Version 2018 | February, 2018

Sustainable Minds Transparency Report™ / EPD Framework

Part A: Compatibility appendices

Table of contents

Introduction

Manufacturers have a choice of ISO 14025 Type III environmental declarations to deliver potential environmental performance information – Sustainable Minds Transparency Reports™ or traditional EPDs.

Sustainable Minds Part A compatibility appendices were designed to easily enable those using an existing PCR to create a TR/EPD AND to optionally be compliant with other international standards. The Part A compatibility appendices ensure that all manufacturers are using the same LCA calculation rules and reporting the same content, where just the reporting *format* is different.

Scenario	Instructions
Starting a new LCA and <u>have not selected a PCR</u>	**Option 1**. If no appropriate PCR exists, use the *Sustainable Minds Part B: Product group definition request form* to initiate the creation of a Part B. In this case, a compatibility appendix is not needed. Complete the LCA to the requirements of Parts A and B. **Option 2**. Complete the LCA to the requirements of the selected PCR and use the corollary compatibility appendix to create a TR/EPD. If no compatibility appendix exists, either request the creation of a new one or create one yourself using the compatibility evaluation form herein. This form is used to identify the additional TR/EPD content required by the PCR that is NOT required by Part A.
Starting a new LCA <u>using an existing PCR</u>	Complete the LCA to the requirements of the PCR and use the corollary compatibility appendix to create a TR/EPD. If no compatibility appendix exists, either request the creation of a new one or create one yourself using the compatibility evaluation form

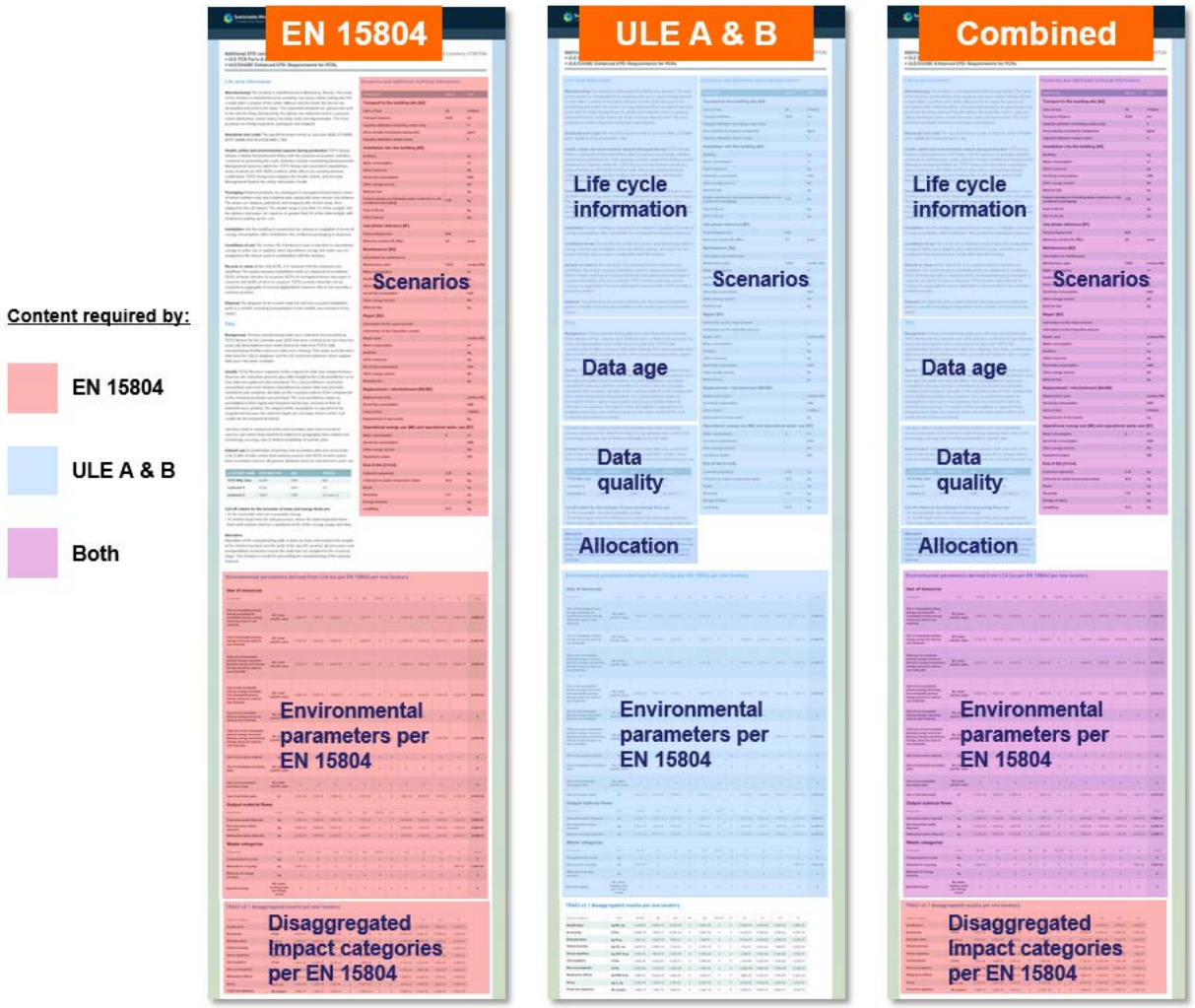
	herein and send to TAB@sustainableminds.com. This form is used to identify the additional TR/EPD content required by the PCR that is NOT required by Part A.
Completed an LCA <u>using an existing PCR</u> and seeking compatibility with additional standards	Use the corollary compatibility appendix/appendices to create a TR/EPD. *Please note that significant changes to the LCA may be required in order to meet the reporting requirements of each additional standard or PCR.*

