of Materials') will expand over time, it is recommended that a **list of all intentionally used substances and all substances known to be contained** in each homogeneous material in the finished product (excluding exempt components as defined per Section 4.3) 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).
    If the list includes 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 1-5 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 manufacturer suppliers.

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. Further, a signed declaration regarding any substances restricted per Section 4.1 or listed in Annex VI to CLP that are present in the material above respective regulatory thresholds or any of their Specific Concentration Levels (SCLs), respectively, must be provided.
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.

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

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: It is recommended that declarations (Section 4.1 Regulatory Compliance; Section 4.2 Organohalogens and OPFRs; and Section 4.6 CMRs & SVHCs) and full chemical composition information are requested from suppliers at the same time.

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 ≤ 0.05% may be assigned a c-assessment.

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, 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%.

Additional Information/Resources

The Material Health Assessment Methodology and specialized assessment methodologies may be found on the Resources page of the C2CPII website.

The Externally Managed Components (EMC) Methodology is a specialized assessment methodology used to assess product components that are enclosed and sealed such that product users and/or the environment will not be exposed to internal materials and chemicals during intended use or likely unintended use. Additionally, guaranteed take-back and end of use management is required. See the EMC Methodology for more information.

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 ≥ 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 subsection 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

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 7.7 Assessing and Optimizing Product Relevant Chemicals in Effluent and Sludge. See the Definitions section for the definition of process chemical.

Required Documentation

- For the Bronze through Gold levels: A C2CPII Bill of Materials Form or equivalent listing all materials in the product or product group seeking certification (a Bill of Materials form is available to Cradle to Cradle Certified assessors).
    - If a Bill of Materials Form is provided in the supplier's own format, the checklist from the C2CPII Bill of Materials Form (Overview & Attestation tab) must be followed.
- For the Platinum level:
    - 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.
- 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.
        - If full composition information cannot be obtained, safety data sheets (SDSs) may be collected for general composition information. However, an SDS alone is insufficient to determine full chemical composition.
        - 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: A signed declaration regarding any substances listed in Annex VI to CLP that are present in the material above any of their Specific Concentration Levels (SCLs). Note: CMR & SVHC declarations are an alternative for achieving the Silver level Section 4.6 Using Optimized Materials requirements when full chemical composition cannot be obtained. Obtaining these declarations for all materials will also provide additional assurance that substances with low Specific Concentration Limits (which may be at risk of being overlooked in the data collection and disclosure process) are identified.

4.4 Assessing Chemicals and Materials

Intended Outcome(s)

To encourage continued improvement of Material Health, an increasing percentage of the product's chemicals and materials are assessed. By the time a product reaches the Gold level, all materials and chemicals subject to review within the product have been assessed as compatible with human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirement(s)

Bronze level: Assess at least 75% of the product.

Silver level: Assess at least 95% of the product.

Gold level: Assess 100% of the product.

Platinum level: Assess 100% of the product AND all process chemistry that comes into contact with the product or its material constituents during the final manufacturing stage.

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 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: Homogenous 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 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

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 (e.g., as may be the case for a certified liquid paint that is dry during final use), the installation phase may dictate the best possible rating. For intermediate products, the hazards associated with the product as sold to professional customers often dictate the best possible 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 for additional information. Ratings are assigned by a Cradle to Cradle Certified Material Health assessor.

Alternative Compliance Pathway for Safer Choice Certified Products

There is significant overlap between the requirements for assessing and using optimized chemicals in the Cradle to Cradle Certified Product Standard and the United States Environmental Protection Agency's Safer Choice standard. For this reason, products that have already undergone the assessment and certification process for Safer Choice and have an active certification to Safer Choice, do not need to undergo the full Cradle to Cradle Certified assessment process in order to document fulfillment of the Bronze, Silver, and Gold level requirements in this section or the Gold level requirements in Section 4.6. Instead, a Material Health assessor may follow the following simplified assessment process for products with an active Safer Choice certification:

- Check if ***Terrestrial Toxicity*** data are available for the chemicals subject to review in the product. If data are available, confirm that no chemical would be rated RED in accordance with the criteria for this endpoint in the Cradle to Cradle Certified Material Health Assessment Methodology.
- Confirm that each chemical subject to review in the product meets the GREEN hazard rating for the ***Organohalogens*** endpoint in accordance with the criteria for this endpoint in the Cradle to Cradle Certified Material Health Assessment Methodology (chemical does not contain a carbon to halogen bond).
- Confirm that each chemical subject to review in the product meets the GREEN hazard rating for the ***Toxic Metals*** endpoint in accordance with the criteria for this endpoint in the Cradle to Cradle Certified Material Health Assessment Methodology (i.e., does not contain a toxic metal compound (e.g., antimony, arsenic, cadmium, chromium VI, cobalt, lead, mercury, nickel, thallium, tin (organotins only), radioactive elements, and vanadium)[1].

- If ***certain solvents***[2] are contained in the formulation, check that data are available and that the criteria for at least a YELLOW hazard rating are met for the endpoints *Skin and Respiratory Sensitization and Mutagenicity* in accordance with the criteria for this endpoint in the Cradle to Cradle Certified Material Health Assessment Methodology.
- Confirm if any ***"VOC-exempt" solvents***[3] or ***oxidant stabilizers*** are contained in the formulation. In case there are, collect data for all toxicity endpoints in accordance with the Cradle to Cradle Certified Material Health Assessment Methodology and confirm that they do not meet the criteria for a RED hazard rating in any endpoints.
- If any ***preservatives*** or ***polymer-related chemicals*** (monomers, catalysts, contaminants, byproducts, etc.) are contained in the formulation, confirm for each chemical whether additional data are available for the *Acute Mammalian Toxicity, Repeated Dose Toxicity*, or *Skin Sensitization* endpoints. If data are available, confirm that none of the chemicals meet the criteria for a RED hazard rating in any endpoints in accordance with the Cradle to Cradle Certified Material Health Assessment Methodology.
- If any ***colorants*** (dyestuffs or pigments) are contained in the formulation, confirm for each dyestuff chemical whether additional data are available for *Acute Mammalian Toxicity (Oral*), or *Skin Sensitization* endpoints. If data are available, confirm that each dyestuff chemical would receive at least a c-assessment rating according to the Cradle to Cradle Certified Colorants Assessment Methodology. For pigment chemicals, make sure that no cleavable aromatic amines are present in the molecule.
- If any ***fragrances*** are contained in the formulation, they must undergo full assessment according to the Cradle to Cradle Certified Material Health Assessment Methodology.

If any of the above criteria cannot be met by the relevant substances in the product, the Material Health assessor must follow the normal Cradle to Cradle Certified assessment approach for the substances in question. If in doing so, any of the substances are x-assessed or cannot be assessed, the product cannot be certified at the Gold level in the Material Health category. Otherwise, the Bronze, Silver, and Gold level requirements in this section and the Gold level requirement in Section 4.6 are considered fulfilled.

[1] If toxic metals are contained in pigments with rutile, spinel, inverse spinel, or hematite structure the product may still qualify for the Gold level in Material Health if the special conditions for a c-assessment contained in the Cradle to Cradle Certified Colorants Assessment Methodology are met.

[2] These solvents are chemicals that belong to one of the following chemical classes: alcohols, esters, ethylene glycols, ethers, or propylene glycol ethers. Chemicals in these chemical classes are named and defined by their incorporation of specific chemical functional groups. For example, the alcohol class includes chemicals such as isopropanol, ethanol, and methanol due to the incorporation of the -OH group in the chemical.

3 According to US EPA regulation, a chemical is VOC-exempt if: it has vapor pressure of less than 0.1 millimeters of mercury (at 20 degrees Celsius); Or, if the vapor pressure is unknown: consists of more than 12 carbon atoms, or has a melting point higher than 20 degrees C. and does not sublime (i.e., does not change directly from a solid into a gas without melting).

Required Documentation

- 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 Assessment Body.
- Rationale with supporting evidence for excluding any common unintended end-of-use processes from the assessment.
- Cradle to Cradle certificate(s) for certified materials counted as assessed. The certification must be active (i.e., not expired) and certified to the same standard version in Material Health as that used to assess the other materials in the product. 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, achievement levels, and expiration dates).
- If the alternative compliance pathway is used for a Safer Choice certified product, (1) a copy of the unexpired Safer Choice certificate and (2) documentation from a Cradle to Cradle Certified Material Health assessor demonstrating that the criteria for the alternative compliance pathway have been evaluated and met.

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 (see Section 4.3 Material and Chemical Inventory), 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.

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 Section 5.3 Material and Chemical Inventory) 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'.

Any chemical known to meet the criteria for being x-assessed may not be counted as GREY (i.e., hazardous substances present at low concentrations may not be 'hidden' and therefore not count as assessed at the given certification level by giving it a GREY rating).

At the Silver level, assurance that listed SVHCs or x-assessed CMRs are not present in any homogeneous materials, including unassessed homogeneous materials, is required. In other words, if using pathway #1a, a CMR & SVHC declaration is required for any GREY material and the GREY portion of any X-assessed homogeneous material counting as assessed. If using pathway #1b or #1c, a CMR & SVHC declaration is required for any undefined chemicals or materials that are not counted as assessed. See Section 4.6 for additional information.

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 4.6).

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 Content Assessment Methodology.

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

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). Furthermore, in order to count as assessed, the certified material must be certified to the same standard version in the Material Health category as the product in which it is used (i.e., a product that has a Gold level MHC under Version 4.0 of the standard may count as assessed when used in a product seeking certification under Version 4.0, but it may not count as assessed in a product seeking certification under any other standard version).

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.

Required Documentation

- 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: CMR & SVHC declarations, if required (see guidance above). Note: A CMR & SVHC declaration template is available to Cradle to Cradle Certified assessors.

4.5 Material Health Optimization Strategy

Intended Outcome(s)

A strategy is in place for prioritizing the use of materials and chemicals known to be compatible with human and environmental health. Demonstrable progress is made toward achieving the strategy.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirement(s)

Develop a Material Health optimization strategy and demonstrate progress toward achieving the strategy at each recertification.

For the Bronze and Silver levels, the strategy must include a plan for assessing and optimizing or eliminating all X/x-assessed and GREY/grey materials and chemicals subject to review. One or more material(s) or chemical(s) must be targeted for specific optimization actions in the near-term (defined as 0-3 years). Optimization work relevant to at least one material or chemical must have been completed during the three-year period between certification and recertification.

For the Gold and Platinum levels, the strategy must focus on:

1. Increasing the percentage of A/a- and/or B/b-assessed materials and chemicals in the product, or
2. Optimizing chemistry in the supply chain as per Section 4.9.

Further Explanation

The Material Health optimization strategy must cover all X/x assessed and GREY/grey materials and chemicals subject to review across all products covered by the certification. The strategy may apply either to the specific product or product group to be certified, or to all products that are certified across a company's entire certified product portfolio.

For recertification, optimization work that has been completed must apply to at least one product within the product group (i.e., improvements that are applicable only to products covered by other certifications obtained by the same applicant company do not count), or in the case of modular products, may apply to a single module or part that is available as an option across the entire modular product group.

The optimization strategy can also include the plan to conduct a life cycle hot spot analysis; however, by recertification the hot spot analysis must have been conducted and it must be shown that problematic emissions relevant to human and/or environmental health and attributable to the product have been identified and a plan to address emissions hot spots has been developed.

Examples of Optimization Work Receiving Credit

Most optimization work examples listed below may apply either to product constituents or to process chemicals. Although assessment and optimization of process chemicals and identification of hotspots is not required until the Platinum level, optimization work relevant to these may receive credit for any achievement level. Additional actions not listed below may also apply, at C2CPII's discretion.

- Phase out or elimination of the use of one or more X or GREY material(s) (in cases where it is determined the substance or substance alternative is not needed).
- Collection of full chemical composition information in support of the assessment of GREY materials.
- Replacement of one or more X or GREY material(s) with preferable alternatives.
- Research into possible alternative materials, including availability, performance issues, and costs (Note: **Research alone may count as acceptable optimization work for only one certification period until Gold level is achieved**. In the subsequent certification period, the applicant will be required to conduct one of the acceptable actions listed here or an alternative action at C2CPII's discretion).
- Performance testing on one or more alternative materials.
- Reduced use of an X or GREY material (in some cases this can lead to a better assessment rating if it is possible to reduce use of the substance to a level at which the substance is below the subject to review threshold or sufficiently low to reduce the overall hazard of the material based on mixture rules, where applicable).
- Assessment of materials or chemicals that were previously GREY.
- Transition to using a polymer that is made of monomers with lower toxicity.
- For Gold and Platinum levels, staying actively informed about new developments in the industry that will allow for increasing the amount of A/a and B/b assessed materials and substances in the product.*

- Work to complete or refine a life cycle hot spot analysis used to identify problematic emissions relevant to human and/or environmental health and attributable to the product (including emissions due to stages outside of the final manufacturing stage)*.
- Creation of a plan to address emissions hot spots within stages other than the final manufacturing stage (required at the Platinum level but may receive credit as optimization work at lower levels) and/or taken action against this type of plan (action against plan required for Platinum level renewal)*.

* This optimization action is also applicable at the Gold or Platinum level.

Alternative Optimization Strategy: Chemical Alternatives Research (Gold and Platinum levels)

For certification to Material Health at the Gold level, an acceptable alternative to providing a strategy that specifies actions to increase the percentage of A/a and/or B/b assessed materials and chemicals in the product is the following: An optimization strategy that is based on the applicant keeping abreast of developments for future optimization that would allow for the identification of suitable alternatives that would increase the percentage of A/a and/or B/b assessed materials and chemicals in the product. The strategy must include discrete actions on how the applicant intends to stay informed (e.g. through engagement with subject matter experts, attending conferences, directing staff hours toward alternatives research, etc.) The strategy must contain details about how the applicant is intending to realize this.

In addition, the applicant must show why currently an optimization to increase the percentage of A/a and/or B/b assessed materials and chemicals in the product is not possible and, in detail, how the applicant came to this conclusion.

Required Documentation

Strategy

- A strategy to optimize, assess, or phase out all X/x assessed and GREY/grey materials and chemicals subject to review (including specification of which materials and/or chemicals will be targeted for optimization work in the near term, i.e., next 0-3 years).
- For recertification, the original strategy and plan, a description of tangible actions that have been taken over the previous certification period, and a revised plan that includes additional near term planned actions.

Section 3.3 Measurable Improvement Credit in Material Health

If applying the measurable improvement credit in the Material Health category, documentation must include one or more of the following (as relevant depending on how the requirement was met):

- Statement and calculation of the percentage assessed increase for at least one product within the group, including prior and current percentage and description of the optimization work that led to the change in percentage.
- Statement and calculation of the percentage decrease in the GREY+X assessed fraction for at least one product within the group, including the prior and current percentage of the GREY+X assessed fraction and a description of the optimization work that led to the improvement.
- Identification of the material(s) or chemical(s) (if any) that were newly assessed.
- Description of the optimization work that led to the measurable improvement.
- For the Platinum level hot spot analysis, normalized before and after hotspot results and description of actions taken that caused the change in results (applicant may receive credit for this at any level). See the guidance for standard Section 4.9 Optimizing Chemistry in the Supply Chain for additional information and references for hotspot analysis.

4.6 Using Optimized Materials

Intended Outcome(s)

The product is made from chemicals and materials that have been intentionally selected based on their preferred safety attributes.

- At the Silver level, the product does not contain chemicals classified or listed as carcinogenic, mutagenic, or reproductive toxicants (CMRs), or, if these substances are present, exposure to them is unlikely or expected to be negligible. In addition, the product does not contain persistent, bioaccumulative, and toxic (PBTs) or very persistent and very bioaccumulative (vPvBs) substances. The product also does not contain substances that cause an equivalent level of concern or exposure to them is unlikely or expected to be negligible.
- At the Gold level, chemicals and materials intentionally added to the product are assessed as compatible with human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology. Exposure to hazardous chemicals during final manufacture, use, and end-of-use of the product is unlikely or expected to be negligible.
- At the Platinum level, an increased percentage of the product is made from chemicals and materials that are assessed as preferable for human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology. Additionally, process chemicals are assessed as compatible with human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology.

Applicable Achievement Level(s)

Silver, Gold, and Platinum

Requirement(s)

Silver level: Use materials in the product that do not contain substances that are:

1. Classified or listed as known or suspected to cause cancer, birth defects, genetic damage, reproductive harm (CMRs), or cause an equivalent level of concern, unless exposure to these substances during the product's final manufacturing, use, and end-of-use is unlikely or expected to be negligible, or
2. 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 human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology, including > 50% A/a- and B/b-assessed materials and chemicals in the product (see "Determining Percentage Assessed" in Section 4.4), and only A/a-, B/b-, and C/c-assessed process chemistry.

Note: In addition to the chemical restrictions in this section, products seeking certification are also subject to the applicable chemical restrictions in Sections 4.1 and 4.2.

For the Silver level, CMRs are defined as substances that have received a harmonized classification of Category 1 or 2 in one or more of the CMR endpoints as listed within the EU's Classification, Labelling, and Packaging regulation (CLP) Annex VI, or are CMR substances listed on the REACH Candidate list of Substances of Very High Concern (SVHC) for Authorisation (including those on Annex XIV). PBTs, vPvBs, and substances causing an equivalent level of concern are defined per the REACH Candidate list of Substances of Very High Concern (SVHC) for Authorisation (including those on Annex XIV).

Further Explanation

Assessment Ratings

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 and are determined by the Cradle to Cradle Certified Material Health assessor (see the Material Health Assessment Methodology and supporting documents).

Alternative compliance pathway for US EPA Safer Choice certified products to meet the Gold level requirement

Please see Section 4.4 regarding the alternative compliance pathway for US EPA Safer Choice certified products to demonstrate compliance with the Gold level requirement in this section.

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

For each homogeneous material in the product (excluding exempt components as defined in Section 4.3 Material and Chemical Inventory), absence of CMRs, PBTs, vPvBs, and Substances of Equivalent Concern must be verified by a signed CMR & SVHC declaration from the material supplier, analytical testing (in the case of recycled content, biological, or geological materials), and/or full chemical composition.

For any listed substance that is present at 100 ppm or above and not a PBT or vPvB, a Cradle to Cradle Certified Material Health Assessor (not a supplier or the applicant) may conduct an exposure assessment to determine whether exposure to the substance is expected to be negligible or may be considered unlikely. Note that reproductive toxicants that have received YELLOW hazard ratings per the Cradle to Cradle Certified Material Health Assessment Methodology are considered to be of negligible exposure concern when used below any applicable limits in Section 4.1 or SCL, whichever is lower. If there is no Section 4.1 limit or SCL limit, the generic limit* of 1000 ppm applies. This is true unless the applicable substance is listed on the Candidate List of Substances of Very High Concern or on REACH Annex XVII (in which case a YELLOW hazard rating is not allowed). Once absence of CMRs, PBTs, vPvBs, and substances of equivalent concern, or negligible or unlikely exposure has been verified for all listed substances present in the product's homogeneous materials, the requirement is fulfilled.

*The generic limit is based on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Chapter on Reproductive Toxicity. The total concentration of all reproductive toxicants must be below 1000 ppm in a homogeneous material to apply the generic limit.

Category 1 and 2 CLP CMRs

The European Chemicals Agency (ECHA) has prepared an Excel table containing all updates to the harmonized classification and labelling of hazardous substances, which is available in Table 3.1 of Annex VI to the CLP Regulation. The harmonized classification and labelling of hazardous substances is updated through an "Adaptation to Technical Progress (ATP)", which is issued yearly by the European Commission. Following the adoption of the opinion on the harmonized classification and labelling of a substance by the Committee for Risk Assessment (RAC), the European Commission publishes the updated list in an ATP: https://echa.europa. eu/information-on-chemicals/annex-vi-to-clp

Additional information on restricted CMRs, including a link to the Annex VI list, is available in the Cradle to Cradle Certified® Restricted Substances reference document.

Note that the Specific Concentration Limits (SCLs) as specified in Annex VI to the CLP for the relevant endpoints apply for the purpose of this requirement. If a substance is listed as a Category 1 or 2 in one or more of the CMR endpoints with SCL(s) assigned to that/those endpoints, it is only considered classified for the relevant endpoints at or above the SCL(s). Such substances are allowed at the Silver level in the Material Health category if they are present in the homogeneous materials of the finished product below their defined SCL(s) for any classified CMR endpoints.

PBTs, vPvBs, and substances of equivalent concern listed on REACH SVHC list

The SVHC candidate list is maintained by ECHA at https://echa.europa.eu/candidate-list-table. Any substances listed as PBT or vPvB on this list would prevent a product from meeting this requirement if present above the subject to review threshold. For other substances listed, the Cradle to Cradle Certified Material Health Assessor may conduct an assessment following the usual methodology. If the substance present is x-assessed in the product, this would prevent the product from meeting the Silver level requirement. However, if the substance is c-assessed or better, its presence does not prevent a product from meeting this requirement.

Additional information on restricted SVHCs, including a link to the SVHC candidate list, is also available in the Cradle to Cradle Certified® Restricted Substances reference document.

CMR & SVHC declarations

To demonstrate compliance with this requirement, declarations/attestations must be obtained from the supplier of each homogeneous material in the product for which full chemical composition is not available (excluding exempt components as defined per Section 4.3). C2CPII provides assessors with a supplier declaration form for this purpose. Declarations must be signed and dated, reference the specific CLP CMR and SVHC candidate lists included in this requirement at the stated date, and attest to the presence or absence of all substances on these lists. If any listed substances are present, their identity and concentration must be disclosed on the form.

For materials for which full chemical composition has been obtained, the assessor may check the disclosed information against the CLP and SVHC lists. However, collection of a signed supplier declaration regarding presence or absence of listed CMRs and SVHCs is still recommended as an added precaution.

Note: At the Silver level, CMR & SVHC declarations are also needed for any GREY assessed materials.

Note: Declarations are not required for exempt components as defined in Section 4.3 Material and Chemical Inventory.

Note: For alloys, mill certificates (mill test reports) will be accepted for full chemical composition. Please see Section 4.3, Further Explanation for additional guidance on using mill certificates and test reports to define alloy composition.

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 Assessment Body.

Silver level

The following are required for each homogeneous material in the product (excluding exempt components as defined per Section 4.3):

- Full chemical composition regarding the chemical composition of the material and confirmation from a Cradle to Cradle Certified Material Health assessor regarding the absence of classified CMRs or listed PBTs, vPvBs, or substances of equivalent concern (or negligible or unlikely exposure to these substances).
  OR,
  If full chemical composition is not available, signed and dated CMR & SVHC declaration(s) referencing the current version of Table 3.1 in Annex VI to the CLP Regulation and the REACH SVHC list.
- For recycled content, biological materials, and geological materials, analytical testing in compliance with the restricted substance list requirements as specified in the appropriate material specific methodology. If these materials contain additives or other inputs beyond the biological, geological, or recycled material, CMR & SVHC declaration(s) or full chemical composition as described in the bullet above is required in addition to analytical testing.
- 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 4.1 compliance.

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

The percentage of the product that is assessed must be 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, by weight, if the material has received an A or B assessment rating, or
   b. Count the 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 lower of:
      i. The percentage by weight of all a- or b-assessed chemicals within the product, and
      ii. The percentage by number of all a- or b-assessed chemicals within the product
2. For products consisting of a single homogeneous material, the percentage A/a- and B/b-assessed 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 A/a- and B/b-assessed is calculated as the weighted average of the percentages assessed for each homogeneous material subject to review in the product.

Further Explanation

The method for calculating the percentage of A/a and B/b-assessed materials and/or chemicals is the same as the method for calculating the percentage assessed for the product in Section 4.4, 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.

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.

Required Documentation

- Calculations showing how the percentage of A/a and B/b-assessed materials and/or chemicals for the product or product group was derived. Calculation fields for determining the percentage of the product that is A/a- and B/b-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.

4.7 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 two 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

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.

Testing is not required for products that are not permanently installed as described in the bullets above (e.g., testing is not required for clothing, bed sheets, towels, or kitchenware).

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).

See the Cradle to Cradle Certified® Volatile Organic Compound Emissions Testing reference document for more information regarding accepted testing schemes.

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.

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 two 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 C2CPII.
- For re-certifications, 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.

Required Documentation

- Explanation of which pathway from the C2CPII 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

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

One of the following:

- Statement(s) from material suppliers asserting that materials are non-emitting.
- Streamlined VOC emissions test report documenting no detectable emissions.
- Expert evaluation asserting that the materials/product are non-emitting and explaining why.

4.8 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

Requirement(s)
For liquid, viscous, or aerosol consumer or construction products, limit volatile organic compound (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 two 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" also includes aerosol adhesives, including those used for consumer, industrial, and commercial uses. See the Consumer Products Program for more information on which products are classified by CARB as consumer products.

VOC Content Testing

The Cradle to Cradle Certified® Volatile Organic Compound Content Limits reference document can be found on the C2CPII website.

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 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.

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 C2CPII 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.
- 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.

4.9 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 and develop a strategy to further reduce hazardous chemical use and/or emissions in the supply chain. Demonstrate progress toward achieving reductions at each recertification.

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

1. 75% or more of the product's input materials or chemicals have a C2C Certified Material Health Certificate at the Gold or Platinum level or 50% or more are Cradle to Cradle Certified at the Gold or Platinum level or equivalent (percentage is calculated following the approach described for

"Determining Percentage Assessed" in Section 4.4 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 4.4, 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*%C2C Certified inputs in the product by weight + % 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 4.9 requirement.

Global Organic Textile Standard (GOTS) certified material receives the same credit as a Cradle to Cradle Certified Material Health Certificate.

Additional standards or certificates may be recognized – please see the C2CPII Recognized Certification Programs and Standards for additional information on C2CPII-recognized standards.

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, and each of the hotspots identified through this analysis are addressed by the strategy to reduce hazardous chemical use and/or emissions in the supply chain of the product. The life cycle assessment must be verified by a qualified third party.

Further Explanation

The methodology for completing a hotspot analysis must be informed by the EU Product Environmental Footprint (PEF) project (see Annex D) and Product Environmental Footprint (PEF) Guide, and Suggestions for Updating the Product Environmental Footprint (PEF) Method. Please see these documents for further guidance.

In alignment with the PEF guidance, the following impact categories, with data expressed in the units listed in Table 2 of the PEF guidance (e.g., tCO2eq), are to be used:

Impact Category	Indicators (units)	Model and Source
Human toxicity - cancer effects	CTUh (Comparative Toxic Unit for humans)	USEtox model, Rosenbaum et al., 2008
Human toxicity - non-cancer effects	CTUh (Comparative Toxic Unit for humans)	USEtox model, Rosenbaum et al., 2008
Particulate matter/Respiratory inorganics	kg PM2.5 equivalent	RiskPoll model, Humbert, 2009
Photochemical ozone/Smog formation	kg NMVOC equivalent	LOTOS-EUROS model, Van Zelm et al., 2008 as applied in ReCIPe
Ionizing radiation - human health effects	kg U235 equivalent (to air)	Human Health effect model, Dreicer et al., 1995
Acidification	Mol H+ eq	Accumulated Exceedance model, Seppälä et al, 2006; Posch et al., 2008
Ozone depletion	kg CFC-11 equivalent	EDIP Model, WMO, 1999

The following impact categories are not required to be included for the Material Health category analysis (although these are required per the PEF guidance 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 - aquatic 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.
- Resource depletion (water): This endpoint will be covered in the Water & Soil Stewardship category.
- Resource depletion (fossil/mineral): This endpoint is indirectly covered by the Product Circularity requirements and Clean Air & Climate Protection requirements.

- Land Transformation: Data may not be available. Not required at this time.

Also in alignment with the PEF pilot phase project, the following life cycle stages are to be included in the analysis:

- Raw material acquisition and pre-processing (including production of parts and unspecific components);
- Production of the main product;
- Product distribution and storage;
- Use stage scenario (if in scope);
- End-of-life (including product / part reuse, recovery / recycling, if in scope).

A hotspot is defined as either of the following (see EU Product Environmental Footprint (PEF) Annex D including *D.5 Example* for additional guidance):

- OPTION A: (1) life cycle stages, (2) processes and (3) elementary flows cumulatively contributing at least 50% to any impact category (before normalization and weighting).
- OPTION B: At least the two most relevant life cycle stages, processes and elementary flows (i.e., a minimum of six hotspots in total). This is defined as the two life cycle stages, two processes and two elementary flows contributing cumulatively more than 80% to any impact category. Note: The procedure to identify the most relevant life cycle stages, processes and elementary flows is detailed in section D.3 and D.4 of EU Product Environmental Footprint (PEF) Annex D. Please see the linked document for further information.

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 C2CPII

For intermediate products, 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). See the EC Understanding Product Environmental Footprint and Organisation Environment Footprint methods (2021).

Required Documentation

- All points mentioned in *Section 8.2.1 Summary* of the PEF Guidance document (see link or most recent version if document is updated) are to be provided:
  - Key elements of the goal and scope of the study with relevant limitations and assumptions;
  - HFRs and PFASs are not present in the material at 1,000 ppm or above by weight of carbon-bonded Cl+Br and F, respectively;
  - A description of the system boundary;
  - The main results for each of the impact categories (i.e., totals for each category);
  - If applicable, environmental improvements compared to previous periods;
  - Relevant statements about data quality, assumptions, and value judgements;
  - 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 (see Appendix D, Section D.5.5 of the EU Product Environmental Footprint (PEF) project guidance).
- Evidence of Life Cycle Assessment verification and third-party qualifications.

Depending on how hazardous chemicals in the product supply chain are addressed, the strategy must include one of the following:

1. Steps to increase the percentage of the product's input materials or chemicals that have a C2C Certified Material Health Certificate or are Cradle to Cradle Certified at the Gold or Platinum level (or equivalent) over time and specifically to increase the percentage of inputs that are certified at the Platinum level.
2. Steps to positively impact (i.e., eliminate or reduce use or emissions of hazardous chemicals) for each of the supply chain hotspots identified through the life cycle assessment, covered by active certifications.

Required Documentation

- Strategy addressing the required points (Note: This strategy may be incorporated into the Section 4.5 strategy).
- At recertification, a description of progress made.

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: A plan has been created to address challenges with the cycling infrastructure at the end of the product's first use; 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) (i.e., recyclable, compostable, or biodegradable).	●	●	●	●
5.5: Circularity data and cycling instructions are publicly available.	●	●	●	●
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) (i.e., recyclable, compostable, or biodegradable).		●	●	●

A strategy for improving product circularity is developed including plans for: • 5.3: Increasing the amount of post-consumer recycled content and/or responsibly sourced renewable material, as relevant to the product type, • 5.6: Implementing a circular opportunity or innovation, and • 5.7: Improving the product's design for disassembly (if relevant).		●	●	●
5.2: Partnerships for cycling (recovery and processing) of the product according to all 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) (i.e., 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. 5.7: If relevant, parts containing these materials are designed for easy disassembly.			●	●
The strategy has been implemented including: 5.3: Increased use of post-consumer and/or responsibly sourced renewable material as relevant to the product type. Alternative: Limitations that prevent increased use are publicly reported. 5.7: A circular opportunity or innovation that increases product circularity.			●	●
5.8: 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.			●	●

5.1: At least two intended cycling pathways are defined for the product and its materials.				●
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) (i.e., recyclable, compostable, or biodegradable). 5.7: If relevant, parts containing these materials are designed for easy disassembly.				●
5.8: 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.				●
Cycling rates and quality are monitored over time, and an increase in cumulative cycling rate or quality is demonstrated.				●

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 5.6 Circular Design Opportunities and Innovation
  - Section 5.7 Product Designed for Disassembly
- Circular Systems:
  - Section 5.2 Preparing for Active Cycling
  - Section 5.5 Circularity Data and Cycling Instructions
  - Section 5.8 Active Cycling

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 and Platinum

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.

Platinum level: Define at least two intended cycling pathway(s) for each homogeneous material subject to review in the product.

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 (e.g., paper), 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.

Exemption

Intermediate and wet-applied products are exempt from the Platinum level requirement.

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 4.3 Material and Chemical Inventory. In general, homogeneous materials present at a concentration ≥ 0.01% (≥ 100 ppm) in the applicant product are subject to review. There are two exceptions to this limit in the Material Health category as follows: *1. Finishes (coatings, plating, paints) are subject to review at any concentration when the part these are relevant to is itself present at ≥ 0.01% in the product*, and, *2. 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.* The second of these exceptions 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. 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. 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. In addition, during recycling processes, paper fibers are unavoidably released to the environment. For these reasons, it is appropriate (and required) to designate and design paper for both cycles.

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).

Note: 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. 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 5.6 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)

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.

Note that for the Platinum level, it is required to *Define at least two intended cycling pathway(s) for each homogeneous material subject to review in the product.* The intent is to ensure there is high likelihood of

cycling occurring and to encourage implementation of pathways that prolong the current use phase and maximize value.

Required Documentation

- Bill of Materials Form or similar including the intended cycling pathway 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 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. 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 (as examples), 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.

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: Develop a cycling plan to address challenge(s) inhibiting development of the cycling infrastructure for the product at the end of its first use, and identify potential partners that are capable of recovering and processing the product. Report on progress made toward achieving the plan at recertification.

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 cycling plan must include the following:

1. Discrete planned actions and an associated timeline.
2. Identification of 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 (with one exception per #3 below). 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 (Requirement #2)

Requirement #2 above requires that potential partners or internal resources 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.
- Check that the sum of these percentages is ≥ 60%.

Requirement #2 above 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 to determine when a material or product may be considered exempt due to the existence of municipal cycling systems or stewardship laws. Note that, typically, municipal cycling is not relevant to building materials. In addition, note that all liquid formulations and intermediate products are exempt from the Silver level requirements.

