



Externally Managed Component Assessment Methodology

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REVISION HISTORY

REVISION DATE	SECTION(S)	TYPE OF CHANGE	AUTHORIZED BY
November 2021	All	<i>Initial Release</i> – This document describes and consolidates the methodology to assess Externally Managed Components according to Version 4.0 of the Cradle to Cradle Certified® Product Standard. Previously, this methodology was incorporated within Version 3.1 of the standard document itself. This separate document has been created to enhance accessibility and provide clarity on new requirements under Version 4.0.	S. Klosterhaus

1 OVERVIEW

1.1 PURPOSE AND CONTENT

This document outlines a customized methodology for the Material Health assessment of Externally Managed Components (EMCs) in the Cradle to Cradle Certified® Product Standard. Product components that meet the requirements described in this document are by definition EMCs. Examples of potential EMCs are a pneumatic cylinder in an office chair, the motherboard in a computer, the electric motor inside an automated window shade product, and a solar panel.

Product components that have achieved all applicable requirements in this document may be counted towards the total percentage of the product that is assessed at all Cradle to Cradle Certified achievement levels.

1.2 SUPPORTING DOCUMENTS

The following documents are to be used in conjunction with this document:

- Cradle to Cradle Certified® Product Standard
- Cradle to Cradle Certified® Product Standard User Guidance
- Cradle to Cradle Certified® Material Health Assessment Methodology
- Any applicable Cradle to Cradle Certified® standard documents and methodology documents posted on the C2CPII website.

1.3 CONDITIONS FOR ASSESSMENT AS AN EXTERNALLY MANAGED COMPONENT

The assessment methodology described in this document is an alternative to the usual inventory and assessment process required per the Cradle to Cradle Certified Product Standard and Material Health Assessment Methodology. A product component may be assessed using this alternative methodology when it is enclosed and sealed such that product users and/or the environment do not come into contact with the internal materials and chemicals during intended use or likely unintended use. Use includes any maintenance that may need to occur during the use phase. In addition, guaranteed take-back and proper end of use management is required. If, during use of the product for which the EMC is a component, a user is exposed to any part or chemical within the component, or if any part or chemical within the component is released to the environment, the component is not considered an EMC and must be assessed and inventoried like the other materials in the product.

1.4 INTENT

The EMC concept is intended to encourage manufacturers to design complex components that are completely managed after use. This methodology allows for the use of product components that do not need to be assessed in the same way as the rest of a product – because they are manufactured in a way that prohibits the migration of chemicals and materials from the component(s), and are managed as a whole.

2 EXTERNALLY MANAGED COMPONENT REQUIREMENTS

2.1 Requirements

Product components that have achieved all applicable requirements below may be counted as assessed at any Cradle to Cradle Certified achievement level:

- There must be guaranteed take-back and appropriate end of use management for the EMC. This may be provided by the applicant, component supplier, or designated third-party(ies). The Version 4.0 Platinum level Active Cycling requirements apply to EMCs in determining whether or not an appropriate end of use / take-back system is in place. Specifically, the EMC must meet Platinum level requirements as described in Section 5.9 of the Version 4.0 standard, regardless of the achievement level and standard version for the product certification overall¹.
- The component must be in compliance with the Restricted Substances List (RSL) if applying under Version 4.0 or the Banned Lists of Chemicals if applying under Version 3.1. A single core RSL or Banned List declaration signed by the applicant or manufacturer of the EMC will be accepted. This declaration must be supported by one or more of the following:
 - RSL or Banned List declarations from suppliers of all homogeneous materials contained within the EMC (these may be collected by the manufacturer and shared with the assessor; it is not required to provide all declarations to C2CPH)
 - Analytical testing of all internal EMC materials for which no RSL declaration from the material manufacturer has been obtained demonstrating compliance with the RSL or Banned List. Contact C2CPH for information on appropriate test methods (methods recommended for the Recycled Content Materials Assessment Methodology apply).
 - The EMC manufacturer may sign a declaration if they have sufficient knowledge of the components material and chemical constituents to ensure that all contained materials are RSL or Banned List compliant.
- If the product is intended to be used indoors, the EMC (or the entire product) must have passed a VOC emissions test per Version 3.1 Section 3.9 or Version 4.0 Section 4.7 (Gold level), as appropriate depending on the standard version for the certification overall.
- If the product is intended to be used outdoors and will be installed in such a way that the housing and/or other components of the EMC will be exposed to environmental media (e.g. rain, soil, ice), the product must have received an appropriate