If you are a program operator or stakeholder interested in creating a compatibility appendix using an existing standard or PCR, fill out the compatibility evaluation form herein and send to TAB@sustainableminds.com. It will be reviewed by the TAB and returned for your use. Once reviewed and approved, it will be published as a compatibility appendix.

All additional TR/EPD content required by the PCR that is NOT included in the Sustainable Minds Transparency Report™ / EPD Framework will be published on Page 4 in a Transparency Report™. Each program operator can determine placement in its own EPD template.

In the example below, a Transparency Report™ compliant with the ULE PCR Parts A and B for Sanitary Ceramics and CEN EN 15804:2012+A1 was used to illustrate the additional content required in the TR/EPD to be compliant with both the PCR and the international standard.

Figure 1. Transparency Report™ Page 4 showing requirements from indicated compatibility appendices



Appendix C: TR/EPD content requirements

Content list	What must be communicated to be useful & be an ISO 14025 Type III environmental declaration
1. Company & product Identification	
Brand identification – company logo, product logo	
Company contact info	Name, corporate address, URL
Product photo(s)	As it looks when delivered
Product name(s)/ID(s)	That the market recognizes
Product(s) description	Description of what it does for the end-user, standards followed (e.g. EN 13310:2003, Kitchen sinks – Functional requirements and test methods), dimensions of the product(s), the use and/or area of application, material type, sub-category, the represented site(s)/plant(s), and other pertinent physical properties and technical information
Product identification (e.g. model number)	
Part B / PCR identification	Reference the Part B / PCR used to create the TR/EPD. Include who the Part B / PCR review was conducted by. (e.g. Part B review conducted by the Sustainable Minds TAB, tab@sustainableminds.com)
Performance Dashboard	**Functional performance**
	User inserts product category-specific attribute list with scores. Required to be on the market or industry-accepted attributes.
	Potential environmental performance
	- Declared product unit
	- Single figure scores by Sustainable Minds impact scores and life cycle stage (optional)
Attributes	**Functional performance**
	Additional attributes that describe product performance, but not required to satisfy a minimum legal standard.
	Potential environmental performance
	Attributes that are relevant to the LCA results and have shown to reduce the footprint by more than 10% in any environmental parameter.
Certifications	**Functional performance**
	Mandatory and optional
	Potential environmental performance
	Mandatory and optional
2. Issuing party and verification information	
Issuing party information	Name, program name, address, logo, website
Third-party verifier information (when relevant)	Name, postal address, phone number, website, email address
Release date, valid until (5 years after release date, or as specified by the PCR)	
Reference to full LCA report	Include title, release date, and software type and version used
Non-comparability statement	Include the following statement: "**Transparency Reports™ / environmental product declarations enable purchasers and users to compare the potential environmental performance of products on a life cycle basis.** They are designed to present information transparently to make the limitations of comparability more understandable. TRs/EPDs of products that conform to the same PCR and include the same life cycle stages, but are made by different manufacturers, may not sufficiently align to support direct comparisons. They therefore, cannot be used as comparative assertions unless the conditions defined in ISO 14025 Section 6.7.2. 'Requirements for Comparability' are satisfied."
Verification level	Choose one of the following:
	□ Verified report and LCA results
	□ Self-declared report with ISO 14044 3rd party reviewed LCA results
	□ Self-declared report with self-declared LCA results