Bronze Requirements for Liquid Formulations and Similar (e.g., Shampoo, Cleaning Products, Solid Soaps)

As noted, liquid formulations are exempt from the Silver level requirements in this section of the standard. However, they are not automatically exempt from the Bronze level requirements. Per

Bronze level requirement #2 *products intended to be cycled via municipal systems* are exempt from the requirement to *identify potential partners or internal resources for product recovery and processing*. This means that if the intended pathway is cycling via biodegradation at municipal wastewater treatment plants (as will typically be the case for products such as shampoo and household cleaning products), only the Bronze requirement #1 applies (or may apply). This requires applicants to *develop a cycling plan to address challenge(s) inhibiting development of the cycling infrastructure for the product at the end of its first use.* For locations where the municipal wastewater treatment plant infrastructure is well developed and functional, such a plan is not necessary. Wastewater treatment plant infrastructure may be considered sufficiently well developed in all countries designated as having low or low to medium risk for Untreated Connected Wastewater per WRI's Aqueduct Water Risk Atlas. For products sold in other (i.e., medium to high, high, or extremely high risk) locations, a plan is required. If required, the plan may focus on either addressing challenges with the infrastructure, or on designing the product to biodegrade in the intended and likely (although perhaps unintended) cycling pathway(s). If applying the latter approach, it must be assumed that the product will be released directly to the environment and that both aerobic and anerobic conditions will be encountered. See Section 5.4 Material Compatibility for Technical and/or Biological Cycles for requirements applicable to determining the biodegradability of individual chemicals within formulations.

In addition to liquid formulations, the approach described above may also be used for non-liquid cosmetics and personal care consumables (e.g., solid soaps, face powder, and lipstick).

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 guidance in Section 5.6 Circular Design Opportunities and Innovation for determining the most common use phase time (i.e., mode) for the product type.

3. For intermediate and wet-applied products, the plan must address challenges inhibiting development of the cycling infrastructure for at least one finished product or applied substrate example application, respectively. Identification of potential partners is not required for these product types.
4. For products containing electronic components, the plan must address the recovery and recycling of intentionally used trace elements whose extraction is associated with risks of limited supply (i.e., "scarce elements").

At recertification, progress must be demonstrated on any planned actions.

Further Explanation

Scarce Elements (Applicable to Electronic Components)

Electronics typically undergo multiple sorting and shredding processes during recycling operations. Most if not all scarce elements (e.g., rare earth elements) are lost during the process and recycling rates for scarce elements are low to zero. In recognition of this issue, the standard requires that *for products containing electronic components, the plan must address the recovery and recycling of intentionally used trace elements whose extraction is associated with risks of limited supply i.e., scarce elements).*

Scarce elements are defined per the European Commission's Critical Raw Materials list. This list includes trace and major elements that are used in electronic components and other applications (e.g., phosphorus used in agriculture). The trace elements typically used in electronic components, and for which electronics represent a clear driver of demand, are required to be addressed in cycling plans for electronics (if used). Currently, these are:

- All rare-earth elements: Cerium, dysprosium, erbium, europium, gadolinium, holmium, lanthanum, lutetium, neodymium, praseodymium, promethium, samarium, scandium, terbium, thulium, ytterbium, and yttrium.
- Platinum-group metals: Platinum, palladium, rhodium, iridium, ruthenium, and osmium.
- Others: Antimony, barium, beryllium, bismuth, cobalt, fluorine (inorganic), gallium, germanium, hafnium, indium, niobium, tantalum, tungsten, silicon, vanadium.

The following are not considered scarce elements and do not need to be included in the cycling plan: Graphite, natural rubber, phosphate rock, phosphorus, borate, magnesium.

Examples of planned actions that would receive credit include:

- Conducting research to develop methods of extracting scarce elements from electronic products after use, and/or
- Working to influence the direction of regulations with the aim of ensuring extraction technologies are adopted industry wide.

Actions may occur individually or collaboratively as part of a working group or broader initiative.

Note that design for disassembly is covered separately in standard Section 5.7 Product Designed for Disassembly as well as in Section 5.4 Material Compatibility for Technical and/or Biological Cycles. Therefore, designing the product so that scarce elements can be identified and recovered by recyclers receives credit only in combination with actions aimed at addressing cycling infrastructure and/or extraction technologies.

The European Union's Waste Electrical and Electronic Equipment (WEEE) regulation does not currently ensure that scarce elements are recovered and recycled. Therefore, addressing the recovery and recycling of scarce elements in the plan is required in the EU (including when relying on EU-wide WEEE implementation for product recovery and recycling).

Demonstrating Progress on Implementing the Cycling Plan

For recertification, examples of progress that would receive credit include:

- Furthering and/or finalizing some of the contracts with potential partners that were identified at the initial Bronze level certification.
- Initiating pilot project(s) to test recovery options and/or partnership effectiveness.
- Plan refinement informed by a cradle to cradle life cycle assessment (i.e., use of life cycle assessment to identify the lowest impact cycling option(s) from an environmental perspective and refine the plan accordingly).

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 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 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

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.
- Check that the sum of these percentages is ≥ 60%.

Receiving Credit for Product Stewardship Laws

Note: "Product Stewardship Laws" includes Extended Producer Responsibility laws.

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

- For the following products sold on the EU market: Batteries, end-of-life vehicles, vehicle tires, waste electrical and electronic equipment, packaging.
- For textile products sold in France and in the Netherlands, and any other country that introduced a mandatory Extended Producer Responsibility scheme for textiles until the EU harmonization on EPR schemes for textiles applies in all EU Member States.
- In France for the following products: 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 for the following products: 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).

Electronics: The European Union's Waste from Electrical or Electronic Equipment (WEEE) Directive is an example of a product stewardship law that receives credit.

Textiles and Apparel: The EU Waste Framework Directive requires EU Member States to establish systems for the separate collection of textiles by 1 January 2025. This is considered municipal cycling. See the section below for additional information.

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

The following may be considered 'commonly recycled or composted via curbside pickup' as required for requirement #3 above. If 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%.

- 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).

Textiles and Apparel

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. (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 Version 4.1 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.
- Recycling may be assumed 'common' for the Czech Republic, Germany, Denmark, France, Italy, the Netherlands, and Sweden. (Reference: Circular Economy Perspectives in the EU Textile sector, European Commission Joint Research Center, June 2021, figure 22.) In other words, these countries may automatically be counted towards the required 60% for the recycling pathway. Note: Additional countries may be added to this list if data demonstrating a ≥ 10% recycling rate for textiles and apparel in the country is provided. This is especially relevant to the Gold level because reuse alone is no longer accepted for achieving the Section 5.2 requirements at Gold level.

Note: Products that will be cycled as part of construction and demolition 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 construction and demolition waste in this category, evidence must be provided showing that both portions of the requirement are met for the specific material (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.

Note: Industrial recycling services (i.e., for manufacturing facilities) are typically not relevant to this section of the standard because these requirements are relevant to end products.

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.

Intermediate products and liquid formulations are exempt from Silver level requirements in all cases.

Further Explanation

Exemptions

The standard states that *liquid formulations are exempt from Silver level requirements*. 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 5.5 Material Compatibility for Technical and/or Biological Cycles), and for which no intervention is needed to ensure active cycling occurs. 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.

Required Documentation

Bronze level

- Cycling plan, including discrete planned actions and timeline.
- Description of challenges inhibiting the development of the cycling infrastructure for the product at the end of its first use.
- 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, as applicable.
- For electronics, plan addressing scarce element recovery and recycling.

Bronze level recertification:

- Evidence of progress on planned actions.

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.
- 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.
- Evidence of active stewardship law(s), if applicable.
- For municipal cycling, evidence the materials are commonly recycled via curbside pickup and accepted by recycling programs in the region(s).
- 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 5.8 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 circularly sourced materials is increased as a result of the increased use of cycled or renewable materials 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. Develop a plan for increasing the use of post-consumer recycled and/or responsibly sourced renewable content, and demonstrate progress toward achieving the plan at recertification. Alternatively, publicly disclose an explanation of the limitation(s) preventing achievement of the required percentage(s).

Further Explanation

Developing a Plan and Demonstrating Progress

At the Silver level it is required to *Develop a plan for increasing the use of post-consumer recycled and/or responsibly sourced renewable content and demonstrate progress toward achieving the plan at recertification*. At a minimum, the plan for increasing the use of post-consumer recycled and/or responsibly sourced renewable content must include the type and source of content intended to be included or increased in the product, a timeline with targets for increasing the content, and a method for achieving these increases. A plan is also required at the Gold level, but not at the Platinum level, because the technically feasible maximum amount of cycled content is required at Platinum.

A progress report on achieving the plan must be provided at recertification and action towards achieving it must have occurred. Ideally this will have resulted in an increased amount of cycled or responsibly sourced renewable content in the product. However, other actions towards achieving that goal also receive credit.

Examples of progress include:

- Using an increased amount of cycled and/or responsibly sourced renewable content in the product.
- Conducting research and development activities aimed at removing barriers to using an increased amount of cycled content. This type of research may be necessary (for example) when technical specifications or Material Health requirements make the use of recycled content difficult. In this case, progress may require conducting performance tests of products containing cycled materials to determine if the required technical specifications can be maintained when cycled content is used.
- Actions taken to increase the available supply of cycled and/or responsibly sourced renewable content available for use. For example, investments that support development of new cycling technologies, investments to increase local recovery and processing capacity or improved sorting capability, or (for renewable material) financial or in-kind support of supplier(s) efforts to obtain a responsible sourcing certification.

Note that progress is required at recertification.

Gold level: Incorporate a percentage of cycled and/or renewable content into the product that is consistent with industry leaders for the product type. Depending on material type, incorporate either post-consumer recycled or responsibly sourced renewable content. 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.

For the Bronze through Platinum certification levels, the required percentages of cycled and/ or renewable content are listed by homogeneous material and 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, 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.

The following are required for multi-material products (i.e., products containing more than one homogeneous material), with one exception as noted below:

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 4.3) 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.

Exception: For multi-material products where there is only one percentage listed per achievement level, the percentages provided are product-level percentages that 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 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*.

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 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. 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 4.3) 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.

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 User Guidance 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 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 5.4 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.

The method(s) employed and percentage(s) achieved must be reported publicly via the Cradle to Cradle Certified® Circularity Data Report (see Cradle to Cradle Certified® Circularity Data Report reference document). For chemical recycling, the technology pathway (e.g., depolymerization or pyrolysis followed by hydrocracking or solvent purification), 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, must also be reported.

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 (with the exception of steel and aluminum material that can be traced via specification).

If applying the credit method (i.e., mass balance) approach, the material must be certified to a C2CPII-recognized cycled content standard. Recognized standards 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. However, 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.

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.).

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 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. Alternatively, C2CPII-recognized cycled and renewable content certifications may be employed (and are required when applying the credit method/mass balance approach).

C2CPII-Recognized Standards

See the most recent version of C2CPII-Recognized Certification Programs and Standards, available on C2CPII's website, for the list of recognized cycled and responsibly sourced renewable content certifications. Refer to Appendix 2 in this guidance document 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 C2CPII 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).

Data and Documentation Requirements

The data and documentation requirements for determining and verifying the minimum, average, rolling average will depend on if the applicant and/or its suppliers hold relevant C2CPII-recognized certifications for input materials (ensuring the percentages of cycled 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.

When applicants procure input materials for which the amount of cycled or renewable content (or amount credited when using the credit method) has been verified via C2CPII-recognized cycled or renewable content standards, and their production process includes controls to ensure the same amount(s) of certified inputs are added to the Cradle to Cradle Certified product over time, one set of data is sufficient to verify the requirements have been met. This will include an applicant bill of materials, review of the production process, the applicable certificates, and proof of purchase.

Additional data and information may be requested if the application review surfaces concerns with (for example) data quality or variability.

When C2CPII-recognized standards are not used and the percentage of cycled or renewable content must be determined for individual materials 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. Exceptions may apply for new products as detailed in the Required Documentation box for this section of the standard. This information must be collected from all applicable supply chain tier(s).

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). 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.

Reporting the Methods Used and Percentage(s) Achieved

The standard requires that *the method(s) employed and percentage(s) achieved must be reported publicly via the Cradle to Cradle Certified® Circularity Data Report (see Cradle to Cradle Certified® Circularity Data Report reference document).* The Circularity Data Report reference document is a form that includes fields and guidance for providing the required information. The following are requested in the form:

- 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, and the C2CPII-recognized certification standard used. (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).

Chemical recycling

For chemical recycling, additional disclosures are required. Regarding the methods used, 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. In addition, report the source of the cycled feedstock (e.g., textiles, mixed rigid plastics or flexible plastic packaging) and technology pathway (e.g., depolymerization or pyrolysis followed by hydrocracking or solvent purification).

Note: With 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, while with non-proportional/ "free" allocation the waste material and recycled input attributes may be allocated freely to the various co-products produced via the process. The latter 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.

The required disclosures for chemical recycling also 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 not required to conduct a comparative impact assessment for the specific material or product, however, if such quantitative data are available, disclosure of these data is encouraged.

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 cycled content claim for that material must be a credit system (or mass balance) claim.

Steel and aluminum: The standard notes that chain of custody documentation is not required for *steel and aluminium that can be traced via specification*. Note that this is a somewhat unusual scenario. It will typically be necessary to obtain chain of custody documentation to prove a certain percentage of recycled content is present in steel and aluminium. Specification is more likely to demonstrate the absence of recycled content than the presence. For example, this will be apparent for certain alloy grades specified where high purity is required and where the variability and/or potential for contaminants in recycled content cannot be tolerated (e.g., alloys used in electrical and aviation applications).

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

ASTM D6866 is currently accepted as a means of quantifying biobased content using radiocarbon dating. Chain of custody may be verified as part of the Cradle to Cradle certification process (see Required Documentation box below for additional information). 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).

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 C2CPII-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 C2CPII-recognized responsible sourcing standard at the Bronze level currently include the following:

- Wood,
- Oil palm,
- Sugarcane,
- Peat,
- 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).

C2CPII-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 C2CPII-Recognized Certification Programs and Standards, available on C2CPII'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 guidance document for requirements and the application process for recognition. Appendix 2 also lists requirements for alternative equivalents to certification.

Note that this requirement does not apply to material that meets the definition of pre- or post-consumer recycled content.

4. For commonly recycled biological and biologically derived materials, renewable content counts half as much as recycled content toward meeting the required cycled and renewable content percentages (e.g., if the percentage of cycled content required is 30%, then 60% renewable content or 30% recycled content is required). This requirement does not apply to biological fibers used in apparel (i.e., for biological fibers used in apparel, renewable content counts in the same way as recycled content toward meeting the required percentages).

Further Explanation

The purpose of this requirement is to encourage the use of recycled content over virgin renewable content for biological materials that are commonly recycled.

Materials that are considered "commonly recycled biological and biologically-derived materials" subject to this requirement are:

- Cellulose-based paper, corrugated fiberboard, paperboard, and similar
- Wood sawdust (used in particleboard, MDF, and similar)

Paper Bag Example:

The Gold level requirements for paper bags per the *Cradle to Cradle Certified® Required Percentages of Cycled and Renewable Content by Product and Material Type* reference document are 75% post-consumer recycled content and 100% total cycled and/or renewable content. Given that for cellulose-based paper, renewable content counts half as much as recycled content toward meeting the required percentages, 100% recycled content is required for Gold level (i.e., there is no way to achieve the required 100% when using virgin renewable given the constraints of the requirements). The remaining 25% may be from either post-consumer or pre-consumer sources.

The Silver level requirement for paper bags is 50% renewable and/or cycled content. There is no postconsumer requirement at the Silver level. This means that Silver level can be achieved by using 100% renewable content, or 50% post-consumer and/or pre-consumer recycled content. If the paper is made from virgin wood fibers, then the material must also be certified as responsibly sourced (this is required for wood at the Bronze level per #3 in this section). If some recycled content is used (but less than 50%), the remainder of the required percentage can be fulfilled by using renewable content. For example, 25% recycled content and 50% responsibly sourced renewable content. For non-wood cellulose-based paper, the Silver level requirement could be met by using 100% renewable material without a responsible sourcing certification.

For the Gold and Platinum levels:

1. For any type of biological material to count as renewable, the material must be certified to a C2CPII-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).
2. For recycled content to count toward the required percentages, at least some of the recycled 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).

Further Explanation

Agricultural crop residue that is non-merchantable as food may be considered renewable without certification to a C2CPII-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".

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 required percentages of cycled and/or renewable content in any case where an applicant is unable to meet the required percentages, including post-consumer recycled and responsibly sourced content as relevant. 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 strategy 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 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

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 at the next lowest achievement level to apply the alternative. In other words, the Gold level may be achieved through this alternative pathway alone.

The required public disclosure (per #2 above) must be via the Cradle to Cradle Certified Circularity Data Report or otherwise published on C2CPII's website. See standard Section 5.5 for additional information about the report.

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.

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 cycled 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 cycled 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 cycled and/or renewable content throughout the certification period.
- Calculations demonstrating how the total percentage(s) were determined.
- Chain of custody documentation (see below) or cycled or renewable content certification certificate(s) from a C2CPII-recognized cycled or renewable content standard.
- 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 cycled 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%*, FSC Mix Credit, FSC Recycled Credit, *FSC Mix x%*, *FSC Recycled x% - where 0 > x ≤ 100%*) for the purchased products.
- For chemically recycled plastic, information as follows (to be disclosed via the circularity data report):
    - A supplier statement or similar (such as publicly available information) that describes the methods and pathway: Whether proportional or non-proportional/free allocation is applied, for non-proportional allocation if a fuel exempt or polymer only approach is applied, the source of the feedstock, and the technology pathway used (e.g., depolymerization or pyrolysis followed by hydrocracking or solvent purification),
    - A rationale for selecting the chemically recycled material over mechanically recycled material and indication of the available alternatives (if any),
    - A quantitative or qualitative description of the known and likely environmental impacts and tradeoffs, and
    - A quantitative or qualitative description of the known and likely human health related impacts.
- For biologically derived plastics and liquid formulations, certificate, test results, and/or chain of custody documentation.
- Silver and Gold Levels: A plan for increasing the use of post-consumer recycled and/or responsibly sourced renewable content, including specific planned action(s) and timeline(s).

- Silver and Gold Level recertification: Progress report demonstrating efforts toward achieving the plan. For example, evidence of increased content, or evidence of other actions taken in support of increasing supply.
- Bronze through Gold Level alternative: If unable to meet the required percentages for cycled or renewable content, an explanation of the limitation(s) and a strategy for addressing the identified limitation(s).
- Bronze through Gold level alternative, recertification: Evidence of progress towards achieving the strategy.

Verifying Chain of Custody (Without C2CPII-recognized Standards)

To verify chain of custody for cycled or renewable content (when the material is not already certified to a C2CPII-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:

- 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 Definitions section).
- A description of how materials are received, recorded as inventory, and stored.
- A diagram and/or a description of the manufacturing process that clearly defines the beginning and end of the process. The 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).
- Records that demonstrate the applicant has an active business relationship with each supplier of the cycled or renewable material. These records might include 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).
- 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.
    - If five product specific production batch records are unavailable (i.e., less than five batches have been produced), 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 (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).

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) and have high-value technical or biological cycling potential.

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 (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).

Further Explanation

Compatibility Requirements

The standard requires an increasing percentage of materials to be compatible with the 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 compatibility requirements vary with cycle (i.e., technical or biological), and pathway (municipal recycling, composting, biodegradation in wastewater treatment plants, etc.). It may be tempting to replace the term compatible with cyclable or recyclable. However, note that the terms cyclable and recyclable are not widely used in the standard. The focus of Section 5.4 Material Compatibility for Technical and/or Biological Cycles is on ensuring 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.

In most cases, individual homogenous materials within a product are either compatible (as defined by this section of the standard) or not. 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. This means that for solid single material products (e.g., a product that is only stainless steel, paper, wood, or polypropylene), the required compatibility percentages by certification level effectively do not apply. An exception is for liquid formulations which may be counted as partially biodegradable based on the biodegradability of the individual substance within the formulation. An exception applicable to the recycling pathway occurs if distinct portion(s) of a material are purposely removed and disposed of during cycling. 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.

The guidance 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. 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 guidance 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 ECVP 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 ECVP 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 ≥ 1% of the material by weight:

- Plastic film lamination or extruded coatings (exception: if the entire product has passed compostability testing, bioplastic film lamination may be considered 'compatible'. Refer to the Gold level guidance within this section for additional information.)
- Foil stamping
- UV-cured printed inks
- Wax and moisture-preventative coatings
- E-beam inks

Paper materials that have municipal recycling as an intended cycling pathway and meet these conditions do not need to demonstrate compatibility per point #4 below to count towards the percentage of materials compatible with the intended cycling pathways. Note that biodegradability and/or compostability must be demonstrated via a C2CPII-recognized standard or test to demonstrate compatibility with high-value cycling at the Gold level (since paper must be designated for at least one biological cycling pathway per Section 5.1 Defining The Product's Technical and/or Biological Cycles).

4. For solid materials intended for the biological cycle, <u>one</u> 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 ≥ 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 standard test.
        ii. For any individual organic additives (e.g., pigments, inks, colorants, scents, secondary polymers, glues) present at a concentration of ≥ 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 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).

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).

- 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.
- 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).

Additional testing methods may also be recognized and subsequently added to this list. Refer to Appendix 2 in this guidance document 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.

Demonstrating Compatibility for the Biological Cycle for Paper and Biological Materials with 100% Unmodified Organic Material

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

Materials that are 100% unmodified biological and organic (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.

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. 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

Per requirement #6a, *if the wet-applied material is an ink for printed products, it must pass the qualifications for de-inkability stated in INGEDE Method 11*.

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 #6b, *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).

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 with a log Koc < 4.5 must meet the OECD definition for ultimate biodegradability (aerobic), and
            2. Organic chemicals with a log Koc ≥ 1.5 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

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 with a log Koc < 4.5 must meet the OECD definition for ultimate biodegradability (aerobic), and*
2. *Organic chemicals with a log Koc ≥ 1.5 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 Koc for that chemical. Koc data can often be located in chemical databases (e.g., the European Chemical Agency's (ECHA) Chemicals Information system). In addition, Koc 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 Koc has been determined, the next step is to search the literature and other publicly available information for the appropriate biodegradability test data.

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 | ≥ 70% DOC Removal is required.
- For anaerobic biodegradability: OECD 311 | ≥ 60% DOC Removal is required; or ≥ 50% anaerobic degradation probability according to QSAR Biowin 7, or T1/2 < 16 days in water, soil or sediment.
- For ready biodegradability: OECD 301 | ≥ 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.

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

- log Koc < 1.5: The substance must meet the OECD definition for ultimate biodegradability (aerobic) under OECD 301, 302A, 302B, 302C or 304A or QSAR.
- log Koc 1.5 – 4.5: 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 Koc > 4.5: The substance must meet the OECD definition of anaerobic biodegradability under OECD 311 or QSAR.

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 guidance for information.

Note: At the time of publishing this guidance, the approach applied in the Material Health Assessment Methodology (MHAM) for assessing persistence does not require consideration of log Koc. 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. 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).

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-}, $B_4O_7^{2-}$
Copper (Cu)	Cu^{2+}	
Sodium (Na)	Na^+	
Silicon (Si)	Si_4^+	$[SiO_{4-x}^{(4-2x)-}]_n$, $0 \leq x \leq 2$
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)*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 level: The use of materials with high-value cycling potential (i.e., high-quality material as defined in #1-2 below) is required.

1. For a material to count toward the required percentage (90%) 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:
        i. Must not contain additives or features that are likely to result in low-value (i.e., low-quality) reprocessed material, and
        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.
    b. Solid materials intended for biological cycles must be certified by a C2CPII-recognized compostability program.
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. 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 two compliance pathways for requirement 1.a.i, *Materials intended for technical cycles and solid materials intended for biological cycles must not contain additives or features that are likely to result in low-value (i.e., low-quality) reprocessed material:*

Pathway #1 for achieving requirement 1.a.i: 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. Any material that is not listed below must follow pathway #2.

All Plastics	• 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 guidance document. 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)	• 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)	• 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 ReCyclass (test methods) for additional information. • Incompatible polymers: EVOH > 1 %, PA, PET, PETG, PVC, polyvinylidene chloride (PVDC), PLA > 1 %

High-Density Polyethylene (HDPE)	• 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 ReCyclass (test methods) for additional information. • Incompatible polymers: PLA, PVC, PS, PET, PETG, PA, PVDC, EVOH > 1%
Low Density Polyethylene (LDPE)	• 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) • 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 and other Solid BN Substrates	• Plastic film lamination or extruded coatings (exception: if the entire product has passed compostability testing as required per requirement 1b in this section, bioplastic film lamination may be considered 'compatible'.) • 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	• Lead-based ink • Attached features containing other metals
Aluminum	• Too many different types of aluminum (> 3 types) • Thin-foil laminations
Glass	• Cobalt blue pigment • Metal tamper-evident rings • Metal-based inks • Glass colors other than flint, green, or amber
Textiles	• Note: requirements are in development and will be added when this User Guidance is next updated.

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 NonRecyclable") for plastics, and the Sustainable Packaging Coalition (SPC) Design Guidelines for Sustainable Packaging for paper, metal, and glass materials.

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 5.9: *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 ≥ 90% of the product with 'high value cycling potential' must be actively cycled. Note that per the Definitions section, cycling is defined as follows: 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.

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 5.3 Preparing for Active Cycling. Same type means having the same function. Economically competitive means the product can be sold.

3. 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).

Further Explanation

For requirement 1.a.ii, *Materials intended for technical cycles and solid materials intended for biological cycles 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.*

Evaluating for Loss of Function and Durability

The following materials, after undergoing reprocessing, may be assumed to have similar properties (i.e., minimal to no loss in function or durability): Glass, metal, clay, chemically recycled polymers.

For other materials, 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 durability must be assumed if there is a > 10% change in one of the following physical indicators in the cycled material compared to virgin material (i.e., > 10% decrease for the parameters currently listed).

- Polymeric plastics
  - Decrease in ductility
  - Decrease in number, weight, or viscosity average molecular weight (g/mol)
  - Decrease in impact strength (kj/m^2)
  - Decrease in tensile strength (MPa)
- Cellulosic fibers
  - Decrease in tensile strength
  - Decrease in bursting strength
  - Decrease in apparent density

Additional indicators may be added upon request to C2CPII.

Renewable or Post-consumer Recycled Content

- Renewable content: In alignment with standard Section 5.4 Increasing Demand, renewable content must be responsibly sourced to count as renewable. In addition, for the Gold level, the alternative compliance pathway (i.e., "Alternative to Meeting Required Percentages of Cycled and/or Renewable Content: Feasibility Analysis") may be applied.
- Post-consumer recycled content: The verification requirements in the standard and guidance Section 5.4 Increasing Demand apply. The alternative compliance pathway may not be applied.

Plausible Next Uses

The standard requires *at least two plausible next uses*. This means two successive next uses (i.e., one after the other) rather than two different next uses. The two next uses must be within the intended

pathway(s) as defined for achieving the requirements in Section 5.1. The two subsequent next uses may be the same use. For example, some metal alloys may be recycled back into the same metal alloy after the first use cycle, the second use cycle, etc.

A next use is plausible if there are existing examples (i.e., more than one example) of the next use occurring for that material in one or more similar products. Products are 'similar' when they have comparable characteristics of application/use, material composition, disassembly requirements, and end-of-use conditions. To receive credit as a plausible next use, the next use must also be part of the Active Cycling plan and implementation (per Sections 5.3 Preparing for Active Cycling and 5.9 Active Cycling).

Further Explanation

For requirement 1.b, *Solid materials intended for biological cycles must be certified by a C2CPII-recognized compostability program).*

C2CPII-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
- Renewable Energy Assurance Limited: Compostable Materials Certification Scheme (CMCS)

Please see C2CPII-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 guidance document 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.

Further Explanation

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 Koc 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 anerobic 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 Koc < 1.5: The substance must meet the OECD definition for ultimate biodegradability (aerobic) under OECD 301, 302A, 302B, 302C or 304A or QSAR.
- log Koc 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 Koc 3 – 4.5: The substance must meet the OECD definition of anaerobic biodegradability (OECD 311 or QSAR) AND ultimate aerobic biodegradability (OECD 301, 302, 304 or QSAR).
- log Koc > 4.5: The substance must meet the OECD definition of anaerobic biodegradability under OECD 311 or QSAR.

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 Koc < 1.5: The substance must meet the OECD definition for ultimate biodegradability (aerobic) under OECD 301, 302A, 302B, 302C or 304A or QSAR.
- log Koc 1.5 – 4.5: 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 Koc > 4.5: The substance must meet the OECD definition of anaerobic biodegradability under OECD 311 or QSAR.

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 guidance, the approach applied in the MHAM does not require consideration of log Koc. 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 form or similar listing the materials that are compatible for technical or biological cycling.
- Description of how each material meets the compatibility requirements.
- 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 guidance above (i.e., certificate(s) and/or test results).

In addition, at the Gold level the following are required:

- An explanation of how the high-value cycling potential requirements were met.
- For materials intended for technical cycles and solid materials intended for biological cycles:
    - 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.
    - 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.
            - 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 (#1-3 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 materials intended for technical cycles and solid materials intended for biological cycles, <u>one</u> of the following (these are the three options within Requirement #1.a.ii):
    - Evidence of minimal loss of function or durability: An explanation of a currently implemented process for reprocessing of the material and its use in the same application for a similar product, AND An explanation and supporting evidence showing that there is < 10% decrease from originally sourced virgin material (or increase in the case that a decrease would lead to improved performance for the specific application) in one of the physical indicators relevant to the material (per guidance above).

- Evidence that the material contains 80% renewable or post-consumer recycled content (renewable and post-consumer are as defined in Section 5.4 Increasing Demand).
- Evidence of at least two plausible next uses: An explanation of the physical capability of cycling the material for the next use identified. Supporting evidence must include cited examples of the next use occurring for that material in one or more similar products. Similarity of the products must be supported by 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 select liquid formulations: Evidence of achieving the minimum percent ready biodegradability and/or anaerobic biodegradability requirements.
- For solid materials intended for biological cycles, compostability certification certificate.

Requesting Additions to the List of Physical Indicators Used to Demonstrate Durability: The following must be provided:

- Identity of the material.
- The physical indicator proposed.
- Academic publications (i.e., more than one) showing a strong correlation between the physical indicator and the mechanical durability and performance of the material.
- A summary of the justification provided within the publications/articles for the high degree of correlation between mechanical performance and that physical indicator.
- Testing data showing how the specific product or material meets the threshold for the physical/ mechanical property based on the corroborated indicator (to be provided after use of the specific indicator has been approved by C2CPII).

5.5 Circularity Data and Cycling Instructions

Intended Outcome(s)

Circularity information for proper end-of-use handling of the product is publicly available, increasing the likelihood that the product's materials will be actively recovered and processed for a next cycle of use.

Applicable Achievement Level(s)

Bronze

Requirement(s)

Make data to support cycling of the product in its intended pathway(s) and instructions for how to cycle the product publicly available.

The applicant must make data to support cycling of the product in its intended pathway(s) publicly available. The data may be reported via the Cradle to Cradle Certified® Circularity Data Report (see Cradle to Cradle Certified® Circularity Data Report reference document) or a C2CPII-recognized circularity reporting standard.

When applicable, the applicant must make instructions for how to cycle the product publicly available. The instructions must include how to identify the materials for cycling, any required product maintenance, and how to recover, reprocess, or recycle the product (see Cycling Instructions section in the Cradle to Cradle Certified® Circularity Data Report reference document).

Further Explanation

Scope: The requirements in this section apply to all products except those that are designated for a biological cycling pathway and for which no intervention is needed to ensure active cycling occurs. For example, this includes cleaning products, soaps, personal care products, and cosmetics.

The product circularity data and cycling instructions that are required to be made publicly available are listed in the *Cradle to Cradle Certified® Circularity Data* reference document.

Publicly available means freely and openly available without restriction. Posting circularity data via databases or other services that charge a fee or have other limitations on access (other than a registration function) does not receive credit. Circularity data and cycling instructions are not considered to be publicly available if it is necessary to email or otherwise contact the applicant (e.g., via a website messaging function) to request this information. Data may be made publicly available by completing the Cradle to Cradle Certified® Circularity Data form. The information provided in the form must be verified (rather than self-reported by the applicant). These data will be made publicly available on C2CPII's web registry.

A C2CPII-recognized circularity reporting standard that is made publicly available may be used as an alternative to providing the circularity data listed in the *Cradle to Cradle Certified® Circularity Data* reference document. If the C2CPII-recognized circularity reporting standard does not include instructions for how to cycle the product, cycling instructions must also be made publicly available by other means (e.g., on the company's website).

Note that circularity data is required to be reported on the C2CPII certified products registry or through a recognized reporting standard (i.e., reporting these data via the company web site or similar alone is not sufficient).

If using materials that have been chemically recycled, data must be reported via the Circularity Data Report (there is no option to report this information via a C2CPII-recognized reporting standard because the required disclosures are very detailed and are unlikely to be covered sufficiently via other routes.)

If using a C2CPII-recognized circularity reporting standard instead of the Cradle to Cradle Certified® Circularity Data form, the company must publicly state (e.g., on the company website) where to locate the required information. C2CPII may also report this information via its product registry.

See the most recent version of C2CPII-Recognized Certification Programs and Standards, available on C2CPII's website, for the list of recognized certifications and conditions for recognition.