¹ For long-use phase products where active cycling is not yet occurring (because the product hasn't been on the market long enough), only those Active Cycling requirements that can be met are mandatory. This is to 'implement a program to increase the cycling rate or quality of the product for its next use'.

International Electrotechnical Commission (IEC) International Protection (IP) rating or National Electrical Manufacturers Association (NEMA) rating² (or similar depending on product type and location in which it is sold) for the environment in which it will be used. This will provide some assurance that the unassessed internal components of the EMC will not accidentally be released due to contact with water and soil, etc.

- Data on the rate of return for the product itself or for similar product(s) and proof that returned EMCs will be handled and recycled in a way that minimizes the risk of human or environmental exposure to hazardous substances must be available. If less than 95% of the EMC is being returned or can be expected to be returned for appropriate handling and recycling (or if data are not available), then landfilling must be assumed as a plausible end of use scenario. In this case, leaching tests are required per the methods described below to ensure that the EMC is not defined as hazardous waste.
- Leaching test requirements for landfill scenario:
 - The extraction method used must be per [EN 12457-1](#) -2 or -3 for granular waste (relevant to the EU's [Council Decision 2003/33/EC](#) Waste Acceptance Criteria). Alternatively, if the product will only be sold outside of the EU, then the extraction method outlined in the US EPA's [Toxicity Characteristic Leaching Procedure](#) (TCLP) may be employed instead.
 - Eluate must meet the requirements for inert or non-hazardous waste per Section 2.2.2 *Limit values for non-hazardous waste* of [Council Decision 2003/33/EC](#) (or most recent version of the clause in the case that the directive is updated or amended) per the requirements in the EU member state(s) where the product is sold. Alternatively, if the product will only be sold outside of the EU then the requirements outlined in the most recent version of the US EPA's [TCLP](#) may be met instead.
- The external part of the EMC that is available for oral, dermal, inhalation, and/or environmental exposure to occur (e.g., housing, external wiring), may not be considered part of the EMC and must be assessed per the usual methodology.

2.2 Required Documentation

Documentation in support of meeting all requirements listed above is required as follows:

- Description of the EMC including an explanation of how it is sealed, thereby prohibiting the migration of chemicals and materials from the component.
- A signed statement from the applicant or component supplier guaranteeing take-back and appropriate end of use management, including a full description of the take-back program and how the product or material will be returned.
- Evidence of having achieved the Version 4.0 Platinum level Product Circularity requirements (see Required Documentation Box in the Version 4.0 User Guidance)

² Information on IP ratings: <https://www.nemaenclosures.com/blog/ingress-protection-ratings/>
<https://www.cnet.com/how-to/water-dust-resistance-ratings-in-gadgets-explained/>
IP and NEMA ratings: <https://www.siemon.com/en/home/support/compliance/nema-ratings-and-ip-equivalents>

- A signed statement from the applicant or component supplier indicating that chemicals in the EMC will not, to the best of the applicant's or supplier's knowledge, negatively impact humans or the natural environment.
- RSL or Banned List declarations and/or analytical test results, as relevant.
- For indoor use products: VOC emissions test results.
- For outdoor use products: IEC, NEMA, and/or similar rating documentation.
- Rate of return data demonstrating at least 95% return rate and explanation of the recycling process demonstrating controls on human and environmental exposure - **OR** hazardous waste test results.
- Laboratory accreditation information for tests conducted.