Verification statement	Include statement of verification (e.g. The LCA and background report are independently verified to the Sustainable Minds Transparency Report™ / EPD Framework and ISO 14025.)
Scope	Choose one of the following
	□ Cradle-to-grave (max)
	□ Cradle-to-gate with options
	□ Cradle-to-gate (min)
Time coverage	Indicate the year for which primary data have been collected.

3. LCA results

Functional unit quantified performance of a product system for use as a reference unit (for cradle-to-grave)	In the functional unit description, include: Quantity, performance, application, reference service life (RSL)
Declared unit (for cradle-gate or cradle-to-gate with options)	In the declared unit description, include: Quantity, performance, application
Material composition	What's in the product – list contents larger than 1% by weight, describe remainder in aggregate. Include the product and other materials that are within the scope of this report. Create a table declaring the product composition information. Materials that exist in the product that are considered proprietary by the manufacturer may be described with a generic descriptor which includes role and/or function. Additionally, where necessary, materials may be reported with a corresponding reasonable range of mass percentages for which they exist in the product or product range. Table headers: Component | Material | % by weight Additionally, specify materials and substances that can adversely affect human health and/or the environment, in all stages of the life cycle.
Numeric LCA results (defined by TRACI, needed for LEED, millipoints), broken down in cradle-to-gate, use phase and end-of-life; info-graphics	Inclusion of [A1], [A2], [A3] are a mandatory minimum and for 'cradle-to-gate'. 'Cradle-to-grave' studies must include all life cycle stages [A1-C4], where module D is optional. All other studies are referred to as 'cradle-to-gate with options'. List the inclusions & exclusions for the following and add explicit details about exclusions. Indicate the impact assessment version used.

Life cycle stages	**Production**	**Construction/ Installation**	**Use**	**End of life**	**Recovery**
Bold the information levels modules included: **Include photos to illustrate life stages. Actual manufacturer's photos preferred vs. stock.**					
Information modules	A1 Supply chain	A4 Delivery	B1 Use	C1 Demolition	D Reuse, recovery and/or recycling
Included/Excluded	A2 Transportation	A5 Installation	B2 Maintenance	C2 Transportation	
	A3 Manufacturing		B3 Repair	C3 Waste processing	
			B4 Replacements	C4 Disposal	
			B5 Refurbishments		
			B6 Energy		
			B7 Water		

SM2013 mPts (optional)	**Production**	**Construction**	**Use**	**End of life**	**Recovery**
Indicate total impacts by life cycle stages [mPts/functional unit] **Caption explaining materials or processes contributing >20% to total impacts in each lifecycle stage**					

Impact category	**Unit**	**Production**	**Construction**	**Use**	**End of life**	**Recovery**
Ecological indicators						
Acidification	**kg SO2 eq**					
Eutrophication	**kg N eq (nitrogen)**					
Global warming	**kg CO_2 eq (carbon dioxide)**					
Ozone depletion	**kg CFC-11 eq**					

Human health indicators						
Carcinogenics (optional)	*CTUh*					
Non-carcinogenics (optional)	*CTUh*					
Respiratory effects (optional)	*kg PM2.5 eq*					
Smog	**kg O_3 eq (ozone)**					
Additional environmental information						
Ecotoxicity (optional)	*CTUe*					
Fossil fuel depletion (optional)	*MJ surplus*					

4. Variations that drive performance

Important parameters within the LCA, what are the major contributions

What things have range or variations, and the relevance

Report:

- All processes or materials that have a contribution of 20% or more in any of the LCA results (= relevant impacts)
- A sensitivity analysis for the most important choices and assumptions must be performed to check the robustness of the results of the LCA. Indicate which influence the results in any environmental parameter by more than 20%. State the chosen approach for these parameters.