Standards and communication tools may be recognized and subsequently listed in the User Guidance. Refer to Appendix 2 in this guidance document for requirements and the application process for recognition.

Required Documentation

- Completed C2CPII Circularity Data Report form
  OR,
  Completed C2CPII-recognized circularity reporting standard document and cycling instructions.
- Evidence of public availability.

5.6 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)
Silver and Gold

Requirement(s)

Silver level: Develop a plan for implementing a circular design opportunity or innovation that increases product circularity; demonstrate progress toward achieving the plan at recertification.

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 5.5 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 5.3 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 at any time in the past, as part of the initial product design process or following initial product launch.

1. Designed to Minimize Material Weight
    a. Description: Any product design strategy that will lead to or has led to at least a 10% decrease in material weight, 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.
    b. Examples of acceptable progress for Silver level recertification: Any work that has been done toward decreasing material weight in the product or establishing partnerships that will allow for decreasing material weight.

2. Design Strategy for Prolonging the Use Phase of the Product
    a. 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.
    b. Examples of acceptable progress for Silver level recertification:
        i. Any work that has been done toward prolonging the use phase time of the product or establishing partnerships that will allow for prolonging the use phase time.
        ii. Market research to identify methods of encouraging product users to purchase a product with a longer use phase.
    c. 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 most common use phase times for many product types are available in the International Living Future Institute's (ILFI) Product Life Database, If data on the most common (i.e., mode) use phase time (i.e., 'lifetime' per the database) for the product type is not available in the ILFI reference, the applicant must submit an alternative appropriate source of data and an explanation of how the data were derived.

3. Designed for Product as a Service
    a. Description: A product that is designed to be rented/leased or shared among customers of the product.
    b. Examples of acceptable progress for Silver level recertification: Any work that has been done toward implementing a product as a service business model or establishing partnerships that will allow for implementing a product as a service business model.

4. Designed for Modularity or Upgradability
    a. 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.
    b. Examples of acceptable progress for Silver level recertification: Any work that has been done toward implementing a modular or upgradable product design or partnerships that will allow for implementing a modular or upgradable product design.

5. Designed for Maintenance, Repair, or Refurbishment Services
    a. 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.
    b. Examples of acceptable progress for Silver level recertification: Any work that has been done toward establishing a process or program for maintenance, repair, or refurbishing services, or partnerships that will allow for maintenance, repair, or refurbishing services.

6. Designed for Manufacturer Recovery and Reuse
    a. Description: A product that is designed for a company take-back program or other company-based recovery initiative aimed at reusing the product.
    b. Examples of acceptable progress for Silver level recertification: Any work that has been done toward establishing a take-back program or partnerships that will allow for a company take-back program.

7. Designed for Product Compatibility

a. Description: A product that is designed for standardization or compatibility with other parts or products, enabling extension of the use phase of the product.
b. Examples of acceptable progress for Silver level recertification: Any work that has been done toward designing the product for standardization or compatibility with other parts or products, or establishing partnerships that will allow for standardization or compatibility with other products.

8. Designed for Remanufacturing
    a. Description: A product that has been designed for manufacturer recovery and can have components re-used for other product applications.
    b. Examples of acceptable progress for Silver level recertification: Any work that has been done toward implementing a remanufacturing program for the product or establishing partnerships that will allow for remanufacturing of the product.

9. Designed for Industrial Symbiosis
    a. 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.
    b. Examples of acceptable progress for Silver level recertification: Any work that has been done toward establishing an industrial symbiosis business plan or partnerships that will allow for industrial symbiosis.

10. Designed for Extending Resource Value
    a. Description: A product that is designed to incorporate the residual value of otherwise "wasted" materials or resources.
    b. Examples of acceptable progress for Silver level recertification: Any work that has been done toward prolonging the residual value of wasted materials or establishing partnerships that will allow for prolonging the residual value of wasted materials.

11. Designed for Other Innovation
    a. Description: A product that is designed in a way that contributes meaningfully to its increased circularity.
    b. Examples of acceptable progress for Silver level recertification: Any work that has been done toward implementing the plan or establishing partnerships that will allow for the plan to succeed.

Required Documentation

Silver level

- Implementation plan, including:
  - A description of the circular design opportunity or innovation to be implemented per the list above.
  - Potential partners/collaborators and their roles, if relevant.
  - A description of how the design opportunity or innovation is expected to increase product circularity and/or create more end-of-use cycling opportunities (i.e., how is the opportunity innovative?).
  - A description of the next step(s) and timeline for implementation.
- At recertification, a description of the progress made toward implementation of the plan.

Gold level

- A description 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.
- The 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 over time.

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 Other Innovation
    - A description of the product design or program and how it contributes to increased circularity in accordance with Cradle to Cradle principles.

Intermediate and wet-applied products: Evidence of communication to finished product manufacturers or customers, respectively

5.7 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)

Silver, Gold, and Platinum

Requirement(s)

Silver level: For products with multiple materials requiring separation for cycling in the intended pathway, develop a plan for increasing the ease of product disassembly into discrete materials for intended cycling pathway(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 Silver level, the plan for increasing the ease of product disassembly must include at least one of the design or communication elements required at the Gold level.

For the Gold and Platinum levels, the following design and communications elements define "ease of disassembly" and are required as applicable for ≥ 90% (for Gold) and ≥ 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 ≥ 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.

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 5.7 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 5.7.

- 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

Silver Level

- Plan for increasing the ease of product disassembly into discrete materials for intended cycling pathway(s) using at least one design feature (per list above).

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.

Silver, Gold, and Platinum Levels: If using the alternative compliance pathway described in the Further Explanation box above, documentation as required per Section 5.7 Circular Design Opportunities and Innovation, instead of the documentation listed above.

5.8 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 ≥ 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 4 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 ≥ 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 includes: beverage cups including covers and lids, beverage bottles, take-out or immediate consumption food containers, packets and wrappers made from flexible materials used to contain food that is intended for immediate consumption, wet wipes, and balloons. 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 4 years.
- Short-use phase product – A product with a use phase time that is typically less than 4 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 guidance, 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 ≥ 50% Active Cycling at the Gold Level

The 'select' single-use plastic products and single-use plastic packaging required to achieve ≥ 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 includes: beverage cups including covers and lids, beverage bottles, take-out or immediate consumption food containers, packets and wrappers made from flexible materials used to contain food that is intended for immediate consumption, wet wipes, and balloons.

This list is currently based on the European Union's single-use plastics directive. The regulations referenced and the list of select single-use plastic products and single use plastic packaging required

to achieve ≥ 50% active cycling at the Gold level will be further updated and maintained in the User Guidance. 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 responsibly regulations and/or regulatory measures intended to reduce use (and therefore required to achieve ≥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 5.8 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 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.

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.

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		5285	6.5%*

*Total active cycling % = Sum of product sold in 2010 (kg) / Sum of product cycled in 2020 (kg) = 5285/81500 = 6.5%. Note: There are ten years between the product cycled data and product sold data because ten 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 5.5 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 requirement.

Intermediate products and liquid formulations are exempt from all requirements in this section.

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 *liquid formulations are exempt from all requirements in this section*. 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 5.5 Material Compatibility for Technical and/or Biological Cycles), and for which no intervention is needed to ensure active cycling occurs. 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).

Required Documentation

Applicable Achievement Level by Product Type	Required Documentation
Gold Level: 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.

Gold Level:
• 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.
 	
Platinum Level:
• Long-use phase products.
	• 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 chosen 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 and is sold in regions where the municipal system is available, active cycling may be assumed to be occurring if the following are provided:
	  ○ Evidence of the municipal 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 recycled through the program(s).

Gold Level: • 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 Platinum Level: • 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).
Gold Level: • Select single-use plastics. Platinum Level: 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.
Platinum Level: • 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.

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: A strategy for increasing use and/or procurement of renewable electricity and addressing greenhouse gas emissions has been developed. The strategy includes near- and mid-term targets.	●	●	●	●
6.4: 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.	●	●	●	●
6.5: Products that use energy during the use phase (e.g., appliances) or that greatly impact the energy efficiency of buildings (e.g., windows, insulation), are certified using a C2CPII-recognized energy efficiency standard or similar, if available.	●	●	●	●
6.6: Greenhouse gas emissions data for the applicant company, for all final manufacturing stage facilities, or for the final manufacturing stage of the product are made available to stakeholders.	●	●	●	●
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: The renewable electricity and greenhouse gas reduction strategy includes long-term target(s) in addition to the near- and mid-term targets.		●	●	●
6.4: 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.			●	●
6.4: 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 matches 100% of electricity used at final manufacturing facilities.			●	●
6.6: Embodied greenhouse gas emissions data are made available to stakeholders.			●	●
6.7: 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.			●	●
6.8: 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.				●
6.4: 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 that support 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.				●
6.8: 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).				●

*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

Determining if a Facility is Subject to These Requirements

The requirements in this section apply to final manufacturing facilities, not only to air emissions that occur as a result of manufacturing the product(s). 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.

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.

For final manufacturing facilities that are not subject to the Bronze level requirements in this section, a signed statement and evidence that the facility is out of scope are required. Refer to the Required Documentation box below for additional information.

Determining What is Required for Final Manufacturing Facilities in Scope

For facilities that are subject to the requirements in this section, what specifically must be done depends on whether the facility is in a region with leading regulations. The following definition applies:

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, such mechanisms do exist in the European Union and the United States. It may currently be assumed that facilities in the European Union, United Kingdom, Switzerland, 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 C2CPII to determine next steps if this occurs. Other regions may be added to this list upon consultation with and pre-approval from C2CPII.

Requirements Specific to Facilities That are in Regions with 'Leading Regulations'

As noted above, facilities in the European Union, United Kingdom, Switzerland, and the United States are currently assumed to be subject to leading regulations. For facilities in this category, it must be demonstrated that the facility is in compliance with its permitted limits.

Definition of Compliance: Compliance means that the manufacturing facility is adhering to the limitations required by the permit. This must be true currently and for the two years prior to certification. Compliance is more specifically defined per the applicable regulations. 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. Permits and test results must be provided by the manufacturer. Alternatively, the compliance status of manufacturing facilities may be demonstrated based on publicly available information (e.g., through the Enforcement and Compliance History Online (ECHO) database in the United States). If the permit does not require analytical testing to demonstrate compliance, testing also generally is not required for Cradle to Cradle Certified. However, exceptions could arise if the manufacturing facility site visit or other evidence surfaces concerns that do warrant testing beyond the current regulatory requirements.

See the sub-section in this Further Explanation box titled When Final Manufacturing Facilities are not in Compliance for additional information.

Requirement Specific to Facilities in Other Regions (i.e., Without 'Leading Regulations')

For facilities in this category, it must be demonstrated that the facility is in compliance with its permitted limits and that the *parameters addressed in the permit are consistent with leading regulations, international guidelines, or industry best practice.* If the parameters are not consistent, additional work is required as described below.

Definition of Compliance: Compliance means that the manufacturing facility is adhering to the limitations required by its permit and/or leading regulations, international guidelines, or industry best practice. This must be true currently and for the two years prior to certification. Compliance is more specifically defined per the applicable regulations, guidelines, or best practices. If minor exceedances are permitted, such exceedances are also accepted for the purposes of Cradle to Cradle Certified.

To determine if a facility is in compliance, emissions test results (summarized as required by the permitting authority), international guidelines, or industry best practice (as applicable), must be

compared to the allowable limits.

Determining Parameter Consistency with Leading Regulations:

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.

Note: For any facility that does not carry out process that fall within the categories of activities per the EU's Industrial Emissions Directive (Annex I) and any subsequent updates, it is not required to determine if the parameters on the facility's permit (if any) are consistent with leading regulations. This may occur for assembly operations and other minor emitters.

International and industry best practice guidelines include the following:

- 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 this category (i.e., in regions without leading regulations), **the capacity of the on-site emissions control equipment must be compared to throughput to determine if 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.

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 two years 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

For all facilities: A signed statement from the applicant or final manufacturer 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 corresponding regional regulatory (if any), international, or industry best practice guidelines (as applicable), 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 C2CPII receiving all documentation to apply for certification.

For facilities that are not subject to the requirements in this section: A description of how this was determined and any applicable supporting evidence (e.g., process flow diagrams, photos of the facility, and/or reference to a manufacturing site visit conducted for the purposes of Cradle to Cradle certification). Note: A signed statement (per the paragraphs above), a description, and check/verification at the manufacturing facility site visit is sufficient evidence. For sites that are not visited, photos and/or process flow diagrams in support of the signed statement are requested.

For facilities subject to the requirements in this section, the following (as applicable):

- 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.
    - 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 in locations without leading regulations, evidence of emissions control equipment capacity and throughput (e.g., description of system design, technical manuals and specifications, and throughput volume).
- 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.

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 CO_2e.
2. Report greenhouse gas emissions from all other sources (e.g., direct emissions from burning fuels, including biofuels) in terms of CO_2e.

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 – 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.

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 4.1, at least one year of data are required. Typically, this will cover the full year prior to certification. Two or more years of data are recommended. For recertifications to Version 4.1, data for the prior certification period are required.

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 Lifecycle 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 Lifecycle Accounting and Reporting Standard or other guidance based on ISO 14040) and relevant Product Category Rules, if available.

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 CO_2) 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.

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 C2CPII's 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 CO_2e.*
2. *Report greenhouse gas emissions from all other sources (e.g., direct emissions from burning fuels, including biofuels) in terms of CO_2e.*

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.

References

- World Resources Institute and World Business Council for Sustainable Development, Greenhouse Gas Protocol Product Lifecycle 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.

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. 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 Lifecycle 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 C2CPII 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 CO_{2e}) 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 (i.e., EPDs for similar products do not receive credit). EPDs created for product groups are accepted if they represent the worst case.

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 Lifecycle 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

- C2CPII Clean Air & Climate Protection 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.
- 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 4.1, one year of data at a minimum (additional years recommended).
  - For recertifications, data for the prior certification period must be provided.
- 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).

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 Lifecycle Accounting and Reporting Standard (2013, page 94), the statement must include:
  - Whether the assurance was performance 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 Clean Air & Climate Protection Strategy

Intended Outcome(s)

A clean air and climate protection strategy that includes targets aligned with international climate science and goals is established, providing a pathway for increasing the amount of renewable energy used to manufacture the product and reducing or offsetting greenhouse gas emissions during the product manufacturing process.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirements

Develop a Clean Air & Climate Protection strategy and report on progress made toward achieving the strategy at each recertification.

The strategy must include the following:

1. Quantitative targets for increasing renewable electricity use and/or procurement and addressing greenhouse gas emissions (as applicable by achievement level below).
   a. For the Bronze, Silver, and Gold level, near-term (0-3 years) and mid-term (≥ 3 years) targets must be set.
   b. For the Silver and Gold levels, long-term (beyond mid-term and by 2050) targets must also be set.
   c. For the Gold level, the long-term targets must be to achieve > 100% renewable and/or a better than carbon neutral final manufacturing stage for the product. Alternatively, the long-term targets must be science-based (see Definitions section).
   d. For the Platinum level, the timeline for meeting the selected target(s) may be determined by the applicant.
2. Proposed activities and method(s) for reaching each target. Base year(s) and target year(s) must be indicated. Note: Methods that receive credit are further described in Section 6.4 Using Renewable Electricity and Addressing Greenhouse Gas Emissions in Final Manufacturing and in 6.10 Addressing Embodied Greenhouse Gas Emissions.
3. A report of progress made toward meeting the targets that were set at the last certification (not applicable for initial certification).

Scope

1. For the Bronze, Silver, and Gold levels, product attributable electricity use and greenhouse gas emissions associated with the final manufacturing stage of the product must be within the scope of the strategy.
2. For construction products and building materials used to construct primary building elements at the Silver level, and for all products at the Gold and Platinum levels, the strategy must take into account the product's (or products') embodied greenhouse gas emissions.

Further Explanation

The Clean Air & Climate Protection Strategy may focus only on using renewable electricity and addressing greenhouse gas emissions. However, it is important to note that transitioning to clean renewable energy sources will also positively impact air quality. This is because burning fuels is one of the primary contributors to poor air quality. Although not required, applicants are encouraged to also explicitly include plans for reducing emissions of hazardous air pollutants in the strategy. Note that the General Requirements section of the standard may also require a strategy and management system applicable to air emissions, depending on activities occurring at the facility.

A strategy for using renewable electricity and addressing greenhouse gas emissions is required at all achievement levels, including Platinum level. The reason that a strategy is still required for Platinum level is because there will typically always be additional work that can be done to more thoroughly and directly address emissions in the supply chain.

Scope: The required 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 – Strategy Scope: Silver through Platinum Level Requirements by Product Type

Strategy Requirement	Construction Products and Building Materials (per the list specified in the standard)	Other Products
Strategy must address 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 are accepted if they include the certified product(s)).	Bronze	Bronze

Strategy must address embodied emissions. Scope: Initial resource extraction or production through final manufacturing.	Silver	Gold
Strategy must address embodied emissions. Scope: Initial resource extraction or production through end of use.	Platinum	Platinum

Setting Targets

Companies should set targets aligned with the Paris Agreement goals at a minimum. Note that companies reporting per the Corporate Sustainability Reporting Directive (CSRD) will have to demonstrate that their transition plan is compatible with the targets of the Paris Agreement.

The standard requires near-, mid-, and long-term targets. Near-term and mid-term are defined in relation to the certification period (three years). These term lengths are slightly different from the term lengths defined by the European Financial Reporting Advisory Group for CSRD reporting (in draft at the time of publishing this guidance). Per EFRAG ESRS E1 Climate Change (draft page 17), the definition of short-term is aligned with the period adopted by the company in its financial reporting, mid-term is from the end of short term to five years, and long-term is more than five years. These term lengths are compatible with and accepted for Cradle to Cradle certification. 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. This means that companies that have set Net-Zero Science Based Targets per the Science Based Targets Initiative (SBTI) may not have set near-term targets as defined and required per Cradle to Cradle Certified (although they will have set compatible mid- and long-term targets).

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.

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 (although applicants are also encouraged to consider what it will take to achieve the next level). For example, a company-level target to achieve a 15% absolute reduction in scope 1 and 2 greenhouse gas emissions by 2027 would be accepted for the Bronze level as long as the certified product is within scope. This is even though the Silver level target (applicable to product attributable electricity and emissions at a minimum) is 20%.

It will be assumed that manufacturing of the certified product is included in the scope of corporate level strategies (as required per the intended outcome), unless final manufacturing stage facility(ies) are owned by contract manufacturers or suppliers and the strategy does not address scope 3 emissions. In the latter case, evidence that the strategy applies to final manufacturing will be requested at the Gold level to ensure the following is achieved: *the long-term targets must be to achieve > 100% renewable and/or a better than carbon neutral final manufacturing stage for the product.*

References

- CDP 2024 Climate Change Scoring Methodology, cdp.net
- Science Based Targets Initiative, sciencebasedtargets.org
- World Wildlife Fund (WWF), Corporate Climate Targets, wwf.eu (February 2024)

Required Documentation

Bronze Level

- A documented strategy that includes quantitative near and mid-term targets including base year(s) and target year(s), a description of the proposed methods of achieving the targets and for moving to the next Cradle to Cradle Certified achievement level.

Silver Level

- All Bronze level documentation, plus evidence/inclusion of long-term targets.

Gold Level

- All Bronze level documentation, plus evidence/inclusion of targets to achieve better than carbon neutral or science-based targets for final manufacturing.

Silver Level (Construction Products and Building Materials) and Gold Level (Other Products)

- Strategy per the Bronze level that also includes quantitative targets specific to embodied emissions. (i.e., all required documentation listed for the Bronze level must have elements applicable to both the final manufacturing stage and embodied emissions).

Platinum Level

- Strategy per the Bronze level that includes target(s) for addressing embodied emissions. Associated timeline(s) are required, but the targets may be near, mid, and/or long term.

Recertification (All Achievement Levels)

Strategy progress report, including the following:

- The original strategy, a description of any changes to the original strategy, and an explanation of why these changes were made.
- Indication of progress made toward the targets including the percent of each target that has been reached to date.
- Reporting on progress made on all activities identified in the original strategy that were to be employed in meeting the targets.
- If a target that was set to be met during the prior certification period was not met, an explanation of why it was not met, and evidence that the strategy has been revised accordingly.

6.4 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. Improve performance by 5% (i.e., reduce electricity use intensity and/or the associated greenhouse gas emissions intensity by 5%), or
    e. 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. 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,
d. 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
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).

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 6.8 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 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. 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
e. 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).
3. 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
- Financial donations to climate-relevant public policy initiatives
- Investment in on-site emissions reduction projects (e.g., purchase of more efficient equipment)

In general, the accepted methods of achieving the targets are increasingly limited as the achievement level increases. For the Platinum level, only 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 above 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 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 two options.

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 that support new (≤15 years) renewable electricity installations (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. Note: 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 renewable (hydro) electricity standard, 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 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 #1.a (for the Bronze and Silver levels) and #1.a and 1.b (for the Gold level) in the sub-section 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 though other short-term purchase agreements.

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 C2CPII-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 guidance, this was: Rules Fact Sheet 5, Types of Energy Inputs and Technologies (AIB-EECS-FS05, Release 7.7, 2nd December 2019).

Installations defined per the AIB for the EECS as run-of-river 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. 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 guidance, 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 support new (≤ 15 years) renewable electricity installations and one or more of the accepted types of renewable electricity (per requirements #2a-e). Note that hydroelectricity typically must be certified to a C2CPII-recognized standard or be non-impoundment to receive credit as renewable.

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: This is an important change from Version 3.1of the Cradle to Cradle Certified Product Standard, which allowed for banking of energy attribute certificates for longer time periods.

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 from generators ≤ 15 years old*. EKOenergy Certified GOs for solar, wind, geothermal, or hydroelectricity from generators ≤ 15 years old**.
United States & Canada	Green-e® Certified Renewable Energy Certificates (RECs).
China	Green Electricity Certificates (GECs) and I-RECs for solar, wind, or geothermal from generators ≤ 15 years old.** It is also necessary to confirm that carbon offsets have not also been produced for the applicable energy (or to procure the offsets in addition to the GECs or I-RECs). GECs will be considered valid for one year (although they may not include a validity date).
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. 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. 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 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 available on their grid, or if grid average data are not available, in 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 may be 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 the average grid mix), such as investment in on-site renewables and/or purchase of carbon offsets.

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 guidance 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 C2CPII-recognized renewable (hydro) electricity standard to be counted towards the renewable electricity targets. C2CPII-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 C2CPII-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 guidance document 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. Note that carbon offsets may have been produced from the same electricity associated with GECs and I-RECs China. GECs and I-RECs China are accepted if it is demonstrated that carbon offsets were not also produced, or if the relevant/associated carbon offsets are also procured and retired. See Green Electricity Certificate (GECs) of China Technical Assessment Report, RE100 Climate Group, August 2020, for additional information.

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. At the time of publishing this User Guidance, 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).

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 alignment with CDP RE100 (see RE100 Technical Criteria, 12 December 2022), the new (≤ 15 years) installation requirement does not apply to:
        i. PPAs with projects to which there is a direct line and no grid transfers,
        ii. 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, and
        iii. Long-term contracts with operational commencement dates before the effective date of Cradle to Cradle Certified Version 4.0 (i.e., 1 July 2021).
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 renewable (hydro) electricity standard, 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 #1.a (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.

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 emission reductions, consider if the credit for investing in emission reduction projects is a viable alternative for meeting the requirements in the relevant certification period.

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. 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). The new date is applicable upon signing of the purchase agreement/contract. Several exceptions to the 15-year requirement apply as noted in the standard.

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.

References

Guide to Purchasing Green Power, (United States Environmental Protection Agency, 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. • 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	• 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.

renewable electricity themselves (e.g., a signed statement of transfer would be accepted as evidence).	
Type: On-site produced renewable electricity (grid connected)	
• 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.	• 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).
- 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.
- C2CPII 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 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.
- C2CPII Clean Air & Climate Protection form with table 1a completed.

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.
- C2CPII Clean Air & Climate Protection form with table 1a completed.

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).
- 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.
- C2CPII 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 July 2021.).
  - Amount of electricity that is/will be purchased (MWh).
  - Sources or electricity (e.g., wind, solar).
- Evidence of renewable energy attribute certificate retention and cancelation (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.
- C2CPII 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).
- Description of the initiative, including link to initiative website if available.
- C2CPII Clean Air & Climate Protection form with tables 1a and 1d 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 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 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

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 emission) 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 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.

C2PCII-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

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 (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) the applicable standard and project type will also be accepted for the purposes of Cradle to Cradle Certified.
- Some ratings assigned by the other rating providers listed above are listed by the Net Zero Marketplace.
- Additional rating providers may be accepted with pre-approval from C2PCII.

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/). 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).

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.

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.

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, United Kingdom, United States , Ukraine. This list is based on 2022 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, Finland, France, Hungary, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Ukraine	none	Established voluntary renewable electricity market and nuclear share > 10%

United States, e-grid subregions AZNM, FRCC, NEWE, NYUP, RFCE, RFCM, RFCW, SPNO, SRMV, SRMW, SRSO, SRTV, SRVC		
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%)

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 exitance 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 will 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 and Silver 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. The investment must be of equivalent value to a carbon offset purchase for achieving the applicable target (i.e., 5% for the Bronze level, and 20% for the Silver level). Offsets used for these estimates must be certified to a C2CPII-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 User Guidance. Please refer to the standard text and the Required Documentation section below for additional information.

References

- 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.
- www.Offsetguide.org/pdf-download

Required Documentation

Carbon Offsets

- Offset certificates indicating date of purchase, vintage, amount purchased (tCO2e), offset standard, and project(s) supported (e.g., project numbers).
- For high-risk project types, evidence of having received a low-risk rating.
- C2CPII 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 C2CPII Clean Air & Climate Protection form.
  - References for emissions factors employed if different from those provided in the C2CPII 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 and Silver levels)

- Cost estimate for carbon offsets (must be based on offsets certified to a C2CPII-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).
- Description of the project and how it will contribute to reduced emissions.
- C2CPII 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 CO_2e 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 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 the Definitions section 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. New (≤ 15 years) biogas installations within the same market region must be supported. 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 appliable 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).
- 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 C2CPII Clean Air & Climate Protection form.
- C2CPII 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., anerobic digestion of municipal waste biomass), and generator identity including location and age 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 CO_2e 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
- SEP 50001 Verification Bodies

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 % CO_2e 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 % CO_2e 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.

6.5 Energy Efficiency During Product Use

Intended Outcome(s)

Manufacturers are incentivized to make energy efficient products and product users are able to identify and select products that perform efficiently.

Applicable Achievement Level(s)

Bronze

Requirement(s)

For products that use energy during the use phase (e.g., appliances) or that greatly impact the energy efficiency of buildings (e.g., windows, insulation), obtain a certification and/or label using a C2CPII-recognized energy efficiency standard, labeling program, or similar, if available.

C2CPII-recognized efficiency standards and labels must allow users to identify products with above-average performance (e.g., EU Energy Label and ENERGY STAR in the U.S.).

Certification or labeling is required if a relevant certification or label is available in the region(s) where the product is sold.

Further Explanation

Products that greatly impact the energy efficiency of buildings that are subject to this requirement currently include: windows, doors, insulation, and reflective roofing.

The European Union Energy Label and United States Environmental Protection Agency/Department of Energy program EnergyStar are currently recognized by C2CPII for the purposes of these requirements. Additional certification 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.

The standard notes that *a C2CPII-recognized energy efficiency standard, labeling program, or similar, if available* is required. 'Similar' programs must be recognized by C2CPII before they may receive credit.

Required Documentation

- Certificate or label applicable to the certified product, or
- Evidence of research conducted to determine that there is not an applicable certification or label available in the region(s) where the product is sold, including explanation and references used.

6.6 Transparency

Intended Outcome(s)

Greenhouse gas emissions data are available to stakeholders, demonstrating the manufacturer's commitment to protecting the climate.

Applicable Achievement Level(s)

Bronze, Silver, Gold, and Platinum

Requirement(s)

Bronze level: Make greenhouse gas emissions data for the applicant company, all final manufacturing stage facilities, or the final manufacturing stage of the product available to stakeholders. Disclose 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.

Silver level: For construction products and building materials used to construct the primary building elements, make an Environmental Product Declaration (EPD) available to stakeholders.

Gold level: For product types other than construction products and building materials used to construct the primary building elements, make embodied greenhouse gas emissions data for the product available to stakeholders.

Platinum level: For product types other than construction products and building materials used to construct the primary building elements, make an Environmental Product Declaration (EPD) available to stakeholders.

For the Bronze level, scope 1 and scope 2 emissions must be reported separately.

Further Explanation

The Bronze level requirement is to *Make greenhouse gas emissions data for the applicant company, all final manufacturing stage facilities, or the final manufacturing stage of the product available to stakeholders.* In other words, there are three options for disclosing greenhouse gas emissions data that receive credit. The intended outcome is for this disclosure to demonstrate *the manufacturer's commitment to protecting the climate.* Therefore, if employing the option to make company level data available, the data must include data applicable to the final manufacturing stage. This means that in cases where the applicant company does not own the final manufacturing stage facilities, the company level disclosure option may not be fully applicable.

The requirements pertain to scope 1 and 2 emissions, which infers that total emissions should be reported. However, reporting on a per unit product basis and/or a total basis receives credit. Reporting totals and on a per unit product basis for the final manufacturing stage of the certified product is encouraged. The latter will enable users and retailers of Cradle to Cradle Certified products to understand the greenhouse gas emissions impacts of their purchases and sales respectively. Note that this information may be reported via C2CPII's web registry or via the company's own website, sustainability report, or similar.

It is also required to report how the Section 6.4 Using Renewable Electricity and Addressing Greenhouse Gas Emissions in Final Manufacturing and Section 6.8 Addressing Embodied Greenhouse gas Emissions targets have been achieved. Methods of achieving the targets must be reported via C2CPII's web registry.

Refer to standard Section 6.2 for guidance on how to calculate scope 1 and 2 emissions. Section 6.2 states that *The methods employed must follow a recognized greenhouse gas accounting methodology (i.e., the Greenhouse Gas Protocol or others listed by CDP).* For guidance on best practices applicable to reporting scope 2 emissions, refer to the Greenhouse Gas Protocol Scope 2 Guidance. The Scope 2 Guidance (2015) requires *Companies with any operations in markets providing product or supplier-specific data in the form of contractual instruments shall report scope 2 emissions in two ways and label each result according to the method: one based on the location-based method, and one based on the market-based method. This is also termed "dual reporting".*

If an EPD has been produced, it will still be necessary to separately achieve the Bronze level scope 1 and 2 reporting requirements. This is because the Bronze level requirements pertain to scope 1 and 2 emissions separately. EPDs may not include separate reporting of product attributable scope 1 (direct) and scope 2 (indirect e.g., from purchased electricity) emissions, or separate reporting of location and market-based emissions for scope 2.

Required Documentation

Bronze level

- Link to website and/or report (e.g., sustainability report) where the required data have been made available.
- Reporting how the Section 6.4 targets have been achieved via C2CPII's web registry.
- Reporting how the Section 6.8 targets have been achieved via C2CPII's web registry (if applicable). Note: This may not be applicable until the Silver or Gold level.

Silver level (Construction Products and Building Materials used to Construct the Primary Building Elements)

- Link to where the Environmental Product Declaration has been made available.

Gold level (Other Products)

- Link to website and/or report (e.g., sustainability report) where embodied greenhouse gas emissions data have been made available.

Platinum level (Other Products)

Link to where the Environmental Product Declaration has been made available.

6.7 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), US 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.

6.8 Addressing Embodied Greenhouse Gas Emissions

Intended Outcome(s)

Offsetting or reducing embodied GHG 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. Otherwise, the performance of a sample of similar products may be used for comparison.

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 6.8 targets in their entirety, separate from the Section 6.4 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 6.4, 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 6.8. In conclusion, because of these issues, it may be simplest to meet the Section 6.4 and Section 6.8 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 6.4 and 6.8 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 C2CPII-recognized offset standard (see Section 6.4 guidance 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.

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.
- Name and qualifications of third-party verifier.

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: Local and product-relevant water and soil issues are characterized. (Required for final manufacturing stage facilities.)	●	●	●	●
7.2: Final manufacturing facilities comply with water quality regulations or guidelines (i.e., permits, international guidelines, or industry best practice). Data to demonstrate the compliance status of off-site, independently operated, effluent treatment facilities (if any) are requested.	●	●	●	●
7.7: Product-relevant chemicals entering effluent or sludge are in compliance with leading chemical regulations. (Required for final manufacturing stage.)	●	●	●	●
7.3: Water use at final manufacturing stage facilities is quantified.	●	●	●	●
7.4: Adequate drinking water, sanitation, and hygiene are provided (final manufacturing stage facilities only).	●	●	●	●
7.5: A strategy for achieving the Silver level water and soil conservation requirements has been developed. For facilities using high volumes of water in stressed locations, the strategy includes water use reduction targets. Progress is reported at recertification.	●	●	●	●
7.1: Water and soil related risks are characterized. (Required for select tier 1 suppliers of key materials.)		●	●	●
7.2: Privately owned, off-site, independently operated effluent treatment facilities (if any), comply with effluent quality guidelines or regulations. Alternatively, a strategy to address the issue has been developed.		●	●	●

7.6: The Bronze level water and soil conservation strategy has been implemented including: • At least one conservation technology or best practice 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.) • One additional action to conserve water and/or soil either at final manufacturing facilities or in the supply chain. (Required when there are any facilities with high-volume or pollutant-intense processes and/or in stressed locations.)		●	●	●
7.7: Product-relevant process chemicals entering effluent and sludge are defined and assessed.		●	●	●
7.7: Product-relevant effluent and sludge does not contain recognized PBTs, vPvBs, or EU CLP Cat.1 and 2 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.)		●	●	●
7.7: Water use data are made available to stakeholders.		●	●	●
7.5: A strategy for achieving the Gold level water and soil conservation requirements has been developed. Progress is reported at recertification.		●	●	●
7.2: Government owned, off-site, independently operated effluent treatment facilities (if any), comply with effluent quality guidelines or regulations. Alternatively, a strategy to address the issue has been developed. For recertification at the Gold level, all off-site, independently operated effluent treatment facilities (if any), comply with effluent quality guidelines or regulations. Alternatively, manufacturing facilities comply with effluent quality guidelines for direct discharge or otherwise address the issue.			●	●

7.6: The Silver level water and soil conservation strategy has been implemented including: • Conservation technologies and best practices 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 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 key materials in scope.)			●	●
7.7: 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.)			●	●
7.9: A positive impact project that addresses local and/or product-relevant water and/or soil issues has been implemented.			●	●
7.8: Water quality data are made available to stakeholders.				●
7.7: Product-relevant chemicals in effluent and sludge are assessed and optimized (i.e., none are x-assessed or grey-rated). (Required for key materials where pollutant-intense processes occur at tier 1, or at any tier for leather, metal finishing, pulp/paper and textiles.)				●
7.9: Impact of positive impact project demonstrated.				●
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.				●

7.1 Characterizing Local and Product-Relevant Water & Soil Issues

Intended Outcome(s)

Through the assessment and understanding of water- and soil-related impacts attributable to the product, including local water availability and quality issues relevant to the product's manufacturing facilities, opportunities to address the impacts are identified.

Applicable Achievement Level(s)

Bronze and Silver

Requirement(s)

Bronze level: Characterize water and soil related issues for all final manufacturing stage facilities and issues relevant to the product.

Silver level: Characterize water and soil related issues at select tier 1 supplier facilities.

For the Bronze Level:

For all final manufacturing stage facilities:

1. Determine the basin/catchment/watershed name.
2. Identify risks to water quantity (including baseline water stress) and water quality, and risk of unimproved or no access to drinking water and sanitation as defined by the most recent version of the World Resources Institute Aqueduct database or equivalent.
3. If a catchment level plan is available, obtain, review, and determine how the plan is relevant to the site. This must include a determination of whether a groundwater abstraction cap (i.e., a regulatory limit on total withdrawals) based on water resource availability has been set, and if so, the cap's relevance to the site.
4. Describe effluent and sludge treatment process(es).
5. Identify any known issues with source and/or receiving water contamination (e.g., due to the use of reclaimed water) or high concentrations of naturally occurring hazardous substances.
6. Describe any known issues with soil contamination, erosion, or other types of degradation at the site.
7. Determine if the facility is potentially impacting any sensitive ecosystems, protected areas, or similar.

For the product: Identify the use cycle stage(s) (also commonly referred to as "life cycle" stages) responsible for the majority of water quantity and quality related impacts. Describe the impacts of concern.

For the Silver Level:

For facilities of tier 1 suppliers using high-volume or pollutant-intense processes to produce key materials that make up ≥ 25% of the product by weight or by cost, or for all tier 1 suppliers:

1. Determine the basin/catchment/watershed name.

2. Identify risks to water quantity (including baseline water stress) and water quality, and risk of unimproved or no access to drinking water and sanitation as defined by the most recent version of the World Resources Institute Aqueduct database or equivalent.

Alternatively, meet the Silver level requirements for at least 50 facilities of tier 1 suppliers using high-volume or pollutant-intense processes to produce key materials that make up ≥ 25% of the product by weight or by cost (i.e., tier 1 suppliers in scope). For recertification, meet the Silver level requirements for all tier 1 suppliers in scope.

Further Explanation

The purpose of this section of the standard is to heighten knowledge and awareness of water and soil related issues relevant to final manufacturing facilities and to the product more generally. This knowledge may inform selection of a Water & Soil Stewardship Positive Impact Project (see Section 7.9). In addition, some of the information collected per the requirements in this section define what is required in other sections. For example, the water stress levels identified in this section, in combination with data on how much water is currently used at each final manufacturing facility (per Section 7.3), inform where water use reduction targets must be set and best practices implemented.

Characterizing Water and Soil Issues for Final Manufacturing Facility Locations (Requirements #1-8)

The requirements in this section apply to all final manufacturing facility locations. Note: The standard requirements are repeated below in italics and guidance is provided in regular font.

1. *Determine the basin/catchment/watershed name.*

   Suggested references for identifying the basin/catchment/watershed name:
   - Aqueduct, World Resources Institute,
   - Interactive Database of the World's River Basins, CEO Water Mandate,
   - United States: Surf Your Watershed, US EPA

2. *Identify risks to water quantity (including baseline water stress) and water quality, and risk of unimproved or no access to drinking water and sanitation as defined by the most recent version of the World Resources Institute Aqueduct database or equivalent.*

   The preferred reference for identifying risks is the World Resources Institute's Aqueduct Water Risk Atlas. At a minimum, the following metrics must be reported as "low", "low to medium", "medium to high", "high", "extremely high", or "no data":
   - Physical risk (quantity)
     - Water stress

       Note: This metric is also referred to as Baseline Water Stress and is used to determine which requirements in Section 7.6 Water and Soil Conservation must be met.
     - Flood Risk
   - Physical Risk (quality)

- Regulatory & Reputational Risk
  - Unimproved/No Drinking Water
  - Unimproved/No Sanitation
  - Water stress

  Note: These metrics are referenced in the Section 7.4 Providing Drinking Water, Sanitation and Hygiene verification requirements. They measure the percentage of population without access to improved drinking water and sanitation. Higher values indicate areas where people have less access.

- Projected change in water stress (scenario: business as usual, 2030)

3. *If a catchment level plan is available, obtain, review, and determine how the plan is relevant to the site. This must include a determination of whether a groundwater abstraction cap (i.e., a regulatory limit on total withdrawals) based on water resource availability has been set, and if so, the cap's relevance to the site.*

   Catchment level management plans may be available from local or state level regulatory bodies and/or from non-governmental organizations operating in the relevant region. It will be necessary to research the availability of catchment plans for each applicant and manufacturing location because there currently is not a single resource that aggregates this information. Depending on the specific plan and site, examples of relevant information that may be identified when reviewing a catchment plan include (1) the identity of major water users in the region (who may be appropriate to collaborate with on water conservation issues), (2) flood risks relevant to the site, and/or (3) the identity of local natural areas that provide critical water-relevant ecosystem services to the site (e.g., upstream forested areas that must be preserved to ensure a stable water cycle). An example of an issue that may not be relevant is an impaired minor stream requiring remediation that is not connected to or likely to be impacted by the site. Applicants are encouraged to use their learnings from review of the catchment plan to develop a Positive Impact Project (see Section 7.9 for additional information).

4. *Describe effluent and sludge treatment process(es).*

   If effluent is treated on site, the description must include provision of technical information (and supporting documentation for locations without leading regulations) for any on-site treatment equipment and indication of treatment capacity. This, in combination with water audit data, may be used (as part of the verification process) as a check on whether sufficient treatment capacity is available, which is required per Section 7.2

5. *Identify any known issues with source and/or receiving water contamination (e.g., due to the use of reclaimed water) or high concentrations of naturally occurring hazardous substances.*
   - This is an important consideration if there are issues with meeting effluent limitations as required in Section 7.2. If the source water is contaminated, the applicant may wish (if

allowed by permits) to adjust for this to demonstrate compliance with the effluent quality requirements in Section 7.2.

- This information is also relevant and useful to the product inventory required for Material Health for products that contain water (i.e., if water used as a product input is contaminated and contaminants are expected to be present above the inventory threshold for Material Health, then contaminants must be included in the Material Health assessments).
- If there are known issues with contamination of source water, and tap water is provided to employees for drinking, this is important to consider for the Section 7.4 requirements to provide drinking water to all employees. Publicly available information on this issue that is more detailed than that provided in Aqueduct (per #2 above) exists in some locations (e.g., the monitoring and reporting required per the European Union's Drinking Water Directive and The United States Environmental Protection Agency's Safe Drinking Water Information System (SDWIS)).

6. *Describe any known issues with soil contamination, erosion, or other types of degradation at the site.* Suggested references for identifying issues (a non-exhaustive list):
    - European Union references:
        - European Soil Data Centre
    - United States references:
        - US EPA, Cleanups in My Community Maps, Toxic Release Inventory (TRI), and
        - Phase 1 Environmental Site Assessment guidance (available through the US EPA Brownfields All Appropriate Inquiries site, several individual US states, and also per ASTM E1527).

7. *Determine if the facility is potentially impacting any sensitive ecosystems, protected areas, or similar.*

    A sensitive ecosystem is defined as an ecosystem that supports high species diversity and/or endemic species that is at risk due to land use and other pressures (e.g., ecosystem remnants).

    Suggested references (a non-exhaustive list):

    - Ramsar listed wetlands
    - International Union for Conservation of Nature (IUCN) Red List of Ecosystems
    - IUCN World Database on Protected Areas

Characterizing Water and Soil Issues for the Product

For the product: Identify the use cycle stage(s) responsible for the majority of water quantity and quality related impacts. Describe the impacts of concern.

Indicate the life cycle stage(s), type of impact(s), and provide supporting reference(s). Include a description of the issues of concern for the particular product type. For example, for products made from biological materials that require irrigation and chemical inputs in the growing stage, the majority

of impacts are likely due to agricultural production. The response to this question may be based on information available for the product and industry in general (e.g., per life cycle assessments conducted on similar products or for the product's primary inputs).

Silver level: Characterizing Water and Soil Issues for Suppliers

For Silver level it is required to *characterize water and soil related issues at select tier 1 supplier facilities. For facilities of tier 1 suppliers using high volume or pollutant intense processes to produce key materials that make up ≥ 25% of the product by weight or by cost, or for all tier 1 suppliers:*

1. *Determine the basin/catchment/watershed name.*
2. *Identify risks to water quantity (including baseline water stress) and water quality, and risk of unimproved or no access to drinking water and sanitation as defined by the most recent version of the World Resources Institute Aqueduct database or equivalent.*

The references noted above for final manufacturing facilities (for requirements #1-2) may be applied to tier 1 suppliers of key materials. Tier 1 suppliers are defined as suppliers to the final manufacturing stage, including in cases where the applicant is not the final manufacturer (e.g., if the applicant is a brand that uses contract manufacturing, the direct suppliers of the contract manufacturer that provide input materials to manufacture the certified product are tier 1). The final manufacturing stage is defined in Cradle to Cradle Certified Final Manufacturing Stage Process Definitions.

Key materials are defined below. Note that the requirement pertains to *suppliers using high-volume or pollutant intense processes.* This means that if it can be demonstrated that tier 1 suppliers do not carry out any high volume and/or pollutant intense processes (as listed in the *Cradle to Cradle Certified® Water & Soil Stewardship – Key Materials* reference document), then the requirement does not apply – even if they are tier 1 and produce key materials that make up ≥ 25% of the product by weight or by cost. Refer to the Key Materials guidance below for additional information on how to identify key materials in scope.

Identifying Key Materials in Scope

A key material is defined as a material that is typically produced using a high-volume water use process or a pollutant-intense process (see Cradle to Cradle Certified® Water & Soil Stewardship – Key Materials reference document for the list of applicable materials and processes).

The key materials in scope for the Water & Soil Stewardship requirements must be determined at the generic material level (e.g., if several aluminum parts are used, the total weight of aluminum applies). Any key material, when aggregated by generic material type, that is ≥ 25% of the product by weight or by cost is in scope. If there are no key materials present at ≥ 25% when aggregated by generic material type, but the sum of all key materials is ≥ 25%, the requirements for key materials must be applied to the key materials representing the highest weight or cost fractions of the product until < 25% of the product includes key materials to which the requirements have not been applied. If the 25% threshold is met

when using only weight or only cost, then the metric that results in meeting the 25% threshold must be used.

Alternative: Water and soil conservation (quantity and quality) impact hotspots, identified based on conducting a life cycle assessment per ISO 14040, may be used instead of key materials that make up ≥ 25% of the product by weight or by cost for all Water & Soil Stewardship requirements applying to key materials. The assessment must be verified by a qualified third party.

Further Explanation

Identifying Key Materials and Associated Processes in Scope

Key materials are listed in the Cradle to Cradle Certified® Water & Soil Stewardship – Key Materials reference document, which may be found on C2CPII's website. As noted in the standard, *a key material is defined as a material that is typically produced using a high-volume water use process or a pollutant intense process*. These processes of concern may be occurring at any tier of the supply chain. For example, a garment made from cotton has a key material (i.e., cotton) that is typically produced using high-volume and pollutant intense processes that occur during cotton production. Cotton production may be several tiers removed from the final apparel manufacturer. All wet processing steps associated with production of the garment are also considered typically high volume and pollutant intense. This includes wet processing that occurs during both yarn and textile production.

The steps for identifying key materials that are in scope are as follows:

1. Review the Cradle to Cradle Certified® Water & Soil Stewardship – Key Materials reference document (Key Materials column only) and the product bill of materials and identify the key materials that the product contains. If the product does not contain any of the materials listed, then the next steps in this list do not apply. In addition, any requirement pertaining to key materials in the other sections of the Water & Soil Stewardship category of the standard are not applicable to the product. However, note that nearly all products will contain at least one key material.
2. As noted in the standard, the key materials in scope for *the Water & Soil Stewardship requirements must be determined at the generic material level (e.g., if several aluminum parts are used, the total weight of aluminum applies)*. Therefore, the next step is to sum the percentages, either by weight or by cost, of all key materials of the same generic type* within the product. For liquid formulations, water weight may be excluded from the total product weight prior to making this determination (see below for additional information relevant to formulations). **Once this is done, any key materials present at ≥ 25% of the product by weight or by cost are in scope.** Note that if there are any key materials identified using the weight option, key materials do not have to be identified using the cost option (and vice versa). Applicants are encouraged to select the option that will allow them to most effectively influence and positively impact water relevant issues in the supply chain. **For many products, this will be the last step necessary for identifying key materials in scope;** however, note the following requirements:

- If there are no key materials present at ≥ 25% using the option that was selected initially (i.e., weight or cost), then the other method must be checked as well. Any key materials determined to be present at ≥ 25% based on the alternative approach are in scope.
- If there are still no key materials present at ≥ 25% when using either the weight or cost approach, then the total percentage of all key materials in the product (regardless of the percentage of any individual generic material type) must be determined. This may also be done by either weight or cost initially. If preferred, this approach may be applied before checking weight or cost using the approach as described in #2 above. This may be of interest if cost data cannot be obtained.
- If the total percentage of all key materials is ≥ 25%, then the *key materials representing the highest weight or cost fractions of the product must be selected as 'in scope' until < 25% of the product includes key materials* that will be out of scope. For example, if a product contains three key materials each present at 10% (total 30%), one of these materials must be selected as 'in scope', resulting in 20% of the product with key materials that are out of scope.
- If the total percentage of all key materials is < 25% when determined based on weight and cost, then there are no key materials in scope (with one exception as described in the next bullet). This means that any requirement pertaining to key materials in the other sections of the Water & Soil Stewardship category of the standard do not apply to the product.
- For products that only have key materials in scope when water weight is excluded from the key materials determination (as described in the bullets above), applicants must select at least one key material (based on identifying key materials with water weight excluded) as in scope. Note that this option is only applicable after checking for key materials in scope as described above, including checking for key materials by both weight and cost. It will be unusual to identify a product that falls into this category because, for formulations with a high concentration of water, the value (i.e., cost) tends to be from the other inputs.

Alternative: The standard requires identifying key materials in scope for the product by weight or by cost. The process described above for identifying key materials in scope assumes that this will be determined separately for each product within a product group. This approach ensures that the requirements are met for each individual product variation included on a certificate. As an alternative to the process described above, **key materials in scope may be identified for an entire set of products included on a single certificate**. This will require adjusting weights or costs associated with individual inputs in each product using annual sales data. One year of sales data may be used for new/initial certifications. For recertifications, assuming variability in the number of products sold and the amount of materials used over the prior certification period, the prior three years data must be reviewed to check for any changes in total weights or costs. The result of this calculation would be a list of materials by total weight or cost purchased over the course of

a year (or three years for recertification) to produce the product group. This list would then be put through the process described above. Referring to the first steps in #2, any key materials present at ≥ 25% of the product group by weight or by cost are in scope. The steps that follow apply as well if key materials still have not been identified using this first approach.

3. For each of the key materials determined to be in scope, review the manufacturing, extractive, and environmental processes of concern (column two of the Cradle to Cradle Certified® Water & Soil Stewardship – Key Materials reference document). The following are important to consider at this stage:
    - As noted previously, the processes of concern may occur at any, and at more than one, tier of the supply chain for a given material. For example, if the product is apparel made from ≥ 25% cotton, then wet textile processing occurring at any tier and cotton production will be in scope. If the product is made from a virgin aluminum part making up ≥ 25%, then primary aluminum production processes and bauxite mining will be in scope. If the product is made from virgin fossil hydrocarbon derived polymer(s) making up ≥ 25%, the primary polymer production and oil extraction processes will be in scope.
    - All processes associated with primary production and extraction (i.e., primary production of plastics, crops, material from grazing species, primary metal production, mined materials, oil and gas, and wood) may be considered as avoided if recycled (rather than virgin) material is used. In these cases, the product contains a key material but the processes of concern are not directly attributable to this use phase of the product. In this case, all requirements pertaining to key materials throughout the Water & Soil Stewardship category do not apply – as long as the recycled content verification requirements (i.e., chain of custody documentation) are met per standard Section 5.3 Increasing Demand: Incorporating Cycled and/or Renewable Content and per the associated guidance.
    - Note that all of the processes listed in the Key Materials reference document are typically of concern for these key materials. Demonstrating that the processes of concern do not occur is one method of achieving the requirements pertaining to key materials. If it is possible to demonstrate that in fact the processes do not occur in the specific supply chain of the certified product, then requirements pertaining to key materials throughout the Water & Soil Stewardship category effectively do not apply. If this occurs, it is not required to identify different materials as in scope. Rather, the requirements have been met.

      In a simple example, a product contains 40% recycled plastic. Recycled plastic is a key material in scope (≥ 25% by weight). The concern is that there may be high-volume processes occurring during washing of the post-consumer plastic prior to it being re-pelletized. The recycled material supplier provides evidence demonstrating that the washing water is recycled and that < 100,000 cubic meters of water per year is used in

the washing process. This means that high-volume processes do not occur and that the requirements pertaining to this key material have been met.
In the case of pollutant intense processes, the processes listed in the key materials reference document as pollutant intense usually must not be occurring at all to avoid applying the requirements pertaining to key materials. This is because the methods of showing that such a process is not pollutant intense would typically require taking the same types of actions as required by the standard (e.g., demonstrating that permitted effluent quality limits are met at the relevant facilities).

When applying the Water & Soil Stewardship requirements pertaining to key materials throughout the standard, note that:

- For key materials sourced from more than one supplier, all suppliers are within scope. For a key material that is produced by a supplier at more than one facility, all facilities are within scope unless it can be determined that the material is consistently sourced from only certain supplier facilities.
- Alternatively, for individual key materials sourced from more than one supplier or from more than one supplier facility, the suppliers and facilities providing the majority of the supply are in scope (i.e., suppliers and facilities supplying > 50% of each key material in scope). Facilities in de facto high-risk locations (as defined per Social Fairness Section 8.2 Assessing Risks and Opportunities) and locations with high risk on water quantity and/or quality (as defined per standard Section 7.1 Characterizing Local and Product Relevant Water & Soil Issues), if any, must be selected preferentially for achieving the requirements for the majority of the supply. Exception: Minor and/or back-up suppliers representing ≤ 5% of supply combined may be excluded regardless of risk levels if the requirements are still achieved for the majority of the supply.
- In a few cases the final manufacturing stage definition already includes supplier(s) to the manufacturing facility(ies) responsible for final production. For example, the final manufacturing stage for apparel includes textile dyeing which is often carried out by suppliers to the final cut and sew facility. For cases where the final manufacturing stage definition already includes suppliers to a final production facility, the Water & Soil Stewardship requirements applying to tier 1 suppliers to final manufacturing may be applied only to the suppliers representing the largest share of production. In an example case where there are several suppliers to final production included in the final manufacturing stage, the one supplier providing the highest percentage of material to the final production facility(ies) would be selected. Then, the suppliers to this facility would be in scope for any requirement applying to tier 1 to the final manufacturing stage.

*** Generic material type** is defined as 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.

Key Materials for Formulations

Formulations commonly consist of a list of 'chemicals' (which are all key materials per the Water & Soil Stewardship Key Materials reference document) plus water (which is not a key material). For products of this type, aggregating by generic material type typically will not be relevant. If it is not logical or possible to aggregate by generic material type, the requirement applicable to identifying key materials in scope can be rewritten as follows: *The key materials in scope for the Water & Soil Stewardship requirements are the individual chemical(s) that make up ≥ 25% of the product by weight or by cost. If there are no individual chemicals present at ≥ 25%, the requirements for key materials must be applied to the chemicals representing the highest weight or cost fractions of the product until < 25% of the product includes key materials to which the requirements have not been applied*.

Alternative for Identifying Key Materials and Issues in Scope

The standard provides the following alternative to identifying key materials and associated issues in scope: *Water and soil conservation (quantity and quality) impact hot spots, identified based on conducting a life cycle assessment per ISO 14040, may be used instead of key materials that make up ≥ 25% of the product by weight or by cost for all Water & Soil Stewardship requirements applying to key materials. The assessment must be verified by a qualified third party.* The analysis must include the following impact categories: Resource depletion (water), eutrophication, ecotoxicity. Recommended but not required at this time: Land transformation. For additional information on conducting a hot spot analysis, see standard Section 4.9 Optimizing Chemistry in the Supply Chain. Qualified third parties are defined as life cycle assessment (LCA) practitioners with demonstrated experience conducting LCAs per ISO 14040.

Required Documentation

Bronze level

- A C2CPII Water & Soil Stewardship form for each final manufacturing stage facility (the form is provided to applicants by their Cradle to Cradle Certified assessor). The form includes fields for reporting all of the required information for final manufacturing facilities and tier 1 suppliers. Note: References and relevant supporting documents must be provided and listed in the form(s) in support of all required research.
- If employing an alternative equivalent method of characterizing the water stress level, a description of the method used, references, and rationale for using the alternative, including a comparison of results to stress levels determined per the preferred reference (WRI Aqueduct).

Silver level

- List of key materials for the product including a bill of materials demonstrating how the key materials in scope were identified.
- For any tier 1 suppliers of key materials (or for all tier 1 suppliers*), location, watershed, and risk levels for the required metrics. The Water & Soil Stewardship form also provides a location for determining and reporting this information. Other formats are also accepted.
- If employing the alternative method of identifying key materials: Required documentation for hot spot analysis per standard Section 4.9 Optimizing Chemistry in the Supply Chain, summary of water and soil related hot spots identified, and qualifications of the individual verifying the results.

* If risks are identified for all tier 1 suppliers, and addressing supply chain issues is not a selected method of achieving the Silver level requirements in Section 7.6, it may be most time effective to identify all key materials in the product and base the Silver level strategy on this. If this approach is taken, it will not be necessary to definitively identify key materials and suppliers in scope as defined per Section 7.1 until a decision is made to begin working to achieve the Gold level. In this case, a list of key materials is still required at Silver level, but the bill of materials showing how the key materials in scope were identified is not required until the Gold level.

7.2 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, Silver, and Gold

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. For off-site, independently operated effluent treatment facilities (if any), request data that will demonstrate if the facility is complying with all applicable laws and regulations.

Silver level: For privately owned, off-site, independently operated effluent treatment facilities (if any), treat effluent prior to discharge to the environment and adhere to effluent quality guidelines or regulations. Alternatively, if privately owned, off-site, treatment facilities are out of compliance, create a strategy to address the issue and report on progress at recertification.

Gold level: For government owned, off-site, independently operated effluent treatment facilities (if any), treat effluent prior to discharge to the environment and adhere to effluent quality guidelines or regulations. Alternatively, if government owned off-site treatment facilities are out of compliance, create a strategy to address the issue.

Gold level recertification: For off-site, independently operated effluent treatment facilities (both private and government owned, if any), implement the Silver or Gold level strategy (as applicable) to address any issues with off-site treatment facility compliance.

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 Silver level:

Final manufacturing stage facilities discharging process effluent to a privately owned, off-site, independently operated effluent treatment facility (e.g., central effluent treatment plant or wastewater treatment plant) with at least secondary treatment must demonstrate that the treatment facility is treating the effluent received to quality standards in line with the corresponding regional regulatory (if any) or international guidelines.

If the off-site treatment facility is out of compliance, the issue must be addressed by recertification at the Gold level (see Gold level section that follows).

For the Gold level:

Final manufacturing stage facilities discharging process effluent to a government owned, off-site, independently operated effluent treatment facility (e.g., publicly owned treatment works or wastewater treatment plant) with at least secondary treatment must demonstrate that the treatment facility is treating the effluent received to quality standards in line with the corresponding regional regulatory (if any) or international guidelines.

If the off-site treatment facility is out of compliance, the issue must be addressed by recertification at the Gold 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

Bronze Level

Determining if a Final Manufacturing Facility is Subject to the Bronze Level Requirements

The Bronze level requirements in this section 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.

The requirements in this section do not apply to final manufacturing facilities that (1) do not discharge any manufacturing process effluent, AND (2) depend on independently operated treatment facilities to manage other effluent types (e.g., effluent from toilets and sinks). However, all facilities that discharge effluent to the environment directly (i.e., that do not rely on independently operated treatment facilities), including those that discharge only sanitary effluent (i.e., effluent from toilets and sinks), are subject to the requirements in this section.

Definitions:

- 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.
- Sludge is defined as solid waste produced by an effluent treatment plant.
- 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.

For final manufacturing facilities that are not subject to the Bronze level requirements in this section, a signed statement and evidence that the facility is out of scope are required. Refer to the Required Documentation box below for additional information.

Determining What is Required for Final Manufacturing Facilities In Scope

For final manufacturing facilities that are subject to the Bronze level requirements, what specifically must be done depends on if the manufacturing facility (1) is in a region with leading regulations, (2) discharges directly to surface or ground water (as defined above), and (3) relies on an independently operated effluent treatment facility to treat process effluent. The guidance that follows is categorized according to these three factors. The following definition of "leading regulations" applies:

Leading Regulations: *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, such mechanisms do exist in the European Union and United States. Therefore, **it may currently be assumed that facilities in the European Union, United Kingdom, Switzerland, 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. Other regions may be added to this list upon consultation with and pre-approval from C2CPII.

Requirements for Final Manufacturing Facilities with Direct Discharge that are in Regions with "Leading Regulations"

As noted above, facilities in the European Union, United Kingdom, Switzerland, and the United States are currently assumed to be subject to leading regulations. For facilities with direct discharge in this category, it must be demonstrated that the facility is in compliance with its permitted limits.

Definition of Compliance: Compliance means that the manufacturing facility is adhering to the limitations required by the permit. This must be true currently and for the two years prior to certification. Compliance is more specifically defined per the applicable regulations. 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 two years prior to certification unless it is demonstrated that this issue has been resolved (see the final 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. 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, must be compared to what is allowed according to the permit. Permits and test results must be provided by the manufacturer. Alternatively, the compliance status of manufacturing facilities may be demonstrated based on publicly available information (e.g., through the Enforcement and Compliance History Online (ECHO) database in the United States). If the permit does not require analytical testing to demonstrate compliance, testing also generally is not required for Cradle to Cradle Certified. However, exceptions may arise if the manufacturing facility site visit or other evidence surfaces concerns that do warrant testing beyond the current regulatory requirements.

Requirement for Final Manufacturing Facilities with Direct Discharge in Other Regions (i.e. Without 'Leading Regulations')

For facilities in this category, it must be demonstrated that the facility is in compliance with its permitted limits and that the *parameters addressed in the permit are consistent with leading regulations, international guidelines, or industry best practice.* If the parameters are not consistent, additional work is required as described noted below.

Definition of Compliance: Compliance means that the manufacturing facility is adhering to the limitations required by its permit and/or leading regulations, international guidelines, or industry best practice. This must be true currently and for the two years prior to certification. Compliance is more specifically defined per the applicable regulations, guidelines, or best practices. For example, the International Finance Corporation (IFC) guidelines note that "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."

To determine if a facility in in compliance, effluent test results, summarized as required by the permitting authority or other guidelines (as applicable), must be compared to the allowable limits.

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 below.

*If permits do not exist and the facility is directly discharging to surface or ground water, the same steps apply.

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

Analytical Testing Requirements: 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. 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.

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 7.3 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.

Requirements for Final Manufacturing Facilities Using Independently Operated Treatment Facilities to Treat Process Effluent

The following are required for final manufacturing facilities in this category (regardless of location):

1. *Comply with required pretreatment limits, if any, and*
2. (By Gold level recertification at the latest) *demonstrate that the treatment facility is treating the effluent received to quality standards in line with the corresponding regional regulatory (if any) or international guidelines.* Note: Efforts to achieve this requirement must begin at the Bronze level where it is required to *request data that will demonstrate if the facility is complying with all applicable laws and regulations*.

Complying with required pretreatment limits, if any (Requirement #1):

This means that it must be demonstrated that the final manufacturing facility is complying with any pretreatment limits that it is subject to (e.g., as assigned to it by the independently operated treatment facility).

Definition of Compliance: Compliance means that the facility is adhering to the pretreatment limitations required by the permit. This must be true currently and for the two years prior to certification. Effluent test results, summarized as required by the permitting authority, must be compared to the permit to determine if exceedances have occurred. Alternatively, the compliance status of manufacturing facilities may be demonstrated based on publicly available information. If the permitting authority allows minor exceedances (e.g., exceedances may be limited by number, frequency, and percentage of operating time or otherwise be categorized as of high vs. low concern), such exceedances are also accepted for the purposes of Cradle to Cradle Certified.

Requesting data that will demonstrate if the treatment facility is complying with all applicable laws and regulations:

As noted, the standard requires *For off-site, independently operated effluent treatment facilities (if any), request data that will demonstrate if the facility is complying with all applicable laws and regulations.* Evidence that such a request has been made is required at the Bronze level. The expectation is that by the Silver level this request will be filled for privately owned treatment facilities, and by the Gold level the request will be filled for publicly owned treatment facilities. (Additional time is allowed for publicly owned facilities given it tends to be more difficult to obtain data from such facilities in certain regions.) The obtained information may then be used to determine if the independently owned treatment facility is (or is not) in compliance as described below. If it is not in compliance, the standard requires that a strategy be created by the applicant company to address the issue. Note that evidence of repeated requests and concerted efforts to obtain information about compliance status that are unfruitful will be taken as evidence of the worst-case scenario (i.e., that the independently operated effluent treatment facility is out of compliance).

Demonstrating that the treatment facility is treating the effluent received to quality standards in line with the corresponding regional regulatory (if any) or international guidelines (Requirement #2):

In addition to complying with any pretreatment limits per requirement #1, the applicant is required to determine if the independently operated treatment facility is complying with its own permits. If yes, the requirement has been met. If not, additional action is required as described below. Note that this topic is also addressed in Section 7.1 Characterizing Local and Product Relevant Water and Soil Issues.

Definition of Compliance: Compliance means that the independently operated treatment facility is adhering to the permitted limits. This must be true currently and for the two years prior to certification. 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.

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, in some locations, the compliance status of independently operated treatment facilities may be determined based on publicly available information. For example, in the United States, compliance information is available through Enforcement and Compliance History Online (ECHO),

and in the European Union, via the European Environment Agency (see Urban Wastewater Treatment Map) when updated. For the EU, note that at the time of publishing this guidance only historical data through 2020 were available and so it is currently necessary to obtain compliance information from the relevant treatment plant or local regulatory agency directly. In the interim, for European countries that are listed as having 95% or higher compliance status of treatment plants, and for which the relevant treatment plant is not listed as having been out of compliance per the most recently reported data in WISE Freshwater – Freshwater Information System for Europe, the third-party facility may be

considered as being in compliance unless evidence is available to the contrary (e.g., via local news sources).

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.

Table - Summary of Requirements for Final Manufacturing Facilities in Scope

Note: The table does not include the interim steps to request, obtain, and review data to demonstrate compliance of independently operated effluent treatment facilities (as required at Bronze through Gold levels).

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
Region with leading regulations (e.g., EU, US)	• Manufacturing facility complies with permitted limits.	• Manufacturing facility complies with permitted pretreatment limits, if any. • Independently operated treatment facility complies with permitted limits. If the independently operated treatment facility does not hold a permit, it complies with international guidelines. Required by Gold level recertification at the latest.
Region without leading regulations	• Manufacturing facility complies with permitted limits. • Parameters included in the permit are the same as the parameters in a comparative set of best practice guidelines (if not, additional parameters are added as needed).	

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 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 prior to completion of corrective actions are acceptable.

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 by Gold level recertification at the latest, or otherwise address the issue. 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). 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. Note: Very small/micro companies (defined per the EU Commission as < 10 employees and annual turnover < €10 million) in locations with leading regulations and without pollutant intense or high-volume processes may automatically be assumed to not significantly contribute to any non-compliances that may be occurring at off-site, independently operated effluent treatment facilities. Otherwise, products manufactured in facilities that discharge process effluent to independently operated treatment facilities that are not in compliance (as defined above – see sub-section titled Requirements for Final Manufacturing Facilities Using Independently Operated Treatment Facilities to Treat Process Effluent) are not eligible for recertification at the Gold level.