Topics include:

- The impact of the geographical & technological variation over the different production locations.
- The variation due to variation in the average composition.
- The variation due to averaging for drawing up a 'group-average'.
- For above, use the highest and lowest values in the sensitivity analysis. Outliers can be disregarded.
- Allocation of recycling processes.
- Allocation of multi- input and multi-output processes.

Results Interpretation

What's causing the greatest impacts, in which life cycle stages, and what is the company doing about them?

5. Relevant additional environmental data related to potential environmental performance

All declared data and/or certifications require reference and must conform to the applicable standards for the region declared in the functional unit. This can include:

- Certificate logos, certificate numbers, and/or other references. Use logos when possible, linked to the organization's web site.
- For cradle-to-gate TRs/EPDs, the following may be qualitatively reported if known:
    - Other products not included in assessment needed for product to serve intended function
    - Anticipated replacement cycle of product
    - Intended use
    - Potential waste treatment scenarios
- Statements that relate to the scope of the TR/EPD
- Additional environmental statements which are mandatory through legislation, even for stages of the life cycle that are not part of the scope

6. Relevant product manufacturing/strategy about environmental ambition/programs

- Relevant to LCA results
- Content about programs, strategies, and successes relevant to the potential environmental performance of the product. Detailed stories and images about potential environmental performance improvement methods and techniques such as: closed-loop recycling, up-cycling, renewable energy, sustainable supply chain efforts, etc.

Compatibility appendices

Standards

TR/EPD compatibility appendix

ISO 21930:2017

ISO 21930 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services, 2017-07

Where this document contains more specific requirements, it seeks to complement ISO 14025 for the EPD of construction products. However, where the requirements of this document go beyond the requirements of ISO 14025 for the development of PCR for construction products, the requirements of this document shall apply.

Use this Appendix to create a TR/EPD compliant with ISO 21930:2017.
The right column indicates the additional content required and its location in a Transparency Report™.

<table>
<tr><th>Content list</th><th>What a TR/EPD must communicate to be useful & be ISO 14025 Type III environmental declaration</th><th>Additional content requirements from ISO 21930:2017</th></tr>
<tr><td colspan="2">1. Company & product Identification</td><td>No additional content required.</td></tr>
<tr><td colspan="2">2. Issuing party and verification information</td><td>No additional content required.</td></tr>
<tr><td colspan="2">3. LCA results</td><td></td></tr>
<tr><td>Numeric LCA results
(defined by TRACI, needed for LEED, millipoints), broken down in cradle-to-gate, use phase and end-of-life; info-graphics</td><td>Inclusion of [A1], [A2], [A3] are a mandatory minimum and for ‘cradle-to-gate’. ‘Cradle-to-grave’ studies need to include all life cycle stages. All other studies are referred to as ‘cradle-to-gate with options’.

List the inclusions & exclusions for the following and add explicit details about exclusions.

Indicate the impact assessment version used.</td><td>Requirement: Page 33, section 7.1.7.1: Within an EPD, the indicators declared in the individual information modules of a product life cycle (i.e. A1 to A5, B1 to B7, C1 to C4) and the optional supplementary information beyond the life cycle (module D) shall not be aggregated in any combination of the individual information modules into a total or subtotal of the life cycle stages. As an exception, individual indicators for information modules A1, A2, and A3 may be aggregated to a total for each indicator in the production stage.