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
- 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.

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

For all facilities: A signed statement from the applicant or final manufacturer 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 corresponding regional regulatory (if any), international, or industry best practice effluent quality guidelines (as applicable), 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.

For facilities that are not subject to the requirements in this section: A description of how this was determined and any applicable supporting evidence (e.g., process flow diagrams, photos of the facility, and/or reference to a manufacturing site visit conducted for the purposes of Cradle to Cradle certification). Note: A signed statement (per the paragraphs above), a description, and check/verification at the manufacturing facility site visit is sufficient evidence. For sites that are not visited, photos and/or process flow diagrams in support of the signed statement are requested.

For manufacturing facilities subject to the requirements in this section, the following (as applicable):

- A copy of the discharge permit(s) including treatment or pretreatment limitations, and/or other quality guidelines employed (either in place of permits or used to determine consistency) as relevant.
- 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 that are in locations without leading regulations, evidence of 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).
- 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.

<u>If there are off-site independently owned effluent treatment facilities treating manufacturing facility process effluent:</u>

- Bronze level: Evidence of having requested compliance data from off-site, independently operated effluent treatment facilities or evidence of having received or obtained such data. For example, a copy of the relevant email.
- Silver or Gold level (for privately owned and publicly owned facilities respectively):
    - To demonstrate that the treatment facility is treating the effluent received to quality standards in line with the corresponding regional regulatory (if any) or international guidelines, the same methods of verification indicated for manufacturing facilities above apply (i.e., permitted limits or other quality guidelines employed and effluent test results must be provided). Note: For off-site independently owned treatment facilities in locations without leading regulations, it is not required to verify that the parameters addressed in the treatment facility's permit are consistent with leading regulations as is required for manufacturing facilities in locations without leading regulations.
    - Alternatively, if compliance information is publicly available, a printout or screenshot of the data demonstrating regulatory compliance for the off-site facility is acceptable.
    - 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.
- Silver and Gold levels (for privately owned and publicly owned facilities respectively): If off-site, independently operated effluent treatment facilities were found to be out of compliance, a strategy to address the issue.
- Silver and Gold level recertification: Progress update on strategy implementation.

7.3 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.

Facilities that withdraw or purchase ≥ 100,000 m^3 of water per year are considered as having high-volume processes.

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 C2CPII 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.

Facilities with High-volume Processes

The distinction of whether a facility uses high-volume processes is crucial because it affects what is required in other sections of the Water & Soil Stewardship category.

As noted in the standard, *facilities that withdraw or purchase ≥ 100,000 m^3 of water per year are considered as having high-volume processes.* This is regardless of whether they use any of the high-volume processes listed in the *Cradle to Cradle Certified® Water & Soil Stewardship - Key Materials reference document*. For facilities that do use processes listed as high volume in the *Cradle to Cradle Certified® Water & Soil Stewardship - Key Materials reference document*, but that use less than 100,000 m^3 of water per year (as determined per the requirements in this section), the facility is not considered to

have a high-volume process for the purposes of this standard. As noted above, this is a facility level requirement. This means that designation as a facility with high-volume processes applies even if the processes contributing to this designation are unrelated to the certified product.

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.

References:

- Global Reporting Initiative, GRI 303: Water and Effluents
- CDP Water

Required Documentation

- C2CPII 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. Exception: For facilities required to set reduction targets per Section 7.5, at least one year of data are required for initial certification and three years of data for recertification.
- 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 C2CPII Water & Soil Stewardship Form. For facilities in regions without 'leading regulations' (per Section 7.2), include evidence of on-site effluent treatment capacity (e.g., system design specifications and technical manuals).

7.4 Providing Drinking Water, Sanitation, and Hygiene

Intended Outcome(s)

Access to drinking water, sanitation, and hygiene is treated as a basic requirement at the facilities where the product is manufactured.

Applicable Achievement Level(s)

Bronze

Requirement(s)

Provide potable drinking water, adequate sanitation, and hygiene to all workers at all final manufacturing stage facilities.

The following conditions must be met:

1. Potable water must be dispensed using a clean and accessible method.
2. An adequate number of toilets per employee must be provided as required by local regulations or international guidelines if local regulations do not exist. The applicant must ensure that sewered and/or portable toilets:
    a. Provide privacy at all times (i.e., may be locked from the inside).
    b. Are separate for each gender. Alternatively, toilet facilities will not be occupied by more than one employee at a time, can be locked from the inside, and contain at least one toilet.
    c. If portable toilets are provided, they must be vented and equipped with lighting.
    d. Are accessible to all employees including disabled people and people with reduced mobility wherever current employees require such accommodations.
3. Handwashing facilities must be located at or adjacent to each toilet facility and must be equipped with one of the following:
    a. Running water and soap.
    b. Waterless skin-cleansing agents capable of disinfecting the skin or neutralizing the contaminants to which the employee may be exposed.
4. A sanitary method of drying hands after washing must be provided.
5. The applicant must establish and implement a maintenance and cleaning schedule with the goal of ensuring that each toilet and handwashing area is maintained in a clean, sanitary, and serviceable condition (including provision of toilet paper or other hygienic option).
6. Reasonable access to drinking water, sanitation, and hygiene facilities must be provided (i.e., either freely accessible at any time as needed by employees or, at a minimum, readily available upon request).

Further Explanation

The requirements in this section apply to all final manufacturing stage facilities. Note that provision of drinking water, sanitation, and hygiene (WASH) is also addressed in the Social Fairness category. Provision of WASH must be included in the Section 8.2 Human Rights Policy. The policy sets the foundation for many of the other Social Fairness requirements, including those to monitor and verify performance on policy implementation (Section 8.3). The result is that provision of WASH will be verified by a qualified third party at the Bronze level in cases where a final manufacturing facility is in a de facto high-risk location (as defined per the Social Fairness category). Note also that WASH must be included in supplier codes of conduct at the Gold level (per Section 8.6 Management Systems).

Definitions

Adequate Number of Toilets: Requirement #2 specifies that an adequate number of toilets must be provided. If local regulations do not specify this, the following references may be employed for determining what is adequate.

How Many Toilets Should a Workplace Have? (UK Health and Safety Executive)

Occupational Health and Safety Standards, Sanitation (United States Department of Labor)

Privacy: *The applicant must ensure that sewered and/or portable toilets provide privacy at all times (i.e., may be locked from the inside)*. This means that stalls must also have solid doors and partitions (rather than curtains). Per ILO Recommendation R120 "Sanitary conveniences should be so partitioned as to ensure sufficient privacy." Door and partition wall height is not indicated (and may vary by local codes –if regulated). However, if stall partition walls are low enough such that it would be possible for an average height person to see over the top of the partition into the stall, and/or reach over to unlock the door, this defeats the purpose of the locks. In this case, the partition walls must be raised.

Toilet Accessibility: Requirement #2d states that toilets must be accessible to all employees including disabled people and people with reduced mobility wherever current employees require such accommodations. A person of reduced mobility is defined as "any person whose mobility…is reduced due to any physical disability (sensory or affecting mobility, whether permanent or temporary), intellectual disability or impairment, or any other cause of disability, or age,…" per Regulation (EC) No 1107/2006

Sanitary methods of drying hands: This includes provision of air dryers or paper towels. An example of an unsanitary method is provision of a hand towel intended to be used by multiple people prior to washing.

Verification Requirements

The level of verification required in this section of the standard (Section 7.4) depends on the risk level for access to water and sanitation (indicators that must be reported as part of the Characterize Local and Product Relevant Issues requirements in Section 7.1). Exceptions to risk levels as identified per Aqueduct for the purposes of verifying these requirements are as follows:

- Final manufacturing stage facilities in the agricultural sector must be considered high risk regardless of the risk level on access to water.
- If tap water is provided for drinking and local data indicate that tap water is contaminated, verification of provision of clean drinking water as required for high-risk sites (see below) is required regardless of risk level on access to water. Note: One of the topics included in the Characterize Local and Product Relevant Issues (Section 7.1) requirements is to identify any known issues with source and/or receiving water contamination or high concentrations of naturally occurring hazardous substances. This topic is relevant to the issue of tap water contamination and will help to inform whether testing of tap water used for drinking is required.
- **For final manufacturing stage facilities in locations with low or low to medium risk on access** – Verification is per Social Fairness Section 8.3. Monitor and Verify Performance.
- For final manufacturing stage facilities in locations with medium to high, high, or extremely high risk on access (and for the agricultural sector regardless of risk level) – If a qualified third party is required to generate social performance data per the Social Fairness

verification requirements (Section 8.3), provision of drinking water, sanitation, and hygiene (WASH) will be included in the list of priority issues to be investigated. In this case, provision of WASH will be verified as part of the Social Fairness requirements and no further action is required for the purposes of the Water & Soil Stewardship category. Otherwise, it may be verified that the WASH requirements have been met during the manufacturing facility site visit (required for the Bronze level).

- **For final manufacturing stage facilities in locations with medium to high, high, or extremely high risk on access to drinking water –** Quarterly testing of drinking water is required to demonstrate that clean drinking water is provided. Either local or the World Health Organization's (WHO) parameters and limits must be met (see Annex 3, Table A3.3 in the linked reference). Testing may be contracted by the applicant, or if water is purchased and provided within sealed containers, by the drinking water provider.

References

- Guidelines for Drinking-water Quality, 4th edition, incorporating the 1st addendum (WHO, 2017). See Annex 3, Table A3.3
- WASH@Work: A Self-Training Handbook (ILO, 2016)

Required Documentation

- For final manufacturing stage facilities in locations with low or low to medium risk on access, no additional documentation is required beyond what is already specified per the Social Fairness category Section 8.3 Monitor and Verify Performance. Per Social Fairness Section 8.3 Required Documentation, for low risk sites (as defined in Social Fairness) the evidence provided may constitute a sample (e.g., photos of a single toilet and washroom rather than of all toilets and washrooms at a final manufacturing stage facility). However, it is important to note that any corrective action plans (CAPs) applicable to achieving the WASH requirements in this section of the standard must be closed (which is not specifically required in Social Fairness 8.3.)
- For final manufacturing stage facilities in locations with medium to high, high, or extremely high risk on access (and for the agricultural sector regardless of risk level), the following must be provided:
    - Photographs or videos within the facility of all toilets, hand washing areas, and method(s) of providing drinking water – For sites where a site visit is not required (see site visit requirements in the Appendix of this guidance document), it must be possible to link the photos to the facility (e.g., photos must include GPS coordinates or other locational information, or a series of photographs lead from areas of the facility that are

identifiable as being owned by the applicant company to the WASH area). Toilets and sinks must appear to be clean in the photos.
    - Maintenance and cleaning schedules printed on company letterhead.

  Exception: If WASH has been verified by a qualified third party per the Social Fairness Bronze level requirements, no additional documentation is required beyond what is listed in Section 8.3 Monitor and Verify Performance.
- For final manufacturing stage facilities in locations with medium to high, high, or extremely high risk on access to drinking water (or for any location where tap water is provided and there is a history of unsafe tap water), drinking water test results conducted on a quarterly basis and indication of laboratory qualifications.

7.5 Water & Soil Stewardship Strategy

Intended Outcome(s)

A water and soil stewardship strategy is developed, providing an actionable pathway toward operating in a manner that protects water and soil resources.

Applicable Achievement Level(s)

Bronze and Silver

Requirement(s)

Bronze level: Develop a strategy for achieving the Silver level water and soil conservation requirements and report on progress made toward achieving the strategy at each recertification.

Silver level: Develop a strategy for achieving the Gold level water and soil conservation requirements and report on progress made toward achieving the strategy at each recertification.

For the Bronze level, the strategy must be designed with the aim of eventually achieving the Silver level as described in Section 7.6 Water and Soil Conservation.

For final manufacturing stage facilities with high-volume processes that are also in medium- to high-stress locations, the strategy must also include quantitative water use reduction targets, informed by the Quantifying Water Use requirements (Section 7.3), including:

1. Near-term (defined as 0-3 years) and mid-term (defined as 3-20 years) targets.
2. Proposed activities and method(s) for reaching each target.
3. Base year(s) and target year(s) must be indicated.
4. A report of progress made toward meeting the targets that were set at the last certification including percent reductions in use and increases in percent recycling achieved (not applicable for initial certification).

For the Silver level, the strategy must be designed with the aim of eventually achieving the Gold level as described in Section 7.6 Water and Soil Conservation.

All strategies must include specific goal(s) and associated timelines for implementation.

Further Explanation

Determining What to Include in the Strategy

The required strategy applies to final manufacturing stage facilities overall (i.e., not only to the processes used to manufacture the certified product) and to key materials in scope (as determined per Section 7.1 and applicable specifically to the product). However, note that the strategy may be developed by the applicant company, including in cases where the applicant company is different from the company that owns the final manufacturing facility(ies).

It is necessary to review Section 7.6 Water and Soil Conservation prior to developing a strategy to understand what must be included in the strategy. As part of this, it will be necessary to consider if any final manufacturing facilities are high volume (as determined per Section 7.3), in stressed locations (as determined per Section 7.1 and 7.6), or use pollutant intense processes (using the approach described for Key Materials in Section 7.1, but applied to final manufacturing facilities rather than suppliers in this case). Additional guidance for identifying facilities in scope for this requirement is provided in Section 7.6.

As noted above, the requirements apply to the facility. This means that even if the certified product does not require any water use, but the facility overall is considered to be a high-volume facility (per Section 7.3), requirements pertaining to high-volume facilities in this Section (7.5) and in Section 7.6 Water & Soil Conservation must be met. In addition, if production of the certified product does not include pollutant intense processes, but such processes do occur at the final manufacturing stage facilities, then requirements pertaining to facilities with pollutant intense processes in this Section (7.5) and in Section 7.6 Water & Soil Conservation must be met.

The standard requires that *the strategy must be designed with the aim of eventually achieving the Silver level* or *Gold level* (for Bronze and Silver respectively). This means that strategies are expected to include planned actions that will directly address and positively impact the identified issue(s). A strategy to only look into/research what might be done to address an issue is not sufficient. For example, a strategy to only research methods of reducing water use is not a sufficient strategy for addressing high-volume water use and will not be accepted. Conducting research may be included in the strategy, but the strategy must also include plans to tangibly act on the results of the research.

Setting Targets for Facilities with High-volume Processes in Stressed Locations

Note that the requirement to set targets to reduce water use for facilities of this type is unique to this section of the standard (i.e., this is not referenced in Section 7.6 Water and Soil Conservation). When setting targets, it is recommended that mid-term targets be set at no more than 15 years out from the current date and that the *projected change in water stress* metric (per Section 7.1) be used to inform the

ambition of the targets and prioritize actions. Targets are required until the Gold level is achieved or until the facility is no longer classified as high-volume (i.e., with ≥100,000 m^3 per year withdrawn and/or purchased) and in a medium to high stress location.

Facilities with high-volume processes in stressed locations that have already fully implemented technologies or best practices leading to the maximum feasible water use reductions as required for the Gold level per standard Section 7.6 Water and Soil Conservation are not required to set quantitative targets as part of the strategy.

Developing a Strategy for Issues Occurring in the Supply Chain

Including supply chain issues in the strategy is optional at the Bronze level. Further, Silver level strategies may include supply chain issues in a general way (i.e., they do not need to be specific to each supplier of key materials in scope).

The methods of achieving the Gold level requirements applicable to key materials in scope (and the associated suppliers) as described in Section 7.6 Water and Soil Conservation should be reviewed when developing the strategy. In addition, it is important to note that the use of recycled material is a method of avoiding the need to address high-volume and pollutant intense processes associated with initial resource extraction or raw material production. For example, for a product that is 100% metal, if it can be demonstrated that > 75% is recycled content, then the requirements to address high-volume and pollutant intense processes associated with metal ore mining and primary metal production will not apply.

In the case of an opaque supply chain, the strategy could include elements that align with similar requirements in the Social Fairness category (Section 8.3, Gold level) as follows: (1) 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 (or work to identify a supply chain that can be traced), (2) Establish how to mitigate the negative impacts, and/or (3) Participate in a stakeholder initiative actively working to address the issues.

Required Documentation

- List of final manufacturing stage facilities and indication if they are high volume, pollutant intense, and/ or in a stressed location (this may be provided via the Water & Soil Stewardship forms).
- A documented strategy that includes all required points applicable to the desired achievement level per this section (7.5) and per Section 7.6 Water and Soil Conservation. All strategies must include specific goal(s) and associated timelines for implementation.
- At recertification, a progress report.

7.6 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, and
2. Take at least one additional action to conserve water and/or soil at final manufacturing stage facilities or in the supply chain.

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 key materials that make up ≥ 25% of the product by weight or 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, and
3. For at least one final manufacturing stage facility, one of the following requirements must also be met
    a. For 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, or
    b. For 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, or
    c. For 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, or
    d. For final manufacturing stage facilities with pollutant-intense processes, technologies or best practices leading to the maximum feasible improvement in effluent quality must be

implemented.

As an alternative to one final manufacturing stage facility complying with one of the requirements (#3 a-d) above, one of the Gold level requirements for one key material that makes up ≥ 25% of the product by weight or by cost must be implemented. (Note: This alternative is optional at the Silver level. If there are no final manufacturing stage facilities in scope for the requirements (#3 a-d) listed above, this alternative compliance pathway is not applicable.)

High-volume and pollutant-intense processes by material type are listed in the Cradle to Cradle Certified® Water & Soil Stewardship – Key Materials reference document. Stress level is defined using the baseline water stress metric first referenced in Section 7.1. Other methods of identifying stress level may be considered on a case-by-case basis.

Further Explanation

Achieving the Silver level

In addition to implementing *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*, it is required to also *take at least one additional action to conserve water and/or soil at final manufacturing stage facilities or in the supply chain.* This is further defined in #1-3 (including #3a-d) for the Silver level. Notice that in #1-3, only final manufacturing facilities are mentioned, and not the supply chain. The supply chain (i.e., key materials) is noted as part of the alternative, which states: *As an alternative to one final manufacturing stage facility complying with one of the requirements (#3 a-d) above, one of the Gold level requirements for one key material that makes up ≥ 25% of the product by weight or by cost must be implemented.* This means that working on issues with key materials is an alternative/option only at this point. If there are not any final manufacturing facilities in scope for the requirements applicable to them as stated, then the requirements simply do not apply. In other words, it is not required to work in the supply chain (on key materials) at the Silver level. This is true in all cases, including when none of the Silver level requirements apply to final manufacturing stage facilities. Key materials are as defined in Section 7.1 and include supply chain issues at all levels going back to initial resource extraction.

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 use pollutant intense processes. The level of action required depends on achievement level and, for water use reductions, the level of water stress. As noted in the Strategy section (7.5), 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 7.3 Quantifying Water Use. As noted in Section 7.3, final manufacturing facilities that withdraw or purchase ≥ 100,000 m^3 of water per year are considered as having high-volume processes.

Facilities in Water Stressed Locations – The water stress level for all final manufacturing facilities was determined per the requirements in Section 7.1 Characterizing Local and Product Relevant Water and Soil Issues. 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 – Final manufacturing stage facilities producing materials associated with pollutant intense processes are defined as facilities that produce one or more of the

materials listed in the *Cradle to Cradle Certified® Water & Soil Stewardship - Key Materials reference document* using one or more of the listed pollutant intense processes.

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 guidance document. The sections relevant to water in the European Union's Reference Documents on Best Available Techniques will also be of use if available for the applicable industry.

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).

For key materials that make up ≥ 25% of the product by weight or by cost:

1. For forest and agricultural raw materials (excluding untraceable commodity type agriculturally derived material, e.g., ethanol):
    a. The material must be certified to a C2CPII-recognized standard that addresses the processes of concern (per the Cradle to Cradle Certified® Water & Soil Stewardship – Key Materials reference document) or an equivalent alternative to certification must be in place.
    b. Alternatively, for the Gold level (i.e., not an option for the Platinum level), the following are required:
        i. 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.
        ii. The explanation must be reported publicly.
        iii. 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.

iv. For recertification:

1. The applicant must demonstrate progress toward achieving the objectives.
2. A description of progress made must be reported publicly.

Further Explanation

The requirements in this section apply to the key materials in scope as determined per Section 7.1

Using C2CPII-recognized Certifications for Forest and Agricultural Raw Materials

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: The Cradle to Cradle Certified® Water & Soil Stewardship - Key Materials reference document indicates that 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 C2CPII-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-Recgonized 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 guidance document 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 #1b may be applied. In this case the limitation(s) identified will be publicly reported via the C2CPII Version 4.0 certification 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 a de facto high-risk location (as

defined for Gold level in Social Fairness Section 8.3) must be certified to a standard that also addresses child labor. Organic standards (e.g., India organic regulation, China organic regulation) do not sufficiently address child and forced labor issues during the cotton production phase where these issues are high risk. See Social Fairness Sections 8.2 and 8.3 for additional information.

The requirements in this section apply specifically to the raw material production phase. It may also be necessary to address additional processes that are used 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 per the *Cradle to Cradle Certified® Water & Soil Stewardship - Key Materials* reference document. To address wet processing steps, applicants may choose from the options described in the next section of the standard (i.e., Requirement #2a-c).

2. For other material types:
    a. A C2CPII-recognized certification or alternative that addresses the processes of concern must be in place (the alternative described in 1b above may be applied), or
    b. The applicant must be actively involved with a multi-stakeholder group working to address the processes of concern, or
    c. The applicant must work directly with suppliers of key materials to implement the Water & Soil Stewardship requirements (per the Alternative for Key Materials section below).

Alternative for Key Materials: Working with Suppliers to Implement Water & Soil Stewardship Requirements

The following receives credit as an alternative to using certified materials, implementing alternatives, or working with a multi-stakeholder working group to address water- and soil-related issues of concern:

For the Gold level, suppliers of key materials must fulfill the following requirements:

1. Local and Product-Relevant Water and Soil Issues must be characterized (per Section 7.1).
2. For supplier facilities producing key materials 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.
3. For supplier facilities producing key materials associated with pollutant-intense processes:
    a. The Effluent Quality Compliance requirements must be fulfilled (per Section 7.2), and
    b. At least one technology or best practice leading to improved water and/or soil quality must be implemented.

Further Explanation

Alternative for Key Materials: Working with Suppliers to Implement Water & Soil Stewardship Requirements

One method of achieving the Gold level Section 7.6 requirements pertaining to key materials is for suppliers of key materials to fulfill certain requirements in Sections 7.1, 7.2, and 7.6 as detailed above in #1-3. It is important to note that these requirements must be met at the supply chain tier where the relevant high-volume and pollutant intense processes (as listed in the Key Materials Reference Document) occur. In some cases, this will mean that suppliers beyond those supplying the material directly to the final manufacturing stage, and/or multiple supply chain tiers will be required to meet these requirements (or for the applicant to achieve the requirements through other means as described in the first portion of Section 7.6). For example, for virgin plastics, the polymer production phase and the oil and/or gas extraction phase are both associated with issues of concern. The Section 7.6 requirements must be met for both phases for the applicant product to achieve the Gold level.

Note that when applying the "Alternative for Key Materials" requirements to suppliers of key materials, only #1-7 in Section 7.1, and the Bronze level requirements in Section 7.2 apply. The suppliers of key materials are not required to achieve the requirements for tier 1 in Section 7.1.

Achieving the Alternative for Key Materials by using Cradle to Cradle Certified Inputs

Gold Level

If all key materials in scope for the applicant product are certified at the Gold level, the requirements for key materials have been fully met.

Silver Level

If using inputs certified at the Silver level in the Water & Soil Stewardship category, it will be necessary to determine on a case-by-case basis if the #1-3 "Alternative for Key Materials" requirements have been met.

In most cases, a portion of the #1-3 "Alternative for Key Materials" requirements will have been met for a given key material in scope for which the Silver level was achieved in the Water & Soil Stewardship category. A portion of the #1-3 requirements will have been met if the final manufacturing stage for the input includes (or provides an alternative to) to at least some of the high-volume and pollutant intense processes applicable to the material. Achieving a portion of these requirements allows the applicant to achieve the Silver level requirement in Section 7.6 to *take at least one additional action to conserve water and/or soil at final manufacturing stage facilities or in the supply chain.*

In some cases, the #1-3 requirements will not have been met by the supplier of a key material in scope when the Silver level has been achieved in the Water & Soil Stewardship category. This occurs when the final manufacturing stage for the certified input does not include (or provide an alternative to) any of the high-volume and/or pollutant intense processes applicable to that material (as listed in the Key Materials Reference Document). This is likely to occur for more complex parts that include key materials with associated high-volume or pollutant intense processes that occur only in the supply chain of the part.

In some cases, the #1-3 "Alternative for Key Materials" requirements will have been fully met when the Silver level has been achieved in the Water & Soil Stewardship category. This is true if (1) the final manufacturing stage for the input includes (or provides an alternative to) all of the high-volume and pollutant intense processes applicable to that material (as listed in the Key Materials Reference Document), or (2) if the supplier did address all issues applicable to key materials, but was not able to achieve the Gold level for other reasons. Note that for most materials, issues do occur at the initial resource extraction or production phase and during subsequent manufacturing processes. For example, for a virgin plastic pellet, if the Silver level in the Water & Soil Stewardship category has been achieved, requirements #1-3 in the 'Alternative for Key Materials" will have been met for the primary production phase of the plastic. However, the requirements are unlikely to have been met for the oil/gas extraction phase until the Gold level is achieved.

Bronze Level

For Bronze certified inputs, #1 and #3a of the Alternative for Key Materials requirements will have been met.

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 C2CPII certification report.

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.

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 7.6 for additional information.

7.7 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.

- At the Bronze level, in alignment with leading regulations that aim to protect human health and the environment, the release of well-known toxic chemicals is avoided.
- At the Silver level, chemicals classified as carcinogenic, mutagenic, or reproductive toxicants (CMRs) are not used, or, if these substances are present, exposure to them is unlikely or expected to be negligible. In addition, persistent, bioaccumulative, and toxic (PBTs) or very persistent and very bioaccumulative (vPvBs) substances are not used. The product also does not contain substances that cause an equivalent level of concern or exposure to them is unlikely or expected to be negligible.
- At the Gold level, chemicals used are compatible with human and environmental health according to the Cradle to Cradle Certified Material Health Assessment Methodology. Exposure to hazardous chemicals via product-relevant effluent and sludge is unlikely or expected to be negligible.

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 leading chemical regulations, as defined by the applicable Bronze level regulatory restrictions in the Cradle to Cradle Certified® Restricted Substances reference document. Alternatively, for textile chemical formulations, comply with the Zero Discharge of Hazardous Chemicals (ZDHC) Manufacturing Restricted Substances List (MRSL) or equivalent.

Silver level:

- Define and assess product-relevant process chemicals entering effluent or sludge during the final manufacturing stage and develop a strategy for optimization.
- 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 known or suspected to cause cancer, birth defects, genetic damage, reproductive harm (CMRs), or cause an equivalent level of concern, or, if these substances are released, that exposure is unlikely or expected to be negligible, and
  - Are not listed as persistent, bioaccumulative, and toxic (PBTs), 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 the Definitions section).
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 ≥ 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 regulatory restrictions in the Cradle to Cradle Certified® Restricted Substances reference document (see Section 4.1), 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 textile chemical formulations, the product may alternatively comply with the most recent version of the Zero Discharge of Hazardous Chemicals (ZDHC) Manufacturing Restricted Substances List (MRSL) or equivalent. If meeting these requirements via ZDHC conformance, all limits and subject to review limits (if any), per ZDHC apply.

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. CMRs are defined as substances that have received a harmonized classification of Category 1 or 2 in one or more of the CMR endpoints as listed within the EU's Classification, Labelling and Packaging regulation (CLP) Annex VI, or are CMR substances listed on the REACH Candidate list of Substances of Very High Concern (SVHC) for Authorisation (including those on Annex XIV). PBTs, vPvBs, and substances causing an equivalent level of concern are defined per the REACH Candidate list of Substances of Very High Concern (SVHC) for Authorisation (including those on Annex XIV).

For the Platinum level, the "select" suppliers in scope are:

1. Tier 1 suppliers to the final manufacturing stage that produce key materials using pollutant intense processes for materials that are ≥ 25% of the product by weight or by cost, and
2. Suppliers at any tier that use pollutant-intense processes associated with leather, metal finishes, pulp and paper, and textiles that are ≥ 25% of the product by weight or by cost. These pollutant-intense processes are listed in the Cradle to Cradle Certified® Water & Soil Stewardship -– Key Materials reference documents.

For further details on identifying the key materials in scope, see Section 7.1.

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 4.1 Restricted Substances List and 4.6 Using Optimized Materials 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 Definitions section).*
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.

Similar to Section 7.2, if liquid effluent is shipped off-site for treatment and then discharged from the treatment facility, this is considered effluent for the purposes of these requirements.

Bronze Level: Section 4.1 Regulatory Compliance (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 4.1 regulatory 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 are in compliance with leading regulations (i.e., the section of the Restricted Substances reference document applicable to all product

types). 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 and SVHCs 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 and SVHCs 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 SVHCs.

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 CMR and SVHC 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 CMRs and SVHCs 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 *tier 1 suppliers to the final manufacturing stage that produce key materials using pollutant intense processes for materials that are ≥ 25% of the product by weight or by cost.* Tier 1 suppliers to final manufacturing are in some cases tier 2+ to the applicant company (this occurs when the final manufacturing stage includes supplier facilities). Key materials in scope are as identified in Section 7.1. The 'select suppliers' also include *suppliers at any tier that use pollutant intense processes associated with leather, metal finishes, pulp and paper, and textiles that are ≥ 25% of the product by weight or by cost.* 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 (i.e., 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 non-CMR and not a SVHC 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 organohalogens 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 organohalogens 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 Restricted Substances List Compliance, 4.3 Material and Chemical Inventory, and 4.4 Assessing Chemicals and Materials. The same requirements apply to Water & Soil Stewardship Section 7.7.

7.8 Transparency

Intended Outcome(s)

Water use and effluent quality data for final manufacturing stage facilities are available to stakeholders, demonstrating the manufacturer's commitment to water stewardship.

Applicable Achievement Level(s)

Silver and Platinum

Requirement(s)

Silver level: Make water use data for final manufacturing stage facilities available to stakeholders.

Platinum level: Make effluent quality data for the final manufacturing stage facilities available to stakeholders.

The data must include:

1. For the Silver through Platinum levels, withdrawals by source and stress level, consumption, and discharge by level of treatment and destination.
2. For the Platinum level, effluent quality test reports as required for verification of the Effluent Quality Compliance requirements (see Section 7.2).

Further Explanation

The Silver level transparency requirements apply to all final manufacturing facilities, including those that only use water for sanitary and hygienic purposes (e.g., toilets and sinks). The data required for achieving the Silver level transparency requirements will have already been collected per the requirements in Section 7.1 Characterizing Local and Product Relevant Water & Soil Issues (i.e., water stress level data) and 7.3 Quantifying Water Use.

Note: Companies may be disclosing this information for the company overall (i.e., encompassing all owned and all operated facilities). This disclosure receives credit if all required types of data are included in the disclosure and the data includes all final manufacturing stage facilities. If some of the final manufacturing facilities are owned by suppliers/contract manufacturers, data must also be disclosed for these additional facilities.

The Platinum level requirements apply to all final manufacturing facilities except the facilities that are not required to comply with the requirements in Section 7.2 Effluent Quality Compliance, which are the facilities that do not release any process effluent and depend on independently owned treatment plants to treat all other effluent (e.g., effluent produced from toilets and sinks). The data required for achieving the Platinum level transparency requirements will have been collected per the requirements in Section 7.2 Effluent Quality Compliance. For facilities in locations where data are publicly available via governmental websites or similar, the requirement may be met by directing interested parties to the appropriate source.

Required Documentation

Silver and Platinum levels:

- Evidence of public disclosure of the required data (e.g., a link to the applicant's website, sustainability report that includes the required data disclosure, or a report prepared per GRI 303-Water).

7.9 Positive Impact Project

Intended Outcome(s)

Water and/or soil quality, water quantity, or the health of aquatic and/or soil ecosystems within the catchment(s) where the manufacturer, employees, customers, and/or suppliers are located is improved through initiation or participation in a collaborative project.

Applicable Achievement Level(s)

Gold and Platinum

Requirement(s)

Gold level: Implement a project that will positively impact local and/or product-relevant water or soil issues.

Platinum level: Demonstrate the impact of the positive impact project using quantitative metric(s).

The project must:

1. Reach beyond the final manufacturing stage facility and into the value chain and/or local community and aim to positively impact aquatic and/or soil ecosystems, local communities, water and/or soil quality and/or water quantity within the catchment(s) where the manufacturer, employees, customers, and/or suppliers are located.
2. Include direct involvement by company employees and/or senior management.
3. Address one or more of the issues identified in the Characterize Local and Product-Relevant Water and Soil Issues requirement (Section 7.1) or otherwise be material to the applicant company.

Further Explanation

The requirements in this section apply to the applicant company.

Selecting a Positive Impact Project

Applicants are highly encouraged to select positive impact projects that focus on issues identified in the Characterize Local and Product Relevant Water and Soil Issues requirement (Section 7.1). If the project selected focuses on an issue separate from those identified in Section 7.1 (i.e., otherwise material to the company as permitted in requirement #3), the applicant must provide an explanation of how this issue was chosen and the explanation must demonstrate that the project is relevant to at least one stakeholder group (e.g., employees, local communities, customers, suppliers, other species, or entire ecosystems).

Example projects include:

- Participation in collective action projects, if any are occurring locally. May include partnering with NGOs (e.g., WWF) focusing on water issues.
- Participation in water stewardship industry initiatives (e.g., working to innovate solutions to product relevant water issues such as microfiber pollution for synthetic textiles).
- Participating in a local wetland restoration project.
- Working with local conservation organization(s) to advocate for increased protection of upstream forest cover (which is relevant to preserving water quality).
- Providing drinking water and/or sanitation to the local community when there is lack of access.

Actions that occur only once (e.g., a single volunteer engagement) will not receive credit. Once implemented, the project must be ongoing with actions occurring regularly (annually at a minimum). A project that has not yet been implemented (i.e., is only in the planning stage) does not receive credit. The project must go beyond simply making donations unless it is demonstrated that donations occur

annually, are ≥1% of company profits (e.g., 1% For the Planet), and employees have have had the opportunity to provide input or make suggestions on the project(s) to support.

Selecting Key Performance Indicators

See the Social Fairness category Section 8.8 Silver level for guidance on selecting key performance indicators. This guidance also applies to the Water & Soil Stewardship category.

Incorporating Employee Input

See the Social Fairness category Section 8.8 Silver level for guidance on incorporating employee input. This Guidance also applies to the Water & Soil Stewardship category.

Platinum Level: Assessing and Demonstrating Impact

See the Social Fairness category Section 8.8 Gold level for guidance on demonstrating impact. This guidance also applies to the Water & Soil Stewardship category.

Required Documentation

Gold Level:

- Description of which issue(s) or opportunity(ies) are addressed that the applicant company identified from the Section 7.1 Characterizing Local and Product Relevant Water & Soil Issues. If the project focuses on an issue separate from those identified in Section 7.1, an explanation of how this issue was chosen – which must include relevance to at least one stakeholder group, or other species.
- Description of measurable outcomes that are planned for the project, and one or more KPIs that will be tracked before, during, and after the project to demonstrate improvement/change/impact.
- Documentation of employee input received and/or employee engagement process. This could include email communication, meeting notes, or survey responses, etc.

Platinum Level:

- Impact assessment report, including tracking of defined KPI(s) developed at the Gold level, and evaluation of progress since project initiation. The report must demonstrate positive impact via evaluation of the defined KPI(s).

7.10 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)

Platinum

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, determined per the Characterize Local and Product-Relevant Water Issues requirement (Section 7.1) 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 7.2) 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. 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 what 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, www.roadmaptozero.com/post/zdhc-releases-wastewater-quality-review.

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 guidance 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.

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 7.6 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 – NO3 to N2 – 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	Best Available Techniques Reference Documents (European Commission)

			reaction 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 stream 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

			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.	Practices in 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 water emissions), and the amount of chemicals added to process water.	Best Available Techniques Reference Documents (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. ICMM 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 x assessed as defined by the Cradle to Cradle Material Health methodology). For low impact reactive dyes, 50% less salt and soda ash are needed for fixation when compared to conventional reactive dyes. For polyester, select disperse dyes that are used in water free dyeing equipment.	Cattermole Consulting (2018)

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.	

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 and an understanding of the company's risk areas is in place.	●	●	●	●
8.2: Human rights risks are assessed for the applicant company, final manufacturing stage, and direct suppliers to the final manufacturing stage (tier 1). Progress is made on assessing risks beyond tier 1 (i.e., tier 2 and beyond).	●	●	●	●
8.4: A strategy for implementing the human rights policy is developed. At recertification, progress toward achieving the strategy is measured.	●	●	●	●
8.3: For final manufacturing stage facilities, performance against the human rights policy is measured and 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.	●	●	●	●
8.5: Company executives demonstrate commitment and support for establishing, promoting, maintaining, and improving a culture of social fairness.	●	●	●	●
8.3: 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.		●	●	●
8.6: Management systems support the implementation and oversight of the human rights policy within company operations.		●	●	●
8.7: A grievance mechanism permits company employees and other stakeholders to obtain redress for negative human rights impacts.		●	●	●

8.8: The company has implemented a positive social impact project that measurably improves the lives of employees, the local community, or a social aspect of the value chain.		●	●	●
8.9: The company uses open and transparent governance and reporting, making information on how human rights risks are managed and adverse impacts are addressed publicly available.		●	●	●
8.2: Human rights risks are assessed for the product's components and raw materials (regardless of tier).			●	●
8.3: Materials associated with high risk of child or forced labor or support of conflict are certified to a C2CPII-recognized certification program or an equivalent alternative is in place. If a certification program is not available, a traceability exercise is conducted upon recertification.			●	●
8.6: Responsible sourcing management systems support the implementation and oversight of the policy within the product's supply chain.			●	●
8.7: A grievance mechanism permits contract manufacturer employees and other stakeholders to obtain redress for negative human rights impacts.			●	●
8.8: An assessment has been conducted to determine the impact of the positive impact project using quantitative metric(s). Measurable progress is demonstrated at recertification.			●	●
8.9: The company incorporates stakeholder engagement and feedback into human rights risk management. Stakeholder feedback informs strategy and operations.			●	●
8.10: The company is collaborating to develop and scale solutions to an intractable social issue within the value chain of the product.				●
8.11: The company fosters 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.				●

8.1 Human Rights Policy

Intended Outcome(s)

The applicant 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.

The policy must:

1. Establish human rights expectations for the applicant company, the supply chain, communities, potentially affected groups, and other relevant stakeholders.
2. Include the company's commitment to support the following (Note: These are the expectations that must be established and are referred to as "required policy elements" in other sections of the standard):
    a. Elimination of discrimination with respect to employment and occupation including, but not limited to, ethnicity-, race- and gender-based discrimination,
    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 including employer contributions for social security benefits and services,
    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, child care, discretionary income),
    j. Fair and ethical business practices, including anti-corruption/bribery. (Note: In practice, this may be part of a human rights policy or, more commonly, a separate company policy or code.),
    k. Additional priority issues identified in the risk assessment (per Section 8.2), if any.

3. Be formally approved by a duly empowered officer of the applicant company or by the board of directors.

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.

Note: Applicants are encouraged to ensure their policies are in full conformance with the requirements in this section of the standard upon initial certification. However, if one or more of the required policy elements and/or references to the international standards are not included in the human rights policy at initial certification at the Bronze level, a statement indicating that the certification holder's policy has not yet fully met the requirement will appear on the product's page on the Cradle to Cradle Certified Products Registry until the missing elements are included. Any missing elements or standards must be included in the policy by recertification and may be verified as included prior to recertification via an interim assessment review (see program fee schedule for applicable fee and more information). Missing elements or standards are not permitted at the Silver level.

Further Explanation

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 *Corporate Responsibility to Respect* human rights, according to the UNGPs, sets expectations with staff and business partners for the business to have responsibility for human rights in its own operations and throughout the value chain. This applies to all locations where the business has operations or business relationships, including relationships with employees, subcontractors, and the supply chain. This includes actual and potential negative human rights impacts on communities, potentially affected groups, and other relevant stakeholders. While suppliers and other entities are also responsible for respecting human rights, a business must set expectations for all actors connected to its business operations, products and services.

Potentially affected groups, and other relevant stakeholders includes all relevant vulnerable groups. For example, women and girls, children, people with disabilities, minorities, indigenous peoples, migrant workers, older persons, lesbian, gay, transgender, and bisexual persons, etc. Relevant stakeholders also include workers' representatives. 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 in the context of the Social Fairness requirements is an individual whose human rights have been affected by an enterprise's operations, products, or services.

The Responsibility to Respect human rights applies to all businesses, regardless of their size, sector, operational context, ownership and structure.

It is common for corporations to create a human rights policy, human rights statement, and/or responsible sourcing policy for their entire entity, and then cascade those expectations through business relationships. Human rights policies and/or codes of conduct typically stipulate an entity's commitment to respect particular human rights, and stipulate the prohibition of certain human rights infringements. Setting expectations with suppliers typically takes the form of a code of conduct, which suppliers are required to comply with as part of business terms. Often, suppliers may not have their own human rights policies – but their commitments are manifested in their agreement to comply with buyers' codes of conduct.

Cradle to Cradle Certified requires that all of the 'required policy elements' be explicitly included in company policy. It must be clear in the policy that these expectations apply not only to the supply chain, but to the company as a whole, communities, potentially affected groups, and other relevant stakeholders. One common pitfall is for companies to comprehensively require commitment to respect human rights in a supplier code while failing to commit to the same set of issues at the corporate level. The purpose of requiring explicit and direct commitment to all points in the human rights policy section at the company level is to ensure that it is clear to all stakeholders, including suppliers and employees, what the company is committed to and how human rights are defined.

Cradle to Cradle Certified requires the following information be explicitly 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 applicant to fully uphold a higher international standard, the applicant must still seek to respect the international standards to the degree possible.

Note: Stating that the company is guided by the United Nations Guiding Principles (UNGPs) is not sufficient on its own. Policies must also reference the ILO Core Conventions and International Bill of Human Rights. Although the UNGPs do reference international human rights standards, they are not legally binding. More generally, the UNGPs are a set of principles, indicating what "should" be done (which includes respecting human rights as defined in the ILO Conventions and International Bill of Human Rights). Including reference to the ILO Conventions and International Bill of Human Rights directly in company policy is proof that the company is working to implement the principles.

Without the second sentence above ('*Where national law and these international human rights standards differ…"),* It would be possible for a company to note they are guided by the UNGPs while still benefiting from the use of prison labor (such as in the U.S.) 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.

The policy is required to *be formally approved by a duly empowered officer of the applicant company 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 council) 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 in 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.

Finally, note that 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.

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)
- Sedex Supplier Workbook: Chapter 1.3: Freedom of Association and Collective Bargaining (Sedex and Verite, 2014)

Required Documentation

Bronze Level

The applicant company's policy document(s) (i.e., may be covered by one or more documents) that:

- Set expectations for the company and value chain (i.e., supply chain, communities, potentially affected groups, and other relevant stakeholders).
- Explicitly include the company's commitments to all of the required policy elements.
- 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.
- Explicitly specify that where national law and these international human rights standards differ, the higher standard will/must be followed; 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.

- Are approved (i.e., signed either physically/handwritten or digitally) by a duly empowered officer of the applicant company or by the board of directors. Evidence of public disclosure of the policy or policies is accepted as an alternative to signature.
- For Bronze level only: If any policy elements are missing from the policy, public disclosure of the missing elements via C2CPII's product registry.

8.2 Assessing Risks and Opportunities

Intended Outcome(s)

Opportunities for improvement are identified and understood as a result of an assessment of human rights risks.

Applicable Achievement Level(s)

Bronze and Gold

Requirement(s)

Bronze level:

- Assess human rights risks and identify opportunities for improvement for the applicant company, including all final manufacturing stage facilities, and tier 1 suppliers. (Note: Tier 1 suppliers are defined as suppliers to the final manufacturing stage, including in cases where the applicant is using contract manufacturing.)
- Demonstrate ongoing efforts to improve visibility and assess risks within the certified product's supply chain (i.e., beyond tier 1).

Gold level: Assess human rights risks and identify opportunities for improvement associated with the product's components and raw materials (regardless of supply chain tier).

For the Bronze level, the risk and opportunity assessment must include all rights required to be included in the policy commitment per Section 8.1 (see the "required policy elements") at a minimum. The assessment must include:

1. A company-level risk assessment based on conducting desk research, at a minimum, to scope and identify:
   a. Known, likely, and potential human rights risks associated with the applicant company's own operations, final manufacturing stage facilities, the product's supply chain, product use, product cycling, relevant communities, potentially affected groups, and other relevant stakeholders.
   b. Well-known risks associated with the applicant's industry/sector and country(ies) of operation.
2. A tier 1 supplier risk assessment based on knowledge of supplier industry/sector and locations to identify high-risk supplier facilities including those in:

a. Industries/sectors associated with a high risk of human rights violations or other negative human rights impacts.
b. Locations that are reputed to have conflict, corruption, widespread human rights violations, and/or weak governance.
c. De facto high-risk locations, defined as countries that fall below the 65th percentile when taking an average of the six World Bank Worldwide Governance Indicators.

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)

Additional information on human rights is included in Section 8.1 Human Rights Policy.

Identifying Human Rights Risks (Requirements #1-2)

The first steps in conducting the risk assessment are to **identify (1) what human rights and (2) whose human rights are or** may be negatively impacted by the applicant company. The list of human rights that every company is required to include in their human rights policy (per Section 8.1 Human Rights Policy) are human rights that the manufacturing sector commonly impacts. Therefore, the list of issues covered by Section 8.1 Human Rights Policy are expected to be included in the scope of the risk

assessment research. This means that the human rights risks identified and prioritized as part of the risk assessment are likely to include some (if not all) of the issues that are also required to be included in the policy. However, **businesses can have an impact on nearly the entire spectrum of internationally recognized human rights.** Therefore, additional human rights (beyond those required for inclusion in the policy) may also be identified through the required research.

The following references provide comprehensive background information on human rights. The references that are required to be included/referenced in the Section 8.1 Human Rights Policy in all cases are noted by an asterisk (*) below. Note: This list is written from the European perspective. For applicants that are also working to comply with the Corporate Sustainability Reporting Directive (CSRD) all references below should be considered when conducting the risk assessment:

- International Bill of Human Rights*
- Fundamental Conventions of the International Labor Organization*
- ILO Conventions (Full List)
- UN Convention on the Rights of Persons with Disabilities
- UN Declaration on the Rights of Indigenous Peoples
- The European Convention on Human Rights
- The European Social Charter
- The Charter of Fundamental Rights of the European

Company-level Risk Assessment (Requirement #1)

The standard requires conducting *a company-level risk assessment based on conducting desk research, at a minimum, to scope and identify: Known, likely, and potential human rights risks associated with the applicant company's own operations, final manufacturing stage facilities, the product's supply chain, product use, product cycling, relevant communities, potentially affected groups, and other relevant stakeholders.*

All of the following must be included in the scope of the research to identify risks: The applicant company's own (direct) operations (including all owned operations, functions, and divisions such as headquarters, sales offices, retail, transport, etc.), final manufacturing stage facilities (which may be contract manufacturing), the product's supply chain, product use, product cycling, relevant communities, potentially affected groups, and other relevant stakeholders.

Owned operations include operations controlled by the applicant company in both owned and rented facilities. Note that the applicant company is the company that signs the certification agreement and the company listed on the Cradle to Cradle Certified certificate. However, if the applicant company is a subsidiary, requirements pertaining to the applicant company may be met by the subsidiary alone, by the holding company, or by a combination of the two.

Note that for the purposes of Cradle to Cradle Certified, the supply chain aspect of the risk assessment is expected to focus on the certified product at a minimum. This is what will be checked and verified as part of the certification process. However, applicants are encouraged to apply the

broadest scope feasible (encompassing the full value chain relevant to all of the company's products and operations) to ensure the risk assessment identifies all relevant risks. This broad scope is as required to fully align with what is required by the UN Guiding Principles and a variety of due diligence regulations and guidelines. Using a broad scope will also ensure the risk assessment has the highest possible value beyond ensuring that the Cradle to Cradle Certified requirements are met.

The standard also requires that the company-level risk assessment identify *well-known risks associated with the applicant's industry/sector and country(ies) of operation.* Location and industry are important to consider when conducting the research because certain industries and locations are associated with higher risk to human rights than others.

Locational based risks must be assessed for the company's direct operations and for the supply chain of the certified product (as described in the following paragraph for tier 1 and beyond), at a minimum. Locational based risks may be identified at the country level. However, it is recommended to identify risks at a more localized scale if feasible to ensure the risk assessment captures all high-risk issues.

Industry based risks must also be identified. Such risks may apply to any aspect of the company's operations and greater value chain. The United Nations Global Compact Business and Human Rights Navigator provides examples of industry-specific risk factors for some issues. For example, the entire supply chain of the textile and apparel industry is associated with a high risk of excessive working hours, in particular during the beginning of each season when orders increase.

As noted, the standard requires identifying well-known risks associated with the applicant's industry/sector and the supply chain of the certified product. (The latter is further described in the section below regarding tier 1 and beyond.) It is highly recommended to also consider industry-based risks associated with the applicant company's entire supply chain to ensure the risk assessment has the highest possible value. For example, oil and gas and mining are associated with high occupational health and safety risk factors per the Business and Human Rights Navigator. Therefore, a company that uses a high volume of polymers and/or geological materials within its product portfolio should include these risks within the scope of the assessment.

The risks identified are expected to **include both actual and potential impacts on human rights and focus on risk to people**. This is in alignment with the UN Guiding Principles on Business and Human Rights (UNGPs). Risk to people means a focus on the impacts a business can have on employees (including temporary and subcontracted workers), workers in the value chain, local communities, and consumers, and it includes vulnerable and "hard to see" populations such as women, minorities, migrants, and others. It is important to note that risk to people is the primary focus of a human rights risk assessment, although increasingly risk to people and risk to business are aligned.

The risk assessment may be conducted based purely on desk research. It is expected that information be obtained from a variety of information sources. References may include government, private, academic, and civil society sources. Best practice includes risk inputs that include geographic, geo-political, issue-based, emerging topics, stakeholder-informed, and both quantitative and qualitative resources. Examples include the Walk Free Foundation Global Slavery Index, UN Human Development Index, ILO Fatal Injuries Index, Transparency International Corruption Perceptions Index, World Bank Rule of Law Index, among other resources. Applicants can also utilize

databases and/or other information sources in combination with supplier location data, such as Maplecroft, Social Hotspots Database, ELEVATE EiQ, Intertek Inlight, or British Standards Institution SCREEN, among others.

Although it is allowed to conduct the risk assessment based purely on desk research, it is highly recommended to incorporate direct monitoring of red flag indicators into the risk assessment. For example, changes in orders during peak season may indicate an increased risk of adverse impacts occurring.

Tier 1 (and Beyond) Supplier Risk Assessment: Tier 1 suppliers are defined as direct suppliers to the final manufacturing stage of the certified product. The tier 1 risk assessment (per requirement #2 above) is a subset of the company-level risk assessment discussed above. **This portion of the risk assessment requires identifying all tier 1 suppliers and at least some tier 2 (or beyond) suppliers specific to the product by industry/sector (#2a) and location (#2b), and using this information to systematically identify human rights risks (see next paragraph for more information regarding assessing risks in tier 2 and beyond).** In addition, efforts to identify risks beyond tier 1 must also be demonstrated. Under Version 3.1 of the standard, the Social Hotspots Database (SHDB) was commonly used for a similar requirement. The SHDB may be used for Version 4.0 as well. Other references are also accepted, as long as they provide a means of identifying industries/sectors and locations associated with a high risk of human rights violations or other negative impacts, as well as locations reputed to have conflict, corruption, and weak governance. The allowance for some flexibility in how this research is conducted and references used is balanced by #2c, which is that **certain locations are always identified as high risk** (see de facto high-risk locations below). Finally, although the standard includes these specific research requirements applicable to tier 1 and beyond, note that the entire supply chain of the applicant company must still be considered in the risk assessment. However, this may be done more generally than what is required per #2 for the supply chain of the product.

Ongoing Efforts to improve visibility and assess risks within the product's supply chain (i.e., beyond tier 1) must also be demonstrated for the Bronze level and at each recertification. For the initial certification, this means that at least some information regarding tier 2 (or beyond) and the associated risks must be obtained. The same methods as those used for tier 1 apply. This information (along with the tier 1 information) is also subject to requirements #3-6 in this section of the standard. Additional information on this topic is included in a separate 'Further Information' box below.

De Facto High-risk Locations

The following locations are de facto high risk:

Afghanistan, Albania, Algeria, Angola, Antigua and Barbuda, 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, Côte d'Ivoire, Cuba, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, Arab Republic, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Gabon, The Gambia, Georgia, Ghana, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, 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, Marshall Islands, Mauritania, Mexico, Micronesia (Federated States), Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nauru, Nepal, Nicaragua, Niger, Nigeria, North Macedonia, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Puerto Rico, Qatar, Romania, Russian Federation, Rwanda, São Tomé and Principe, Saudi Arabia, Senegal, Serbia, Sierra Leone, Solomon Islands, Somalia, South Africa, South Sudan, Sri Lanka, Sudan, Suriname, Swaziland, Syrian Arab Republic, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, Uzbekistan, Vanuatu, Venezuela, Vietnam, West Bank and Gaza, Yemen, Republic, Zambia, Zimbabwe.*

The risk assessment must identify specific issues. If a risk assessment fails to identify any issues and is submitted for certification, it will not be accepted. If an applicant concludes that there is not a single issue of high importance to employees or to other stakeholders throughout the value chain, the applicant will be required, at a minimum, to examine more thoroughly the employment and community issues in the headquarters location.

*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 approach is in turn based on the World Bank's Worldwide Governance Indicators. The list above is based on the most recent list of indicators available at the time of writing this guidance (2019).

References

- Declaration on Fundamental Principles and Rights at Work (United Nations, 1998)
- International Bill of Human Rights (United Nations, 1948)
- The Corporate Responsibility to Respect Human Rights: An Interpretive Guide (United Nations, 2012)
- Worldwide Governance Indicators (World Bank, 2022)

3. Identification of human rights due diligence best practices to address the risks. Note: These may be best practices that are already in place, best practices planned for future implementation, and/or best practices employed by others that could potentially be implemented by the applicant in future.
4. Information regarding the actual and potential impacts and importance of risks identified as defined by affected stakeholders, including employees of the applicant company.
5. Prioritization (based on severity and likelihood) of the risks and opportunities for improvement identified. At a minimum, the following must be prioritized:

a. Well-known industry risks,
b. Human rights violations, an
c. Issues where the applicant has substantial leverage to make improvements.

6. Testing the results of the assessment with internal audience(s) to validate the outcome.

Further Explanation

Identifying Human Rights Due Diligence Best Practices (Requirement #3)

Once the full set of human rights risks have been identified as described in the box above (requirements #1-2), the next step is to identify due diligence best practices for addressing the risks. These may be practices that are already in place, planned for future implementation, or that have just been identified as part of the research conducted for Cradle to Cradle certification.

Due diligence is generally defined as **the care that a reasonable person and/or organization exercises to avoid harm to others**. Human rights due diligence aims to prevent and mitigate potential human rights impact(s) in which an enterprise might be involved. The United Nations Guiding Principles on Business and Human Rights (UNGPs) defines human rights due diligence (HRDD) as a) assessing risks, b) managing risks/ impacts, c) tracking effectiveness, and d) communicating how impacts are addressed. HRDD is built into Cradle to Cradle Certified as described below. Therefore, the due diligence best practices identified may generally include actions that also allow for achieving higher levels of certification. Other more specific and targeted approaches will also be relevant, depending on the actual and potential risks identified in the assessment.

a. ***Assessing risks*** **–** This aspect of HRDD is addressed through the other requirements in this section of the standard (i.e., through #1-2, the requirement to demonstrate ongoing efforts to identify risks beyond tier 1, and the Gold level requirement to identify high-risk raw materials and components).
b. ***Managing risks/impacts*** – This is addressed via Section 8.3 Monitor and Verify Performance as well as Section 8.6 Management Systems for direct operations, final manufacturing, and tier 1.
c. ***Tracking effectiveness*** – This requires identifying metrics and/or milestones to track the effectiveness of actions taken as part of managing risks and impacts. Tracking effectiveness requires asking and answering the question: did the actions taken to manage risks and impacts work? This is one aspect of standard Section 8.4 Strategy for Policy Implementation. It is also tied to the Section 8.3 Monitor and Verify Performance requirements, which require measuring performance over time as well as taking corrective actions as needed.
d. ***Communicating*** how impacts are being addressed – This includes both internal and external communication. External communication is a requirement of standard Section 8.9 Transparency and Stakeholder Engagement. Examples of how and where companies may already be communicating this information externally include Modern Slavery Act Statements and Corporate Social Responsibility Reports.

Example of due diligence practices: A human rights policy or code may be used as a tool to identify

risks (i.e., the policy sets expectations and provides the list of issues that will be tracked and managed), while audit reports and corrective action plans may be employed as a means of both managing and tracking human rights policy/code violations over time if combined with method(s) of measuring effectiveness and a tracking system.

Collecting Information Regarding the Impact and Importance of Risks as defined by affected stakeholders, including employees of the applicant company (#4): This type of information is ideally gathered directly in consultation with stakeholders, including employees, but may also be gathered indirectly from publicly available information (e.g., labor organizations/trade unions, human rights watch groups and defenders, and grassroots organizations). The information obtained on the impact and importance of risks may help to refine the risk assessment (requirements #1-2) and inform prioritization (requirement #5) as described below.

Prioritizing Risks (Requirement #5)

Cradle to Cradle Certified requires that the following types of risks be prioritized for action, at a minimum: Well-known industry risks, human rights violations, and issues where the applicant has substantial leverage to make improvements. More generally, prioritization is to be done per the UNGPs, which expect an organization to review all potential impacts based primarily on severity. Severity is defined by how grave, widespread, or difficult to remedy the impact would be: "Severity of impacts will be judged by their scale, scope, and irremediable character." The UN's Corporate Responsibility to Respect Human Rights Interpretive Guide further explains: "This means that its gravity and the number of individuals that are or will be affected (for instance, from the delayed effects of environmental harm) will both be relevant considerations. 'Irremediability' is the third relevant factor, used here to mean any limits on the ability to restore those affected to a situation at least the same as, or equivalent to, their situation before the adverse impact."

Per UN Guiding Principles Reporting Framework: "An understanding of a company's salient human rights issues is built on a process by which the company:

- identifies the full range of human rights that could potentially be negatively impacted by its activities or through its business relationships:
  - involving all relevant functions and units across the business;
  - informed by the perspectives of those who may be negatively impacted;
- **prioritizes** potential negative impacts for attention:
  - primarily based on their potential severity, as defined in the UN Guiding Principles, namely:
    - **how grave** the impact would be;
    - **how widespread** the impact would be;
    - **how hard** it would be to put right the resulting harm;
  - secondarily based on their **likelihood**, retaining due attention to high-severity, low-likelihood impacts;
- engages with internal and external stakeholders to explain its conclusions and check whether any considerations have been missed."

Note: If all of the high risks identified will be prioritized, the process above is not necessary or required.

Testing the Results of the Risk Assessment (Requirement #6)

Cradle to Cradle Certified requires the results of the risk assessment (at a minimum) to be tested with internal audiences. This may (for example) be done through an internal survey to gather input and reactions to the assessment and identify any gaps. Internal audiences must include a representative sample of company employees from various business units and functions (e.g., sustainability, marketing, legal, procurement, human resources, finance, audit, operations, etc.), including managerial and non-managerial roles. Employee representatives can also be included such as trade unions or other representatives.

While not a requirement, it is good practice to also test the results of the risk assessment with external stakeholders. The UNGPs expect that businesses engage with affected stakeholders and/or their representatives. The following definitions are provided.

- **Affected** stakeholders can include employees, contract workers, workers in the supply chain, and community members or groups located where the applicant company operates or its products are produced. Stakeholder representatives are groups that represent affected persons, which can include unions, employee or worker committees, and community groups. Affected stakeholders can be either internal or external stakeholders.
- **Internal stakeholders** are typically anyone employed directly by the company and contract employees.
- **External stakeholders** can include suppliers, communities, buyers, investors, civil society organizations, customers, and end-users of products.

Additional Guidance: Obtaining a Deeper Understanding of Human Rights Issues

Most human rights issues are complex and require deeper understanding, as outlined in the ILO Core Conventions or other explanatory resources provided in this User Guidance. Companies looking to deepen their knowledge and management approach are encouraged to conduct further research and/or engage with peer companies, respected industry initiatives, and other stakeholders. Some examples include:

- Further research into understanding ***drivers of forced labor*** – for example, the ILO has defined 11 indicators of forced labor, which include abuse of vulnerability, deception, restriction of movement, isolation, physical and sexual violence, intimidation and threats, retention of identity documents, withholding of wages, debt bondage, abusive working and living conditions, and excessive overtime. See ILO Indicators of Forced Labour.
- Calculating and implementing a ***living wage*** – A living wage goes beyond the legal minimum wage. The Global Living Wage Coalition (GLWC) defines a living wage as "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." At the time of writing this User Guidance, there was no single agreed upon method of defining living wage, and therefore its implementation varies. The GLWC has a series of case studies on its website of how to calculate and implement a living wage. Note that it is a requirement for all companies with Cradle to Cradle Certified product(s) to commit to providing a living wage in the human rights policy (see Section 8.1). Implementing a living wage is a requirement for Platinum level certification (see Section 8.11).

- Considering the nuances of ***freedom of association and collective bargaining*** in locations where the relevant ILO Core Conventions C087 and C098 (respectively) have not been ratified – this applies to countries such as Bahrain, Oman, Qatar, Saudi Arabia, United Arab Emirates – where trade unions are banned completely; and in China and Vietnam, where unions are government controlled and not independent. If ILO member states have not ratified either of these Core Conventions, they are still bound to uphold freedom of association and the right to collective bargaining through the 1998 ILO Declaration on Fundamental Principles and Rights at Work. The Sedex Supplier Workbook provides practical guidance on situations where country law prohibits or limits workers' rights to freedom of association and to bargain collectively; in these scenarios, "companies must make sure that their practices do not prevent workers from forming or joining legally acceptable worker organisations. For example, companies must not pressure workers to join a company-controlled organisation in place of an organisation created by and controlled by workers." See also the ILO list of ratifying countries by Convention.
- Understanding ***excessive overtime*** – Working hours are a fundamental component of safe and humane working conditions. Weekly rest and paid annual leave are expected as a normal part of working agreements, typically required by national and local law, and must be provided to employees as part of their benefits. The first ever ILO Convention (CO1) in 1919 focused on working hours, stipulating a maximum of 48 hours per working week (typically 8 hours per day, for 6 days). While this convention was initially written for industry, ILO Convention 30 makes it clear the expectation applies to Commerce and Office environments as well. ILO Convention 14 stipulates workers are entitled to at least one rest day – which is defined as a continuous period of at least 24 hours each week. Overtime is the number of hours worked beyond the maximum allowed by week (8 hours per day), or 48 hours per week. National laws can vary from international standards. Peak production periods also show that many suppliers do not adhere to these expectations on a continuous basis.

Alignment with the Corporate Sustainability Reporting Directive (CSRD)

Companies that must comply with the Corporate Sustainability Reporting Directive (CSRD), are required to conduct a double materiality assessment. Double materiality looks at both impact materiality (i.e., risk to people) and financial materiality (i.e., risk to the business). Cradle to Cradle Certified requires looking only at risk to people (in the Social Fairness category) and risk to the

environment (in the Environmental Policy & Management section). More specifically, the CSRD requires *undertakings to report both on the impacts of the activities of the undertaking on people and the environment, and on how sustainability matters affect the undertaking. That is referred to as the double materiality perspective, in which the risks to the undertaking and the impacts of the undertaking each represent one materiality perspective. The fitness check on corporate reporting shows that those two perspectives are often not well understood or applied. It is therefore necessary to clarify that undertakings should consider each materiality perspective in its own right, and should disclose information that is material from both perspectives as well as information that is material from only one perspective.* Further, per the CSRD and related guidance developed by EFRAG, companies are required to report actions taken to address issues that affect financial performance and external impact. Again, this is different than what is described above for Cradle to Cradle Certified, in which financial materiality is not considered.

Please refer to the Corporate Sustainability Reporting Directive and related standards and guidance developed by EFRAG for further information on the regulation.

A detailed comparison of Cradle to Cradle Certified and the CSRD on a per requirement basis is available on C2CPII's website. This document will provide companies with guidance on how their Cradle to Cradle certification supports this effort (and vice versa).

References

- Implementing Human Rights and Environmental Due Diligence (HREDD) – A Guide for Small- and Medium-sized First Buyers (Fairtrade, 2023)
- The Corporate Responsibility to Respect Human Rights - An Interpretive Guide (United Nations, 2012)
- Guiding Principles on Business and Human Rights (United Nations, 2011)
- Human Rights Due Diligence in High Risk Circumstances: Practical Strategies for Businesses (Shift, March 2015)
- OECD Due Diligence Guidance for Responsible Business Conduct (OECD, 2018)
- UN Guiding Principles Assurance Guidance (Shift and Mazars, 2017)
- UN Guiding Principles Reporting Framework with Implementation Guidance (Shift and Mazars, 2015)

Ongoing efforts to improve visibility and assess risks within the product's supply chain based on increasing knowledge of tier 2 (and eventually beyond tier 2) supplier industry/sector(s) and location(s) as described in #2 above for tier 1 must be demonstrated. If new risks are identified, #3-6 above also apply. For supplier locations that have not yet been identified, if there is a chance that the location is high risk, then it must be considered de facto high risk until shown otherwise. Identification of the locations of these potentially high-risk suppliers must be prioritized.

Further Explanation

Ongoing Efforts to Improve Visibility and Assess Risks

As noted previously, ongoing efforts to improve visibility and assess risks within the product's supply chain (i.e., beyond tier 1) must also be demonstrated for the Bronze level and at each recertification. For the initial certification, this means that at least some information regarding tier 2 (or beyond) and the associated risks must be obtained. The same methods as those used for tier 1 apply. This information (along with the tier 1 information) is also subject to requirements #3-6 in this section of the standard. Ongoing efforts are required until the entire supply chain has been mapped, to the degree possible.

An applicant company's risk assessment must be updated at each recertification (i.e., every three years), and the results must be used to determine if any changes to the policy, policy implementation, or risk assessment are needed. This might be the result of emerging issues that have arisen since the policy was created or last risk assessment was conducted. For supply chain risks, the applicant must review at a minimum if its supplier locations have changed, and if so then risk assessment for those suppliers must be updated. In addition, if updates have been made to the data sources used, then it will also be necessary to update the results (e.g., the US Department of Labor reference required for identifying materials associated with a high risk of child labor or forced labor at the Gold level as described below is updated every year).