<table><tr><th>Action</th><th>Add to TR* page</th></tr><tr><td>Report results per each individual module, except for A1-A3 which may be aggregated</td><td>Anywhere LCA results are presented</td></tr></table>*Each program operator can determine placement in its EPD template.*

Requirement: Page 44, section 7.1.10:
SI units shall be used. […] With the exceptions noted below, all resources are expressed in kg.
Exceptions are:
- RPR_E and $NRPR_E$, which are expressed as kWh or MJ
- RPRM and NRPRM, which are expressed as kWh or MJ. However, measurement of these materials as inputs are expressed in mass. Primary resources used as energy or material input shall have the same unit
- Water use, which is expressed in m^3
- Temperature, which is expressed in °C
- Time, which is expressed in practical units depending on assessment scale: mins, hours, days, yrs</td></tr>
</table>

Action	Add to TR page
Use those units for measurement of those metrics	Anywhere LCA results are presented

Requirement: Page 52, section 7.2.1.4: *The following waste categories shall be declared and specified for all information modules included in the EPD:*

- *hazardous waste disposed, in kg,*
- *non-hazardous waste disposed, in kg,*
- *radioactive waste disposed,*
    - *high-level radioactive waste, conditioned, to final respiratory, in kg or m3,*
    - *intermediate- and low-level radioactive waste, conditioned, to final respiratory, in kg or m3*

The following output flow categories shall be declared and specified for all information modules included:

- *components for reuse*
- *materials for recycling*
- *materials for energy recovery*
- *recovered energy exported from the product system*

Action	Add to TR page
Include these waste flow parameters	Page 4

Requirement: Page 58, section 9.3: *The EPD shall specify the following: […]*

- *allocation procedure*

Action	Add to TR page
Describe allocation procedure	Page 4

Requirement: Page 58, section 9.3: *The EPD shall specify the following: […]*

- *cut-off procedure*

Action	Add to TR page
Describe cut-off procedure	Page 4

Requirement: Page 58, section 9.3: *The EPD shall specify the following: […]*

- *declaration of technical information and scenarios*

Action	Add to TR page
Include scenarios and additional technical information, as described in ISO 21930:2017 section 9.4	Page 4

		Requirement: Page 61, section 9.5.2: *The following parameters derived from LCI shall, as a minimum, be included and specified for all information modules:* - *Use of primary resources (several indicators)* - *Use of secondary resources (several indicators)* - *Abiotic depletion potential for fossil resources (ADPfossil)* - *Consumption of freshwater resources* - *Waste and output flows (several indicators)* **Action**: Include these material and resource use parameters **Add to TR page**: Page 4 **Requirement**: Pages 61-62, section 9.5.2: *The following indicators shall be included for transparency and specified for all information modules, where the respective flows occur:* - *removals and emissions associated with biogenic carbon content of the bio-based product* - *emissions from calcination and removals from carbonation* - *removals and emissions associated with biogenic carbon content of the bio-based packaging* - *emissions from combustion of waste from renewable sources used in production processes* - *emissions from combustion of waste from non-renewable sources used in production processes* *The output flows that have crossed the system boundary between product systems shall be declared as stated in Table 4 and specified for all information modules.* **Action**: Include emissions for all information modules **Add to TR page**: Page 4
4. Variations that drive performance		
Important parameters within the LCA, what are the major contributions **What things have range or variations, and the relevance**	Report: • All processes or materials that have a contribution of 20% or more in any of the LCA results (= relevant impacts) • A sensitivity analysis for the most important choices and assumptions must be performed to check the robustness of the results of the LCA. Indicate which influence the results in any environmental parameter by more than 20%. State the chosen approach for these parameters. Topics include: • The impact of the geographical & technological variation over the different production locations. • The variation due to variation in the average composition. • The variation due to averaging for drawing up a 'group-average'.	**Requirement**: Page 22, section 5.3: *Where an average composition, representative composition, or worst case environmental indicators are used, the products included in an average EPD shall not differ in their environmental impact indicators by more than ±10%. Similar products included in other average EPDs should not differ in their environmental impact indicators by more than ±10%. Where larger impact differences are found for the companies/sites and/or products evaluated, these need to be justified in the project report or the system separated.* **Action**: If variation for any impact indicator is more than +/- 10%, separate an average EPD until this requirement is met **Add to TR page**: Whole TR

	• For above, use the highest and lowest values in the sensitivity analysis. Outliers can be disregarded. • Allocation of recycling processes. • Allocation of multi- input and multi-output processes. What's causing the greatest impacts, in which life cycle stages, and what is the company doing about them?	
5. Relevant additional environmental data/certifications related to environmental performance		No additional content required.
6. Relevant product manufacturing/strategy about environmental ambition/programs		No additional content required.