Gold level: Assess human rights risks and identify opportunities for improvement associated with the product's components and raw materials (regardless of supply chain tier).

For the Gold level, high-risk components and raw materials must be identified, including the following de facto high-risk items:

1. Materials and components from source countries where there is reason to believe that child labor or forced labor is involved, and
2. Tin, tantalum, tungsten, and gold from conflict-affected and high-risk areas.
3. If new risks are identified, #3-6 above also apply.

Further Explanation

The information that must be obtained for Gold level is considered a more detailed subset of the overall risk assessment described above for the Bronze level. Once this information is obtained, it must also be incorporated into the process of identifying due diligence best practices though testing of results (i.e., requirements #3-6 described for the Bronze level in the section above).

Identifying Materials and Components that are De Facto 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 US 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 US 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.

Identifying Other High-risk Components and Raw Materials

In addition to the de facto high-risk components and materials as identified per the guidance above, the standard requires that *high-risk components and raw materials must be identified* more generally. This aspect of the risk assessment may be conducted based purely on desk research. References may include government, private, academic, and civil society sources. Best practice includes risk inputs that include geographic, geopolitical, issue-based, emerging topics, stakeholder-informed, and both quantitative and qualitative resources.

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

Bronze Level

- Description of the applicant's company-level risk assessment methods and results that demonstrates the risk assessment was conducted using the required scope (per requirement #1a-b) and lists any well-known risks associated with the applicant's industry/sector and countries of operation.
- A list of tier 1 suppliers by location and industry/sector and indication of the high-risk issues for each. (Note: Tier 1 refers to direct suppliers to the final manufacturing stage of the product only.)
- List of de facto high-risk locations for applicant company headquarters, final manufacturing stage facilities, and tier 1). Note: This information for tier 1 may be included with the information required in the bullet above. In addition, there is a column that automatically looks up this information in the Bill of Materials form.
- Evidence of efforts to map risks beyond tier 1.
- References used, including any information obtained (either directly or indirectly) from stakeholders.
- List of due diligence best practices that are or could/will be used to address the identified risks.
- Evidence of prioritization and description of methods used; indication that the issues listed in #5a-c have been prioritized, at a minimum. Note that prioritized issues must be included in the strategy required in Section 8.4.
- Evidence that the results of the assessment have been tested, at a minimum, with internal audiences (e.g., internal survey results).

Gold Level

- List of de facto high-risk components and raw materials and source location(s). If source is unknown, this must be specified.
- List of any additional high-risk components and raw materials and source location(s). If source is unknown, this must be specified. List of references used.
- Evidence that any additional risks identified for the Gold level have also achieved the Bronze level requirements #3-6 (i.e., the last four bullets in the Requirement Documentation section above for the Bronze level).

8.3 Monitor and Verify Performance

Intended Outcome(s)

Performance on upholding human rights is monitored and verified, 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 against the human rights policy 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 against the human rights policy 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 C2CPII-recognized certification (if available) or equivalent that includes performance requirements aligned with the human rights policy.

For the Bronze level:

1. Performance data must be generated and verified by a qualified party.
2. For de facto high-risk locations (defined in Section 8.2), 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).
3. 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.

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., discrimination, excessive working hours), including additional priority issues identified per the risk assessment in Section 8.2 (if any). In addition, performance must be measured on points #2a-g, defined in this section (Section 8.3).

The specific metrics and indicators used to monitor and measure performance are determined by the applicant company. When selecting indicators, consider the UN Guiding Principles Assurance Guidance, which outlines expectations that: "The company has relevant qualitative and/or quantitative indicators that it uses to assess how effectively it is addressing actual and potential human rights impacts, and which:

- Are capable of providing valid insights into how effectively the company is addressing human rights impacts.
- Are capable of being reliably measured or assessed.
- Are placed in context* where this is necessary to interpret how effectively the company is addressing its human rights impacts.
- Include indicators that reflect stakeholder perceptions."

*Regarding context: this means that the performance indicators selected must be appropriate to the local and national context for racial, ethnic, religious, and economically disadvantaged minorities (i.e., the specific categories of minority or vulnerable groups being tracked will vary according to locality).

It is recommended that enterprises monitor outcomes (e.g., knowledge level of workers, worker attitude, conditions of the workplace) rather than just outputs (e.g., implementation of systems) to get a complete picture of whether harms are being prevented.

For verification purposes, evidence must be presented to demonstrate that final manufacturing facility(ies)' performance data is capable of satisfying individual performance measurement requirements (i.e., for each required policy element). This is described in the Required Documentation section below and detailed in the Monitor and Verify Performance Form. 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 final manufacturing facilities located in de facto low-risk

locations, the applicant may generate their own performance data without specific qualifications required, although use of a qualified auditor is encouraged. **For de facto 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 Siler 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 headquarters, high risk*	Applicant owned, low risk		n/a		✓
	Applicant owned, high risk		n/a		✓
	Contract manufacturing/supplier, low risk		✓	✓	✓
	Contract manufacturing/supplier, high risk			✓	✓

**Location risk level is defined per Section 8.1 #2c, (i.e., de facto high-risk locations are countries that fall below the 65th percentile when taking an average of the six World Bank Worldwide Governance Indicators). A list of de facto high-risk locations is* provided in this User Guidance under Section 8.1 Assessing Risks and Opportunities.

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.

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 #2a-g in this section are identified when measuring performance, the company 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
- 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 #2 a-g of this section. For facilities certified to (or audited per) some social standards and/or audit protocols, many of the Section 8.3 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 8.3 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 8.3 requirements, including a list of any Section 8.3 requirements that are not covered by each.

When employing a recognized standard 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 Monitor and Verify Performance 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

- Evidence that performance has been measured for all final manufacturing stage facilities on the required policy elements (Section 8.1 Human Rights Policy, #2a-j) and issues of high concern (Section 8.3 #2a-g). See **detailed evidence/documentation requirements*** following this bulleted list applicable to these points.
- If employing third-party standard(s) for achieving this requirement: Certificate(s), audit report(s), corrective action plan(s) and evidence of gap closure (see guidance above). In this case the detailed evidence/documentation requirements noted in the bullet above is not directly required because this will have been covered/examined as part of the third-party audit.
- 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.
- 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** for each policy element (Section 8.1 Human Rights Policy #2a-j) to demonstrate that performance has been measured for all final manufacturing stage facilities. These

documentation requirements are also listed in C2CPII's Section 8.3 Monitor & Verify Performance Worksheet. The form is expected to be used to gather and submit the required documentation/evidence for low-risk locations. Separate forms must be completed for each final manufacturing stage facility. Where qualified internal or third-party auditors are used, an audit report generated by the auditor may be submitted as an alternative to using the form (this is expected to be the norm). Additional instructions are provided in the form.

The aim should be to always obtain 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 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 furnish 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.

In all cases, confidential employee information (i.e., names and other identifying information) should be redacted from the documentation provided. For example, this is relevant where contracts and working hour data are required as evidence.

a. **Discrimination**

- Written policies and procedures that document anti-discrimination commitment, regardless of gender, race, religion, age, disability, sexual orientation, nationality, marital status, political opinion, social group, ethnic origin or medical status. This should include statements that characteristics of an individual shall not be the basis of decisions regarding any employment decision for hiring, job assignment, bonus, allowance, compensation, and discipline, and that these decisions shall be based solely on and discipline shall be made solely based on education, training, and demonstrated skills or abilities.

b. **Harassment and abuse:**

- Written policies and procedures that document the applicant has committed to ensuring its workplace or any workplaces associated with the product cycle is free of sexual harassment, and that sexual harassment is not tolerated.
  Definitions of harassment and abuse 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.

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:**

- Written policies and procedures regarding hours of work and requirements for overtime, including policy and documentation for overtime hours within allowable limits under applicable laws or agreements, whichever is stricter. Documentation of an established mechanism to determine, monitor and control the overtime hours of employees. For example, time and attendance records.
- 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 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 7-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 SMETA or SLCP may be referenced).
  - Include data for at least three pay periods per employee.
  - Include 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.

f. **Freedom of association and collective bargaining:**
- Written policies and procedures that the applicant respects 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.
- The policy allows for granting access to workers' representatives from workers' 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. Provide this information for each final manufacturing stage facility separately.

i. **Access to water, sanitation and hygiene (WASH):** 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 that:

- 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 (stalls with doors).
- Employees have access to clean water for washing within nearby proximity to toilets.
- Employees have access to drinking water.

Note: For sites with medium to high, high, and extremely high risk on access to WASH per Section 7.1 of the Water & Soil Stewardship category (and for the agricultural sector in all cases), please also refer to Section 7.4 Providing Drinking Water, Sanitation and Hygiene Required Documentation. Further, note that any CAPs applicable to achieving the Section 7.4 requirements must be closed.

ii. **Emergency preparedness and response:** 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:

- Compliance with all applicable laws and regulations governing 'Emergency Preparedness'. Note: A signed statement of compliance on company letterhead, or a signature on the Monitor and Verify Performance form, is accepted as evidence for low-risk sites.
- There are sufficient numbers of emergency exits at the workplace (production floors, office areas, warehouse, etc.).
- 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).
- 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.

iii. **Hazardous materials handling procedures:** 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:

- Compliance with all applicable laws and regulations governing 'Chemical and Hazardous Substances'. Note: A signed statement of compliance on company

letterhead, or a signature on the Monitor and Verify Performance form, is accepted as evidence for low-risk sites.

- An inventory of chemical and hazardous substances used in the workplace is maintained.
- Chemicals used at the workplace are registered for the intended used 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.
- 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 work spaces).
- 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).
- The facility provides first aid arrangements for the treatment of acute work-related accidents and emergencies on site by trained first aid personnel.

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.
- 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 provided.

v. **Appropriate building construction, electrical, and fire safety:** 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:

- Compliance with all applicable laws and regulations governing 'Building Safety', 'Electrical Safety', and 'Fire Safety'. Note: A signed statement of compliance on company letterhead, or a signature on the Monitor and Verify Performance form, is accepted as evidence for low-risk sites.
- All legally required building or construction certificates/reports/permits are current and available for review.

- 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.
- 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.
- The employer follows local law and fire safety standards to have a suitable fire detection and emergency alarm system covering the facility.
- 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.
- The facility maintains all fire safety certificates, licenses and inspection records as legally required.
- 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:**

- Written policies and 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.
- Policies and procedures regarding that overtime hours are paid at a premium as legally required or by contractual agreement, whichever is higher.
- Policies and procedures that commit the applicant 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 withholds 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 not required. See Section 8.11 for additional information.
j. **Fair and ethical business practices, including anti-corruption/bribery:** See section below relevant to issues of high concern.
k. Additional priority issues identified in the risk assessment (if any): Documentation will vary by issue.

***The following evidence is required** per issue of high concern (Section 8.3 Monitoring & Verification #2a-g):

a. **Child labour:** 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 provided.

c. **Corruption/bribery:** Written policies and procedures that document its 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.

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.

Confidential information may be redacted (e.g., identity of subcontractors and/or customers on the records provided). Note also that the Monitor and Verify Performance 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.

For final manufacturing stage facilities, provide the required documentation for each facility separately.
If building permits are not available, provide 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): 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 the following.

- 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 is 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.
- 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.
- Compliance with all applicable laws and regulations governing employee protection and machine safety. Note: A signed statement of compliance on company letterhead, or a signature on the Monitor and Verify Performance form, is accepted as evidence for low-risk sites.
- 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 assessment body serves as sufficient evidence.

Alternatives for generating the required documentation and demonstrating conformance (low-risk sites):

The list of required documentation 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), it is allowable for supporting evidence to be generated during the manufacturing facility site visit (Site Visit requirements are described in Appendix 1). Supporting documentation is still required to be gathered and provided to C2CPII in all cases. However, it may consist of a completed and signed Section 8.3 Monitor and Verify Performance form (including comprehensive comments and notes), along with photos taken and/or digital copies of documents collected during the site visit. Where photos are provided as evidence of the physical conditions at the site (e.g., cleanliness of toilets, presence of clear emergency exit paths), a photo **sample** of these conditions may be provided rather than photos of e.g., all toilets or all fire extinguishers. If any issues are identified, evidence of the issue(s) identified is also required (e.g., if any emergency exit is blocked, provide a photos of the blocked exit). Samples of documentation may also be provided in some cases. Please see the Section 8.3 Monitor and Verify Performance Form for additional information.

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 documented as an alternative to writing a separate step-by-step procedure in a company operating manual or similar. 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 documented (e.g., via screenshots of software and explaining how it functions to meet the requirement) either by the applicant or during a site visit. This, in combination with providing evidence that human resources/hiring staff are required and trained to use the software is sufficient evidence for the age verification procedure and training requirements.

Silver level: Request data measuring performance against the human rights policy 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 4.3), including all de facto high-risk suppliers (as defined in Section 8.2).
2. If data are outdated or not available, the applicant 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.
7. At recertification, progress must be demonstrated on requesting social audit data from additional high-risk suppliers, if any, identified through the supplier risk assessment. For suppliers that continually fail to provide data, the applicant must take remedial actions (i.e., steps to suspend or terminate the relationship) after a maximum of two years.

Further Explanation

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. At a minimum, data must be requested from tier 1 suppliers that are in de facto high-risk locations as defined in Section 8.1. 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 may be tier 2 for the applicant company in cases where contract manufacturing is carrying out the final manufacturing stage of the product).

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 (e.g., SLCP, SA8000, or SMETA).

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 8.3).
- 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, SLCP, SMETA), 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 8.3 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 any additional high-risk suppliers have been identified 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 two-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 labour 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.

Required Documentation

Silver Level (minimum for initial certification):

- Evidence of communication requests (i.e., an example) to tier 1 suppliers in de facto 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 the company and 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, #2a-j) and issues of high concern (Section 8.3 #2a-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 guidance). 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 C2CPII-recognized certification (if available) or equivalent that includes performance requirements aligned with the human rights policy.

For the Gold level:

1. A C2CPII-recognized certification or an equivalent alternative to certification is required for all de facto high-risk components and raw materials subject to review (as defined for Material Health), if a C2CPII-recognized certification exists and certified material is available.
2. At recertification, if a C2CPII-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,
    b. Establish how to mitigate the negative human rights impacts, and
    c. Participate in a stakeholder initiative actively working to address the issues.

Further Explanation

Utilizing C2CPII-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 C2CPII-recognized certification (if available) or equivalent that includes performance requirements aligned with the human rights policy and related performance requirements specified for final manufacturing stage facilities (as defined for the Bronze level in Section 8.3) is required. High-risk components and raw materials are defined in Section 8.1 (Gold level).

C2CPII-recognized certifications for the purposes of this requirement are certifications that address the required human rights policy elements and also meet the C2CPII certification program requirements (per Appendix 2 in this guidance). Certifications recognized for achieving this requirement at the time of publishing this User Guidance include:

- Fairtrade International
- Fair Trade Certified (USA)
- Forest Stewardship Council (FSC)

Please refer to C2CPII-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 guidance document 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 here. 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 required human rights policy elements and meet the relevant C2CPII program requirements for equivalents (per Appendix 2 in this guidance). 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.

Required Documentation

Gold Level

- Valid C2CPII-recognized certificate(s) or equivalent for all de facto 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 #2a-c have been implemented. See Appendix 2 in this User Guidance 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.

8.4 Strategy for Policy Implementation

Intended Outcome(s)

A framework for monitoring and measuring progress toward achievement of social performance targets and for identifying areas for improvement is established.

Applicable Achievement Level(s)

Bronze

Requirement(s)

Develop a strategy for implementing the human rights policy and report on implementation progress at each recertification.

The strategy must:

1. Address priority risks and opportunities (per Section 8.2).

2. Include specific time-bound performance and impact objectives to guide decision making.
3. Define the scope of implementation.
4. Define the company's human, technical, and material resource allocation for implementation.

For recertification, performance data must be collected and analyzed to measure progress toward achieving social targets and objectives and identify areas for improvement. For any areas of poor performance identified, methods of improving outcomes must be identified and evaluated, and the strategy refined accordingly.

Further Explanation

The Social Fairness strategy is expected to reflect the commitments made in the human rights policy and demonstrate how the company will operationalize these commitments. This entails developing a framework for implementing the policy, defining the scope of implementation, identifying accountable parties and designated resources within the business, and a sound measurement system.

Priority Risks and Opportunities (Requirement #1): At a minimum, the strategy is expected to focus on the priorities determined per the Risk Assessment (see Section 8.1). Note that prioritization per Cradle to Cradle Certified focuses on risk to people (severity and likelihood). See Section 8.2 for additional information, including how this is different from the double materiality assessment required per the Corporate Sustainability Reporting Directive (CSRD).

Time-bound Performance and Impact Objectives (Requirement #2): The specific objectives and related targets included in the strategy will depend on the priority action areas identified in #1. Performance objectives and related targets will, in many cases, be contained in the human rights policy itself (see Section 8.1) – for instance, targets of zero tolerance apply to the commitment to prohibit child labor or forced labor; there are other areas where targets can focus on reducing negative impacts, such as root cause analysis of excessive working hours to credibly working to prevent this occurrence; or targets that communicate expectations and track efforts to manage emerging opportunities, like implementing a living wage in the supply chain.

Scope of Implementation (Requirement #3): This is a requirement to define the geographies and tier(s) of the applicant's operations and supply chain that are addressed by the strategy.

Defining Resources (Requirement #4): The human, technical, and materials resource allocation to support the plan's implementation must be defined. It is best practice to also define the financial resources allocated (or spend) for effective implementation. Examples of business units and staff that are typically involved in implementation include Procurement, Purchasing, Sourcing, Risk Management, Internal Audit, Compliance,

Supply Chain, Operations, Sustainability, Corporate Responsibility, Legal, Human Resources, Product Development, Product Design, Planning, and Quality Assurance.

Resource allocation could, for example, include a description of relevant business units and staff experience assigned to implementation, agreements with external stakeholders or service providers

who are or will be engaged to support implementation efforts, or a training plan and budget for supplier capacity building.

Preparing for Recertification: The framework for implementing the policy is required to identify how implementation will be monitored and measured. Measurement must include performance metrics to evaluate existing processes and outcomes and define improvement areas. This is in preparation for achieving the recertification requirements that *performance data must be collected and analyzed to measure progress toward achieving social targets and objectives*.

Recertification: For any areas of poor performance identified, methods of improving outcomes must be identified and evaluated, and the strategy refined accordingly. Examples of evaluation methods that can be used include: •

- Management reviews at appropriate intervals
- Industry or competitor benchmarking
- Obtaining feedback from internal and/or external stakeholders

Required Documentation

Bronze Level

- The applicant company's strategy that includes the required points #1-4.
- Description of how implementation will be monitored and measured.

Bronze Level Recertification

- Evidence of performance data analysis specific to the defined objectives in the original strategy.
- List of areas of poor performance identified from the analysis conducted (if any).
- Description of plans to improve performance outcomes, and description of how the plan is selected/ developed and evaluated.
- Description of how the strategy has been updated to incorporate the need to improve poor performance.

8.5 Demonstrating Commitment

Intended Outcome(s)

A culture of social fairness that prioritizes human rights and the application of responsible business practices to all stakeholders is established, promoted, and improved by company leadership.

Applicable Achievement Level(s)

Bronze

Requirement(s)

Demonstrate commitment and support for establishing and maintaining a culture whereby employees and business partners are able to achieve high levels of social performance.

The applicant's leadership team (i.e., C-level executive and/or Board of Directors) must demonstrate commitment and support by:

1. Communicating the company's social aspirations and values, strategy for upholding human rights, and significance of respect for human rights to the success of the company internally and/or externally.
2. Defining a position to actively lead on human rights, oversee implementation of the strategy, and drive continuous improvement efforts.
3. Ensuring there are defined procedures for escalating human rights risks and identified impacts to the executive team.

Further Explanation

Importance of Demonstrating Commitment

According to the UN Guiding Principles on Business and Human Rights, companies are expected to express their commitment to meet their responsibility to respect human rights by ensuring their human rights policy:

- Is approved at the most senior level of the business enterprise.
- Is informed by relevant internal and/or external expertise.
- Stipulates the enterprise's human rights expectations of personnel, business partners and other parties directly linked to its operations, products or services.
- Is publicly available and communicated internally and externally to all personnel, business partners and other relevant parties.
- Is reflected in operational policies and procedures necessary.

Communicating the company's position to respect human rights internally and externally shows that the company takes this commitment seriously and is accountable for its implementation.
It is important for a senior executive to have ultimate oversight for the applicant's commitment to ensure there is accountability for its implementation.

Who is Expected to Demonstrate Commitment

The applicant's leadership team (i.e., C-level executive and/or Board of Directors) must demonstrate commitment. In practice, positions with this responsibility can include:

- Board Director or Executive that has accountability for human rights (e.g., Head of Sustainability), Human Rights Committee, or member of Executive team with accountability

for People, Supply Chain, Compliance, etc., such as Chief People Officer and/or Chief Procurement Officer.
- Business Unit functional head that has accountability and responsibility for human rights. This could be a leader within Procurement, Purchasing, Sourcing, Risk Management, Internal Audit, Compliance, Supply Chain, Operations, Sustainability, Corporate Responsibility, Legal, Human Resources, etc.

Creating accountability means instilling ownership through all levels and functions within the organization, and defined procedures to support implementation of the policy – including revision of existing procedures if necessary.

Demonstrating Commitment

Communicating (Requirement #1): For the Bronze level, communication of the company's social aspirations, values, and strategy may be either internal or external. This may include, for example, sustainability reports and/or signed policy documents. See Required Documentation section for additional examples.

Defining a Position to Actively Lead on Human Rights (Requirement #2): The position often has responsibility for the human rights management plan, internal and/or external progress reporting on implementation efforts, and/or KPIs to measure and assess progress. The designated position to lead on human rights may be full time or part time as appropriate and feasible for company size.

Procedures for Escalating Risks and Impacts (Requirement #3): In assigning roles and responsibilities, the senior executive is expected to also have accountability for human rights risks and identified impacts that have been escalated to the executive team. Examples of escalation procedures can include internal monitoring and reporting procedures, employee hotlines, grievance mechanisms and/or procedures maintained by Internal Audit, Ethics, or Risk Management departments. The escalation process should be included in training for key roles responsible for implementing the policy and demonstrating the organization's commitment to respect human rights.

References:

- UN Guiding Principles on Business and Human Rights, see Principle 16 (United Nations, 2011)
- The Corporate Responsibility to Respect Human Rights: An Interpretive Guide, see p. 26. (United Nations, 2012)
- Doing Business with Respect for Human Rights, see Chapter 3.2. (Shift, Oxfam, Global Compact Netherlands, 2016)

Required Documentation

Bronze Level

- Evidence that the applicant company is Communicating the company's social aspirations and values, strategy for upholding human rights, and significance of respect for human rights to the success of the company internally and/or externally. May include one or more of the following:
  - A human rights policy document with executive level signature that is publicly available and/or circulated internally to all employees,
  - A company press release on this topic,
  - A Modern Slavery Act Statement,
  - A sustainability report that includes a section on human rights, and/or
  - A transcript from a public speech given by a C-suite representative.
- Description of the designated position to lead on human rights.
- Defined processes and procedures for escalating and reviewing human rights risks and identified impacts by the executive team.

8.6 Management Systems

Intended Outcome(s)

A management system for people and procedures is in place, ensuring that necessary corrective actions are taken, actions are effective, and that performance on respecting human rights is ultimately improved.

Applicable Achievement Level(s)

Silver and Gold

Requirement(s)

Silver level: Implement a management system that supports achievement of the human rights policy commitments within company operations.

Gold level: Implement a responsible sourcing management system that supports achievement of the human rights policy commitments within the product's supply chain.

For the Silver level, the management system must include the following elements:

1. Designated staff with social compliance responsibilities.
2. Designated oversight function and process.
3. Business procedures that support implementation of the human rights policy within the company's workplace and across corporate functions and different levels of management.
4. Education for staff with social-related duties on human rights principles.
5. Internal communication and employee involvement.
6. Procedures to measure and evaluate workplace activities against the human rights policy.

7. Policies and procedures for the prompt implementation of corrective and preventive actions within the company's workforce.

For recertification at the Silver or 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. (Note: This applies to the company-level management system at the Silver level and also to the responsible sourcing management system at the Gold level.)

Further Explanation

Consider the following when implementing a management system that supports achievement of the human rights policy commitments within company operations:

Elements of a Credible Human Rights Management System for Company Operations

To implement a management system that supports implementation of the human rights policy within a company's own operations, the policy must be embedded into the organization's business processes. This includes senior accountability and oversight, staff involvement throughout all functions and levels of management and related training, internal communication, and monitoring processes.

A Credible Management System has the Following Components:

- Defined roles and responsibilities for implementation.
- Shared ownership throughout the organization, including different functional responsibility and geographic responsibility where relevant for adequate implementation.
- Required training to ensure staff with responsibilities have adequate knowledge of human rights and details contained in the policy.
- Procedures that document how human rights are expected to be integrated into the company's operations.
- Framework for reviewing the effectiveness of implementation. This can include required review of documentation and tracking of KPIs to measure progress against internal or publicly made goals.
- Regular review of compliance with the policy, including compliance with legal requirements, emerging expectations in locations of operation and/or as compared to peers or best practices identified, and adequacy of company performance to meet stated commitments.
- Stated commitment for regular review/continuous improvement based on findings.

CSR Europe's Blueprint for Embedding Human Rights in Key Company Functions outlines six essential elements for embedding human rights into a company. Additional information is provided here to outline key expectations for implementation.

1. ***Cross-functional coordination and leadership.*** Assign accountability throughout all senior levels of the company and identify all business functions with responsibility to implement the policy. Define responsibilities in writing to ensure clarity and ownership.
2. ***Shared responsibility.*** Includes all departments and functions that would have responsibilities for activities or business relationships that could be connected to human rights risks. This can include the following examples:

    - *Senior* management: Leads senior-level accountability, review and decision-making. Involved in setting targets, incentives, and disincentives; fostering a culture that respects human rights from the top; and managing necessary change management.
    - *Human resources*: Helps embed human rights in relevant processes, such as recruitment, hiring, training, performance appraisal and dismissal. See Section 8.11 for additional detail.
    - *Procurement/Sourcing*: Ensures social fairness criteria are integrated into sourcing criteria and decisions. Can exercise influence with suppliers to minimize negative impacts on human rights and/ or enhance positive impacts on social fairness. (This is a Gold level requirement in this section.)
    - *CSR/sustainability*: Provides substantive expertise for the embedding phase on specific human rights policy elements or social fairness implementation criteria; can support design and implementation of staff training *Middle management*: Day-to-day responsibilities for implementing policy requirements and business procedures, which can include management of corrective actions where necessary.
    - *Communications*: Supports roll out of human rights policy coordination, informing staff of important developments, and disseminating key policies and commitments.

3. ***Operational guidance and training***. Training focuses on the human rights policy commitment and the key issues and topics embedded within it per Section 8.1. A focus is also on building understanding of specific human rights issues, internal roles and expectations for management, and how to escalate issues. It is expected to be tailored to individual roles and be supported by senior management. Section 8.11 has additional details about employee training, engagement, and involvement.
4. ***Two-way communication.*** This occurs between management and operational staff, to ensure challenges are identified and course of action for addressing such challenges are reviewed and approved.
5. ***Performance goals for staff to align incentives.*** Ensure relevant staff have human rights or social fairness goals included in their annual performance evaluations. More information about this criteria is detailed in Section 8.11.
6. ***Regular analysis of performance***. Maintain an inventory of internal policies and procedures for implementing the human rights policy, including identification of individuals responsible and support for annual reviews to determine where improvements are needed. Determine corrective and preventative actions in relevant areas of the business and ensure individuals are accountable for addressing root causes of negative human rights impacts to prevent reoccurrence.

A Note Regarding Grievance Mechanisms

Note that grievance mechanisms (covered in Section 8.7) are a means of identifying adverse impacts and providing remedy. Grievance mechanisms could be considered as one aspect of a human rights management system. However, management systems should be designed such that a company is able to avoid infringing on human rights and having adverse impacts, therefore also avoiding the need for remedy to begin with.

Developing Business Procedures (Requirements #3, 6, and 7)

The following are required:

- Requirement #3: Procedures that support implementation of the human rights policy within the company's workplace and across corporate functions and different levels of management.
- Requirement #6: Procedures to measure and evaluate workplace activities against the human rights policy.
- Requirement #7: Policies and procedures for the prompt implementation of corrective and preventive actions within the company's workforce.

A procedure is a standard way of doing something and includes detailed step-by-step instructions. Generic examples of procedures used in management systems are widely available through ISO management system support offerings. Manufacturers are often most familiar with standard operating procedures applicable to quality management and/or health and safety. A generic outline of a procedure and a sample fire response procedure may be found in the IFC-ESMS Toolkit. Other examples include this checklist for interviewing/ hiring committees developed per the University of Washington Human Resources Department, and this age verification procedure developed by the Center for Child-Rights and Corporate Social Responsibility.

Procedures that Support Implementation of the Human Rights Policy (Requirement #3) may be specifically focused on human rights issues. However, human rights are also expected to be integrated into and aligned with business procedures more generally with the goal of preventing the business from having an adverse impact on human rights. For example, part of a hiring procedure will include checking the identification, including the age, of an applicant to ensure that they are old enough to work as defined per local and/or international law. Some more nuanced examples are provided by the UN Guiding Principles Implementation Guide: "For instance, if a construction company rewards operational staff purely on their speed in building new infrastructure and without regard to whether they harm communities in doing so, it is likely to incentivize behaviours that lead to adverse human rights impact. If an Internet company's staff automatically defer to every Government request for information about users, regardless of the human rights implications, it runs the risk of being involved in any human rights abuses that result." Additional examples and guidance may be found in the set of Environmental and Social Management System Implementation Handbook & Toolkit documents available through Social Accountability International's resource library.

Procedures to Measure and Evaluate Workplace Activities Against the Human Rights Policy (Requirement #6)

- Procedures to measure and evaluate activities against the human rights policy may include definitions of performance indicators and how those are tracked and evaluated. Relevant indicators may include (for example) number of accidents, average working hours and wages paid, or number of workers trained on health and safety. This requirement ties back to the requirements to monitor performance (Section 8.3). The difference is that the focus of this section (Section 8.6) is on the existence of a consistent measurement and evaluation procedure as part of a comprehensive management system, where for the Bronze level, the requirements focus on the performance itself at a particular point in time.
- One aspect of the procedures to evaluate activities against the human rights policy is the procedure for conducting a management review described for recertification below.

Procedures for the Prompt Implementation of Corrective Actions (Requirement #7): Corrective action plans (CAPs) are explained in the guidance to Section 8.3. Refer to Section 8.3 for a description of credible corrective action plans. It is recommended that a procedure for prompt implementation of corrective and preventative actions includes all of the elements of a credible CAP (e.g., inclusion of a timeline for closure). Note that corrective actions are expected to be proportional to the severity of the harm. A generic outline of a procedure may be found in the IFC-ESMS Toolkit.

Recertification

Management System Review: For recertification at the Silver level, an internal management review of the system must have been conducted. Note that annual reviews are considered best practice. The system's effectiveness on implementing the policy is expected to be reviewed. Best practice is to also include a review of compliance with all relevant laws. Management review is often accomplished via a management review meeting. A possible agenda for a management review meeting (per the SA8000 and IFC Toolkits referenced below): (1) Review progress on strategy and action plans, (2) Review progress on any improvement plans or remedial activities, (3) Review compliance with labor laws and regulations, (4) Review social performance, (5) Discuss possible adjustments to risk assessment, (6) Prioritize activity for the next three, six and 12 months, and (7) Review and approve needed resources by senior management.

Remedial Activities: The standard requires that *remedial activities (if needed) must be underway and seek to identify and address root causes*. The remedial activities referred to in the requirement are actions to address any issues with the effectiveness of the management system that may have been identified during the management review. This means that the management system review must be conducted far enough in advance of recertification for remedial activities (if needed) to be initiated. A root cause is the core issue or highest level cause of a problem. It is the core reason for a cause and effect chain reaction that may have occurred, ultimately leading to a specific problematic outcome(s).

References

- Blueprint for Embedding Human Rights in Key Company Functions (CSR Europe, 2016)
- Environmental and Social Management System Implementation Handbook & Toolkits (Social Accountability International and International Finance Corporation, 2014-2020).

Required Documentation

Silver Level

The following information is required to demonstrate that the management system for the applicant company's own (i.e., direct/owned) operations 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.
2. Description of who and what processes create accountability for social compliance and policy implementation. For example, 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 managed within the company's own operations.
3. Detailed information about how the policy is integrated into the organization – this may be through written procedures, description of processes, reference to several standard operating procedures, and/ or intra-department collaboration for managing the policy implementation or processes.

   Written procedures must reference the human rights policy and social compliance program as part of defined ways of working. A procedure must include details about responsibilities of different functions (such as Sourcing, Compliance, Sustainability, Product Development, Design, Legal, Human Resources, etc.) and levels of management (managers, directors, business leaders).
4. Examples of any internal human rights training for individuals with social-related duties. Provide examples of training materials and a training log to show completion of training. Alternatively, for new management systems (or portions thereof), a procedure for ensuring that education will occur over the course of the certification period.
5. Internal communication to employees about the company's human rights commitments and activities. Examples include reference to the human rights policy in an employee handbook or internal emails announcing progress on goals.

   Examples include announcements about the policy, reference in an employee handbook, internal emails announcing progress on goals, etc.

6. Key performance indicators or example progress reports to evaluate the effectiveness of implementation plans and the management system. This may include documentation for processes to review compliance with the human rights policy and also compliance with local laws. If third-party assessments of activities and/or reports have been conducted by an external stakeholder, provide this information to document supporting implementation of different activities. Alternatively, for new management systems (or portions thereof), the procedure, including defined key performance indicators, for tracking, measuring and evaluating workplace activities against the human rights policy.
7. Written policies and procedures that outline requirements for implementation of corrective and preventive actions if risks and/or impacts are identified.

Silver 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. Regular internal management reviews (annual review is recommended) of the social compliance system, where documentation is written records from management review meetings. This must include evidence that improvements identified in the previous review are underway.

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 policy 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 Silver or 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. (Note: This applies to the company-level management system at the Silver level and also to the responsible sourcing management system at the Gold level.)

Further Explanation

Consider the following when implementing a responsible sourcing management system:

Elements of a Credible Human Rights Management System for the Supply Chain

Requirements at the Gold level are similar to the Silver level, with specific focus on responsible sourcing management systems to be applied throughout the supply chain.

This includes the same essential elements for embedding human rights, such as the following:

- 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.
  See Silver level (above) and Section 8.3 for more details.

Applicants are expected to communicate their human rights policy commitment to all business partners, including suppliers, and cascade implementation responsibilities to business relationships throughout the value chain. Communication can take the form of providing business partners with copies of the policy commitment and keeping records of communication with suppliers that promote responsible business practices.

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. See Section 8.1 for additional context. 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.

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 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 conducted at 3-, 6-, 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 8.3 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.

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 Trade 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 the human rights policy. 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.

8.7 Grievance Mechanisms

Intended Outcome(s)

A mechanism is in place by which employees, customers, suppliers, and other stakeholders may safely report negative effects of business activities and operations and other social fairness concerns to the company in order to obtain redress for those impacts.

Applicable Achievement Level(s)

Silver and Gold

Requirement(s)

Silver level: Provide a grievance mechanism that permits company employees and other stakeholders to obtain redress for negative human rights impacts. For any contract final manufacturing stage facilities, request that a grievance mechanism be made available.

Gold level: For contract final manufacturing stage facilities, ensure that a grievance mechanism is available that permits employees and other stakeholders to obtain redress for negative human rights impacts.

For the Silver and Gold levels, the applicant company must have a grievance mechanism for company employees and other stakeholders 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 the Gold level, the grievance mechanism may be provided by the contract manufacturer or by the applicant.

Further Explanation

About Grievance Mechanisms

For the Silver and/or Gold levels, the grievance mechanism(s) must be in place, functioning, and effective.

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 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.

If there are no cases recorded within 12 months of grievance procedure operation (24 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 Silver level, the applicant must assess the problem, identify barriers to effective functioning (if any), and take action to correct the issue(s). At the Gold level, this may require intervention with the contract manufacturer (as relevant).

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

Documentation of a company's own grievance mechanism available to employees and other stakeholders that meets all points below. If any contract manufacturers are used for the final manufacturing stage of the product, evidence that the applicant has requested that they provide a grievance mechanism of their own (e.g., copy of email communication to the supplier).

Gold Level

Documentation of an existing grievance mechanism available to employees and other stakeholders at contract final manufacturing facilities (if any) that meets all points below. The mechanism may be provided by the applicant company or by the contract manufacturer. If provided by the applicant, evidence of communication to all contract manufacturer employees and 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 is either freestanding or incorporated into another policy. The nonretaliation 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).
2. Documentation that the grievance mechanism is legitimate, predictable, and rights compatible (i.e., capable of addressing the risks and potential adverse impacts) as follows:
    - Evidence that the grievance mechanism is used by the intended audience, as demonstrated in a log or summary of complaints received. Note: the summary should exclude all confidential information including (but not necessarily limited to) the names of those involved in the grievance.*
    - 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) about the grievance. Documentation may include, for example, screenshots of the interface used to file and track a grievance through the process.
    - Evidence 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.
3. Documentation demonstrating that the process is transparent, visible, and understandable to all stakeholders and that grievance procedures include a defined timeline for responses to occur, including:
    - 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).
    - Evidence that parties raising grievances are informed about progress.
    - Evidence of regular communication about the overall mechanism's performance to build confidence in its use. *
4. Examples of how the applicant has engaged individuals who have used the mechanism to provide feedback/outcomes from the review. * If the applicant does not have an example, they must provide procedures of how it would respond in the event an issue is raised.
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 for complaints, concerns, or suggestions received, including:
    - Usage statistics for the grievance mechanism to demonstrate that records are maintained and reviewed. This may include data such as the number of complaints filed and types of complaints or topics on which complaints are made, 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 processes to make improvements.

*For mechanisms that are newly implemented (i.e., implemented one year ago or less, or two years or less for companies with < 10 employees and < 10 €10 million), this piece of evidence may be provided at recertification.
All evidence is expected to exclude information that may be confidential (e.g., the names of those filing the grievance and of those involved in the complaint).

8.8 Positive Impact Project

Intended Outcome(s)

Positive impact on a social issue of significant importance to the company and/or value chain of the product.

Applicable Achievement Level(s)

Silver and Gold

Requirement(s)

Silver level: Implement a positive impact project that measurably improves the lives of employees, the local community, or a social aspect within the value chain of the product.

Gold level: Conduct an assessment to determine the impact of the positive impact project using quantitative metric(s).

For the Silver level, the following are required:

1. The applicant must invest in a social impact project that involves issues or opportunities that were identified in the risk assessment process (per Section 8.2) or that are otherwise material to the company.
2. The project goal(s) must be supported by one or more key performance indicators that are tracked before, during, and after the project.
3. Project selection must incorporate employee input.

For the Gold level, an impact assessment must be performed based on the defined key performance indicator(s). For recertification, measurable progress must be demonstrated.

Further Explanation

A positive social impact project is a project implemented, often through community investment or community development efforts, where an applicant is engaged in activities to help address wider issues affecting people – including employees – in the communities where the applicant does business or its products are made. Positive social impact projects can vary widely. For example, they may focus on access to drinking water and sanitation, accessible childcare and education in the supply chain, employees volunteering with at-risk youth, or reducing local food insecurity through community gardening.

Selecting a Positive Social Impact Project

Applicants are highly encouraged to select positive impact projects that focus on human rights and other social issues rather than environmental issues, which are already addressed by the other Cradle to Cradle Certified program categories. Projects focusing on environmental issues are only eligible if the applicant can show a clear connection to the risk assessment conducted per Section 8.2, or otherwise demonstrate the project will contribute to respecting the rights of people and/or benefit

those people or their communities. If the project selected focuses on an issue separate from those identified in the human rights risk assessment process (i.e., 'otherwise material to the company' as permitted in requirement #1), the applicant must provide an explanation of how this issue was chosen and the explanation must demonstrate the project is relevant to at least one stakeholder group (as defined in Section 8.2).

Ensuring a focus on respecting human rights in the selection of the positive social impact project is consistent with the UN Guiding Principles prioritization of salient human rights risks, which focus on risk to people, as compared to material issues which focus on risk to the business – although increasingly salience and materiality are related. Definitions of salient human rights are provided in Section 8.2. The UN Guiding Principles Reporting Framework Resources: Salient Human Rights Issues states that using 'salience' means change from being a resource drain on companies to being an investment in putting in place processes that enable the company to manage key risks to people.

For companies that have multiple ongoing positive impact projects, note that a single project may be selected as the focus area for achieving these positive impact project requirements.

Selecting Key Performance Indicator(s)

One or more Key Performance Indicators (KPIs) must be selected and tracked before, after, and during the project. It is important to understand the difference between inputs, outputs, and impacts. The Business for Societal Impact (B4SI) Framework defines these different types of indicators as follows. Because focus is on measurable improvement of the lives of employees, the local community, or a social aspect within the value chain of the product, it is recommended to focus on impact indicators if there is only one KPI for the project.

- ***In puts: what is contributed,*** e.g., financial or in-kind initiative focused on issues such as education, health, economic development, environment, arts and culture, social welfare, etc., in a specific location.
- ***Outputs: what happens,*** e.g., number of individuals or communities supported, employees involved, suppliers reached, stakeholders engaged, etc.
- ***Impacts: what change occurs,*** e.g., depth of impact on people, behavior or attitude change, quality of life improvement or well-being change, etc.

Incorporating Employee Input

Incorporating employee (not only upper management) input into the project is a minimum requirement. Involving employees in additional aspects of the project is highly encouraged. For example:

- The project's design has included involvement of the applicant company and/or supplier employees (as relevant) through a documented needs assessment process.
- Employees have provided feedback on program design elements.
- Employees participate in project governance.

- If a trade union is established at relevant facility(ies), the trade union has been consulted in the project design and involved in project implementation.

It is best practice to also engage with external stakeholders – particularly those community members that the positive social impact project is meant to serve, including disadvantaged and/or vulnerable groups.

This process can include stakeholder mapping (see Section 8.8) to identify groups that are interested in or affected by the applicant's activities. Project planning and implementation are expected to be inclusive, considering multiple perspectives and paying particular attention to vulnerable groups or those that may be underrepresented in the most visible community groups.

Gold Level: Assessing Impact

Impact assessment of the positive impact project is required for the Gold level and for recertification at the Gold level. The impact assessment must draw on the KPI(s) that were developed for the Silver level to evaluate and measure progress since project initiation.

It is recommended that projects be monitored periodically against KPIs, at the beginning, midterm, or several interim points, and at the end of the project. Regular monitoring and evaluation ensure projects can be adjusted as needed based on local contexts to ensure objectives are achieved. It is common for positive social impact projects to be slightly adjusted to reflect local realities. The monitoring process can also include community members in participatory evaluation – this is an important way to drive inclusiveness and also ensure feedback from local stakeholders is incorporated.

The impact assessment must focus on outcomes. For example, if an applicant implements a training for small scale producers that results in an increased number of qualified workers to perform skill-based work, neither the training or the number of workers are KPIs that show the impact of the project. In this case, the impact was improved productivity, capacity, logistics, and market efficiency of the producer's operations, which increased profits and the ability to support their families.

Gold Level Recertification: Demonstrating Progress

For recertification at the Gold level, measurable progress must be demonstrated by the impact assessment (i.e., the assessment must demonstrate positive impact). Best practice is to demonstrate impact using an impact KPI.

References:

- UN Guiding Principles Reporting Framework: Salient Human Rights Issues (UNGP Reporting Framework, 2015)
- Business for Societal Impact (B4SI) Guidance Manual (Corporate Citizenship, 2020)
- World Bank Community Driven Development

Required Documentation

Silver Level

- Description of which issue(s) or opportunity(ies) are addressed that the applicant company identified from the risk assessment process. If the project focuses on an issue separate from those identified in the risk assessment process, an explanation of how this issue was chosen - which must include relevance to at least one stakeholder group (as defined in 8.2).
- Description of measurable outcomes that are planned for the project, and one or more KPIs that is being tracked, before, during, and after the project to demonstrate improvement/change.
- Documentation of employee input received and/or employee engagement process. This could include email communication, meeting notes, survey responses, etc.

Gold Level

- Impact assessment report, including tracking of defined KPI(s) developed at the Silver level, and evaluation of progress since project initiation. Note: For new projects, provide evidence of tracking of defined KPI(s) and an initial assessment based on data availability.

Gold Level Recertification

- An updated impact report that demonstrates positive impact via evaluation of the defined KPI(s).

8.9 Transparency and Stakeholder Engagement

Intended Outcome(s)

The applicant company is held accountable for any negative human rights impacts, encouraging ever-improving performance.

Applicable Achievement Level(s)

Silver and Gold

Requirement(s)

Silver level: Use open and transparent governance and reporting, making information on how human rights risks are managed and adverse impacts are addressed publicly available.

Gold level: Incorporate stakeholder engagement and feedback into human rights risk management, using it to shape company strategy and operations.

For the Silver level, the applicant must make the following information publicly available:

1. The human rights policy, objectives, and progress toward achieving objectives (i.e., activities and outcomes),

2. A description of adverse impacts on human rights and how they are addressed, and
3. Sourcing information including number of suppliers by geographic location. Required for the final manufacturing stage, direct suppliers to the final manufacturing stage, and suppliers of high-risk components and raw materials (when such information becomes available or at a minimum for the Gold level when identified as required per Section 8.2).

For the Gold level, 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 shape the strategy for implementing the human rights policy, management systems, and related operations.

Further Explanation

Silver Level: Transparency

The UN Guiding Principles on Business and Human Rights expect a human rights policy statement be publicly available, and communicated actively to entities with which the enterprise has contractual relationships; others directly linked to its operations, which may include State security forces; investors; and, in the case of operations with significant human rights risks, to the potentially affected stakeholders.

Under both the UNGPs and the OECD Guidance for Responsible Business Conduct, companies are expected to communicate about their efforts to prevent and address human rights risks as part of their due diligence process. That means communicating with:

- Internal stakeholders, including executives and business units that are involved in assessing and managing human rights risks; and
- External stakeholders, including affected groups, civil society organizations, local communities, topic experts, investors, and anybody else who might be interested in or concerned about your human rights impacts.

Wherever and whenever an applicant identifies a human rights risk (see Section 8.2), it is expected to communicate with potentially affected stakeholders to explain how it is addressing the risk. In this communication, it is important to consider literacy, language, and cultural communication barriers.

Transparency on Adverse Impacts and How They are Addressed

For the Silver level requirement #2, the applicant is required to make information about adverse impacts on human rights that are connected to its business activities publicly available. This must include information regarding how the impacts are addressed, including measures adopted to mitigate the impacts. **The applicant must disclose how it is connected** – e.g., whether it has caused, contributed to, or is linked to – the adverse impact.

The UNGPs define a company's connection to adverse impacts on human rights as follows:

This designation informs its responsibility for providing remediation for the adverse impact.

How a Company is Connected	Definition	Action Required
Cause	Causes an impact through its own activities	• Cease the activity that caused the impact • Provide remedy • Take steps to prevent impact from recurring
Contribution	Contributes to an impact either directly or through some outside entity (government, business or other)	• Cease activity and avoid contribution • Provide remedy • Use leverage to mitigate any remaining impact to the greatest extent possible
Linkage	A company's operations, products, or services are linked to a negative human rights impact through a business relationship (or series of relationships)	• Has forward-looking responsibility to prevent the impact from recurring • No explicit responsibility to provide remedy but can choose to do so

If no adverse impacts have been identified, the applicant must disclose that none have been identified.

Note that the most common adverse impacts for manufacturers to disclose are accidents that have occurred in the workplace. This information may be disclosed in a sustainability report or other Global Reporting Initiative disclosure. This type of information is in some cases reported at the industry level for impacts that are commonly associated with specific sectors.

Note that annual communication is recommended at a minimum.

Transparency on Sourcing

For requirement #3 when applying for the Silver level, applicants must make sourcing location(s) publicly available. At a minimum, this must include information about the locations of final manufacturing stage facilities and tier 1 suppliers (i.e., direct suppliers to the final manducating stage of the product). This information may be aggregated at the country level.

For requirement #3 when applying for the Gold level, information regarding the locations of suppliers of high risk components and raw materials (as defined in Section 8.2) must also be made publicly available. Where sourcing locations of potentially high-risk components and raw materials are

unknown, this must also be disclosed.

Gold Level: Stakeholder Engagement and Feedback

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 plan for stakeholder engagement by first conducting stakeholder mapping to have a clear understanding who 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

All or some of the information required may, for example, be published in the applicant company's Sustainability Report, website, Human Rights Report, or Modern Slavery Act statement. Provide links to all relevant documents/information.

Silver Level

Evidence that the applicant company makes the following information publicly available must be provided.

- The human rights policy, objectives, and activities.
- A description of adverse impacts on human rights connected to the company's business activities and how they are addressed/mitigated. Note that adverse impacts can reflect the issues found in the human rights policy or risk assessment (see Section 8.1 and 8.2) and may include adverse impacts that are reported through monitoring, verification, or corrective actions taken (see Section 8.3); or uncovered through grievance mechanisms (see Section 8.7). The publicly available information must include how the company is connected – e.g., whether it has caused, contributed, or is linked – to the adverse impact. If no adverse impacts were identified, this must be disclosed.
- The number of final manufacturing and tier 1 suppliers by country.

Gold Level

- Evidence that the applicant company makes the following information publicly available: The number of suppliers of high-risk components and raw materials by country, or disclosure that the location(s) is/are unknown (as relevant).
- 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). Note that for newly implemented systems, this may be provided at recertification.

8.10 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 policy.
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 multistakeholder 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 the purposes of this requirement.

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 policy.
- 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.

8.11 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 (i.e., those included in the policy or identified per the 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 the 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 focus on the human rights policy commitment and the key issues and topics embedded within it per Section 8.1 – including human rights, diversity and inclusion, gender equality, and anti-discrimination, among other issues identified in the organization's risk assessment process (per Section 8.2). It is recommended that trainings occur at the time of hire and also include details about how the policy is operationalized throughout business operations and partnerships. All employees are expected to understand the policy 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 the 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). Current industries include bananas, coffee, floriculture, garments/textiles, manufacturing, seafood processing, tea. Current countries include Bangladesh, Brazil, China, Colombia, Costa Rica, Dominican Republic, Ecuador, Ethiopia, Ghana, Guatemala, India, Kenya, Malawi, Mexico, Nicaragua, Pakistan, South Africa, Sri Lanka, Uganda, Vietnam. 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 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.

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 the risk assessment (Section 8.2) and/or human rights policy (Section 8.1). 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., board room, 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 efforts to achieve the diversity strategy. This may include focused recruiting efforts and internal KPIs to measure progress on diversity targets.

c. Documentation of existing demographics in supervisory and management roles to compare to full employee population statistics as baseline information.
   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.
   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 references 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.

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 high product circularity standards 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.

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 any packaging materials

that are intended to be used with the product or for the application or dispensing of the product, must comply with:

1. The applicable Bronze level regulatory restrictions in the Cradle to Cradle Certified® Restricted Substances reference document (Section 4.1),
2. The Bronze level restrictions on organohalogens and functionally related chemicals of concern (Section 4.2), and
3. One of the following (a, b, c, or d) for products certifying at the Bronze or Silver levels , or two of the following (a, b, c, d) for products certifying at the Gold or Platinum levels:
    a. The sum of post-consumer cycled and renewable content must be ≥ 20% or equal to the percentage of cycled and renewable content required for the Silver level per Section 5.3 Increasing Demand.
    b. At least 90% of the packaging materials (by weight) meet one of the following:
        i. Compliance with the Silver and Gold level requirements, respectively, in Sections 5.2 Preparing for Active Cycling and 5.4 Material Compatibility for Technical and/or Biological Cycles, or
        ii. Compliance with ii. 1, 2, 3, and 4 below:
            1. The packaging is compatible for municipal cycling systems,
            2. Plastic materials are:
                (a) A type that is commonly recycled or composted via curbside pickup (i.e., PET, HDPE, PP), and
                (b) Accepted by municipal cycling programs in the region(s) where the product is sold.
            3. Materials that are intended for composting are fully compostable per a C2CPII recognized compostability standard consistent with the intended cycling pathway(s), and
            4. Materials that are commonly recyclable (e.g., paper, steel, aluminum) do not contain additives or features that are likely to result in low-value (i.e., low-quality) reprocessed material. Additives that may be present in the recycled content used are out of scope for this determination. Exemption: Glass is exempt from this requirement.
    c. 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.
    d. 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.

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 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 materials are not subject to the packaging requirements:

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).

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.

Scope

In general, packaging is defined as material(s) used to contain, wrap, protect, and/or dispense the product. 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 and hangtags.

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.

As noted, packaging and other materials used exclusively for shipping the product (e.g., polybags, boxes, pallets, shrink wrap) are out of scope. 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 Bronze level Regulatory Restrictions in Section 4.1 (Requirement #1)

See standard Section 4.1 Complying with Leading Chemical Regulations in the Material Health category for guidance on achieving this requirement.

For materials that do not contain recycled content, declarations from packaging and packaging component suppliers stating that the packaging does not include restricted substances above the indicated limits are required as evidence of compliance. Declarations must be collected for all packaging components including labels, inks, adhesives, and minor parts such as pumps.

The Cradle to Cradle Certified Version 4.1 Restricted Substances reference document may be found on C2CPII's website. A Supplier Regulatory Compliance declaration is available to Cradle to Cradle Certified assessors. Note that the 4.1 All Products tab in the Restricted Substances reference document applies to all packaging materials.

Section 4.1 Regulatory Compliance for materials containing recycled content

For recycled content materials from sources that cannot be fully defined (i.e., post-consumer sources and many pre-consumer sources as well), analytical testing is required to confirm compliance with the Section 4.1 regulatory restrictions (in addition to a supplier declaration of compliance with Section 4.1 restrictions – see Section 4.1 for additional guidance on these restrictions and how to collect a sufficient declaration). At a minimum, this must include the Bronze level testing requirements per the Recycled Content Materials Assessment Methodology and related list of analytes. Testing frequency is at least once per certification cycle (i.e., at least once every three years). Refer to the Recycled Content Materials Assessment Methodology (linked above) for additional information. Note that Silver level analytical testing is not required unless the packaging will be assessed separately and/or certified separately from the product itself, and the application for the certified packaging will be for achievement above the Bronze level. However, note that Silver level analytical testing is an alternative for demonstrating conformance with the Section 4.1 restrictions in the absence of a supplier declaration of compliance with Section 4.1 restrictions.

The concentration limits listed below apply when analytical testing is required to confirm compliance with Section 4.1 regulatory restrictions. Note that these limits apply to total concentration of the metal within the material rather than to leached or migrated amounts.

Chemical Name	Maximum allowable concentration (ppm)
Arsenic and its compounds	1000
Cadmium and its compounds	1000
Chromium, hexavalent, and its compounds	1000
Mercury and its compounds	1000
Lead and its compounds	1000

Complying with the Restriction on Organohalogens and Functionally Related Chemicals of Concern (Requirements #2)

See standard Section 4.2 Avoidance of Organohalogens and Functionally Related Chemical Classes of Concern in the Material Health category for additional guidance on complying with this requirement.

Note that only the Bronze level requirements in Section 4.2 apply to the Section 9 packaging requirements; the Silver and Gold level requirements in Section 4.2 do not apply.

There are several exemptions noted in Section 4.2 that may also be applied to packaging. The exemptions are as follows:

> *A homogeneous material may be exempt from meeting this requirement if any of the following conditions are met:*
>
> 1. *It is present at < 1% of* all 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 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*.*

All packaging materials refers to all 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.

For materials that do <u>not</u> contain recycled content, declarations from suppliers stating that the packaging complies with this restriction are accepted as evidence of compliance. An Organohalogens and Functionally Similar Chemical Classes of Concern declaration is available to Cradle to Cradle Certified assessors. Alternatively, elemental analysis as described below for recycled content may be employed.

For materials containing recycled content from sources that cannot be fully defined, analytical testing is required to confirm compliance with this restriction. Conformance may be determined via elemental analysis. The restriction has been met if the combined elemental concentration of Cl and Br are <1000 ppm and the concentration of F is < 1000ppm, and a supplier declaration has been collected indicating that the material complies with the Section 4.2 restrictions on functionally related chemical classes of concern. If elemental analysis limits are exceeded, additional focused testing will be necessary to ensure compliance with these restrictions. Refer to the Recycled Content Materials Assessment Methodology for additional information. Note that analytical testing is <u>not required</u> for the organophosphate ester flame retardants (one of the Section 4.2 restrictions), provided that compliance is demonstrated through a supplier declaration.

<u>Circularity Requirement Options (Requirements #3a-d)</u>

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.

Achieving the Required Percentage of Post-consumer Recycled and/or Renewable Content (Requirements #3a)

Requirement: *The sum of post-consumer cycled and renewable content must be ≥ 20% or equal to the percentage of cycled 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 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.*

This means that for wood-based paper made from virgin wood pulp to count as renewable it must be certified to a C2CPII-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 C2CPII-Recognized Certification Programs and Standards for additional information on C2CPII-recognized responsible sourcing standards.

Applicants may achieve these requirements on a per package basis or based on the average amount of postconsumer recycled and renewable content for all Cradle to Cradle certified products over the prior year (for new certifications) or prior three years (for recertifications). If meeting the requirement based on the average, a signed commitment to tracking and maintaining compliance over the next three years is also required. If employing this approach, the methods employed to demonstrate compliance with the California packaging law must be applied.

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 C2CPII-recognized cycled

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 ≥ 20% post consumer recycled or renewable content is to achieve the Silver level requirements 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 the Packaging & Single Use Products tab) for Silver level requirements by material type. However, note that in most cases the required percentages for packaging as listed in this document will be greater than 20%. In other words, it will usually be less difficult to achieve "the sum of postconsumer cycled and renewable content must be ≥ 20%" than to achieve the required percentages per the Required Percentages of Cycled and Renewable Content by Product and Material Type reference document. In addition, the Product Circularity section of the standard requires that: *For commonly recycled biological and biologically derived materials, renewable content counts half as much as recycled content toward meeting the required cycled and/or renewable content percentages*. If meeting the percentages in the Required Percentages of Cycled and Renewable Content by Product and Material Type reference document rather than the 20%, this requirement also applies.

Achieving the Compatibility Requirements (Requirements #3b.i)

Requirements: *At least 90% of the packaging materials by weight meet the Silver and Gold level requirements, respectively, in Sections 5.2 Preparing for Active Cycling and 5.4 Material Compatibility for Technical and/or Biological Cycles, **OR** comply with #1-4 below:*

1. *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.
2. *Plastic materials are (a) A type that is commonly recycled or composted via curbside pickup (i.e., PET, HDPE, or PP) **and** (b) 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 my municipal programs in the European Union, United Kingdom, and Switzerland. 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.
3. *Materials that are intended for composting are fully compostable per a C2CPII-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 C2CPII-Recognized Certification Programs and Standards for recognized compostability tests and standards.

4. *Materials that are commonly recyclable (e.g., paper, steel, aluminum,) do not contain additives or features that are likely to result in low-value (i.e., low-quality) reprocessed material. Additives that may be present in the recycled content used are out of scope for this determination. Exemption: Glass is exempt from this requirement.* Refer to the guidance for standard Section 5.4 Material Compatibility for Technical and/ or Biological Cycles (Gold level high-value cycling requirements and associated guidance) for a list of additives and features that likely result in low-value reprocessed material. Note that this requirement does apply to plastic packaging although it is not listed as an example material in this clause of the standard.

Refill/Reuse and Product Specific Take-back Program (Requirements #3c)

No additional guidance is provided. Refer to Required Documentation section below.

Weight Reduction (Requirements #3d)

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. Refer to Container Compliance Options: Rigid Plastic Packaging Container (RPPC) Program (CalRecycle) for additional guidance and calculation methods.

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).

Required Documentation

- Description of product packaging.

For compliance with the restricted substances and organohalogen and functionally related chemical classes of concern requirements (requirements #1 and #2:

- Restricted substances (Section 4.1) and organohalogen and functionally related chemical classes of concern (Section 4.2) declarations for all packaging components/materials.
- If using recycled content materials, analytical test results (i.e., metals and organohalogens, as described above).

For compliance with the post-consumer recycled and renewable content requirements (requirements #3a):

- 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.
- If achieving this requirement based on averages, data and calculations demonstrating how the average has been ≥ 20% over the prior year (for new certifications) or prior three years (for recertifications) and signed commitment to maintaining this percentage over the next three years at a minimum.

For compliance with the compatibility requirements (requirements #3b):

- 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 guidance (i.e., Section 5.4 Bronze and Gold levels)
    - 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, any declarations must be supported by composition data collected (e.g., the

composition data that is collected for the purposes of achieving the Material Health requirements.

For compliance with the reusable/refillable or part of take-back program requirement (requirements #3c):

- 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 compliance with the weight reduction or other design opportunity requirements (requirements #3d):

- Description of the weight reducing design and how it has enabled the use of less material (i.e., at least 10% less). Data and calculations showing how the packaging weight changed and over what time period. Evidence that compatibility for cycling did not decrease with the weight reduction, referring to Section 5.4 Compatibility requirements.

or

- Required documentation per Section 5.7 Circular Design Opportunities and Innovation if a different opportunity is selected.

10 // Animal Welfare Requirements

Several animal material types may not be used in certified products (see eligibility restrictions in the User Guidance). 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. Develop a strategy and plan for implementing a mechanism that aims to ensure adherence to the policy and demonstrate progress toward implementing the policy and mechanism.

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 planned 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 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. 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.

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.

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 concvern, and references used.
- Company policy that includes all required points. This must include a zero tolerance stance for mulesing and live plucking, as applicable.
- Description of the planned mechanism for ensuring policy implementation including required points #1-2 (i.e., surveillance and tracking).
- Procedure for addressing any policy non-compliances identified.
- Bronze level recertification: Progress report on policy and mechanism implementation (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).

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 C2CPII'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. 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, and
3. Unless meeting all standard requirements per the option below, 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 and reference these requirements in the registry. It will also be stated on the registry entry that the product manufacturer 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.

If a company does not wish to disclose the required information in #3 above related to assessment and conformance with the company-level requirements, the product and company must meet all standard requirements (although the majority will have already been met by the manufacturer and parent company). This will include:

- The company-level Social Fairness requirements, and
- The company-level Environmental Policy and Management requirements unless already met by the final manufacturing stage.

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

- C2CPII 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).
- 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- (adjusted Biogenic Assessment Factor for the eligible fuel)].

Biogenic assessment factor – A unitless factor that represents the net atmospheric biogenic CO_2 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 CO_2 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 (IL) 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 8 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 organisations 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 4 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 generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose.

Pre-consumer cycled content – Material or parts diverted from the waste stream during a manufacturing process. Material or parts such as rework, regrind, or scrap that are generated in a process and are capable of being reclaimed within the same process that generated it are excluded.

Further Explanation

Pre-consumer recycled content material that is sourced internally is considered pre-consumer cycled 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.

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.

This definition of pre-consumer cycled content is aligned with ISO 14020 Environmental Labels and Declarations. 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 assembly tools and/or 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 [Reference: www.cites.org/eng/app/index.php] and/or in the International Union for Conservation of Nature (IUCN) Red List as Near Threatened, Vulnerable, Endangered, or Critically Endangered. [www.iucnredlist.org/]

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 if 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

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 prioritise risks by using the parameters of scale, scope and irremediable character. See the OECD Due Diligence Guidance for Responsible Business Conduct for additional information (https://mneguidelines.oecd.org/OECD-Due-Diligence-Guidance-for-Responsible-Business-Conduct.pdf).

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: 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 4 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.

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 (www.oecd.org/en/publications/2017/02/oecd-due-diligence-guidance-for-meaningful-stakeholder-engagement-in-the-extractive-sector_g1g65995.html).

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, https://single-market-economy.ec.europa.eu/system/files/2016-06/eu-smes-subcontracting-final-report_en_0.pdf.

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 and www.ifm. eng.cam.ac.uk/research/dstools/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.

Frequency and Type of Site Visit

An on-site (i.e., in person) visit is required:

- Prior to initial certification (for new Cradle to Cradle Certified products) or, for products transitioning from Version 3.1, at the first renewal after the first certification to Version 4.0 or Version 4.1 of the standard.

An on-site or remote site visit is required:

- Prior to all subsequent recertifications, as part of the recertification process.
- If the manufacturing process changes significantly. This includes, but is not limited to, cases where a process step, as defined in Final Manufacturing Stage Process Definitions, 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.

For products certifying to Version 4.1 of the C2C Certified Material Health Certificate Standard, an on-site visit is recommended prior to initial certification, but is not required. Instead, an on-site visit is required at each subsequent recertification, and if the manufacturing process changes significantly, as noted above.

Note: Remote site visits are permitted only in cases where it is possible to verify all required points as listed in the site visit checklist.

Location(s)

At a minimum, a site visit must be conducted at the main final manufacturing facility. Site visits must also be conducted at any additional facilities involved in 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 verifer(s) must use their best judgement 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 http://wwwen.ipe.org.cn/about/about.aspx
- US - OSHA database: https://www.osha.gov/pls/imis/establishment.html#disclaim

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.
- 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 8.3 Monitor and Verify Performance regarding when and where a third-party social audit is required in addition to the site visit(s) described above.

Required Documentation

- Completed C2CPII Manufacturing Site Visit Checklist (available to C2CPII assessors)

14 // Appendix 2 – Process for Becoming a C2CPII-recognized Program

Further Explanation

C2CPII-recognized Programs

Several requirements in Version 4.1 of the Cradle to Cradle Certified Product Standard reference *C2CPII-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 C2CPII recognition:

- The program, standard, or testing method includes the technical requirement(s) and otherwise addresses the issues and intent as defined in the Version 4.1 requirement, and
- 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 C2CPII Recognized Program Application Form.

Note: System requirements for recognition are subject to change. Decisions to recognize programs, standards, and testing methods are made in C2CPII'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 C2CPII has directly determined compliance with the C2CPII 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 C2CPII system requirements covered by the accreditation scheme.

Applying for C2CPII Recognition

To apply for recognition as a C2CPII-recognized program, the C2CPII Recognized Program Application Form must be completed and submitted to C2CPII. An application processing fee applies. C2CPII 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 4.1 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	1 July 2024
4.1	Updated to include information about the new alternative compliance pathway to use C2CPII-recognized programs	26 September 2024
4.2	Updated to include information about the new alternative compliance pathway to use C2CPII-recognized programs	26 September 2024
4.2	Updated the guidance for intermediate products	02 October 2024