UL Environment PCR: Parts A and B for Sanitary Ceramics

Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report – Version 1.3, 19.06.2014
Adapted for UL Environment from the range of EPDs of Institute Construction and Environment e.V. (IBU) http://industries.ul.com/wp-content/uploads/sites/2/2014/09/ULE-IBU-PCR-Part-A_v71.pdf
Part B: Requirements on the EPD for Sanitary Ceramics – Version 1.0, 14.06.2014 http://industries.ul.com/wp-content/uploads/sites/2/2014/09/ULE_PCR_Part_B_Sanitary_Ceramics_12-15-15.pdf

Use this Appendix to create a TR/EPD compliant with UL Environment Parts A and B for Sanitary Ceramics. The right column indicates the additional content required and its location in a Transparency Report™.

Content list	What a TR/EPD must communicate to be useful & be ISO 14025 Type III environmental declaration	Additional content requirements from ULE Parts A and B for Sanitary Ceramics
1. Company & product Identification		
Product(s) description	Description of what it does for the end-user, standards followed (e.g. EN 13310:2003, Kitchen sinks – Functional requirements and test methods), dimensions of the product(s), the use and/or area of application, material type, sub-category, and other pertinent physical properties and technical information	**Requirement:** Part B, pages 4-5, section 2: **2.7 Manufacture** The manufacturing process must be described and can be illustrated using a simple graphic. If the EPD applies for several locations, the production processes for all locations must be described. Quality management systems can be referred to. **2.8 Environment and health during manufacturing** Presentation of measures relating to health protection during the manufacturing process extending beyond national guidelines (of the production country). Presentation of measures relating to environmental protection during the manufacturing process extending beyond national guidelines or plant-specific requirements, e.g. description of special environmentally-friendly dealings with waste air, waste water and waste as well as noise emissions. Information on the Environment Management System or similar (if available). **2.9 Product processing/Installation** Description of the type of processing, machinery, tools, dust extraction etc. to be used and auxiliary materials as well as measures for reducing noise Information on the rules of technology and industrial and environmental protection is possible. **2.10 Packaging** Information on product-specific packaging: type, composition and possible reuse of packaging materials (paper, pallets, foils etc.). **2.11 Condition of use** Information should be provided here as regards the special features of contents for the period of use. **2.12 Environment and health during use** Information on the relationships between products, the environment and health; possible content of harmful substances or emissions. Any recommendations concerning cleaning, maintenance etc. of the declared product should be listed in the corresponding section in 4 “Technical information on scenarios”. **2.14 Extraordinary effects** Fire: If relevant, information on fire performance according to the International Code Council (ICC) and National Fire Protection Association (NFPA). Water: Information on product performance including possible impacts on the environment following unforeseeable influence of water, e.g. flooding. Mechanical destruction: If relevant: Information on product performance including possible impacts on the environment following unforeseeable mechanical destruction. **2.15 Re-use phase** The possibilities of re-use, recycling and energy recovery must be described. **2.16 Disposal** The possible disposal channels must be indicated. In accordance with US waste classification and disposal routes. **Action** | **Add to TR* page**

		Add relevant sections → Page 4 Life cycle information **Each program operator can determine placement in its EPD template.*
2. Issuing party and verification information		No additional content required.
3. LCA results		
Data quality		**Requirement:** Part B, page 6, section 3 **3.5 Background data** The sources for background data used must be provided. **3.6 Data quality** An estimate should be made as regards data quality, whereby the age of background data used must be indicated. **Action:** Add background data sources and data quality estimate, including age → **Add to TR page:** Page 4 Data background
Functional unit quantified performance of a product system for use as a reference unit (for cradle-to-grave)	In the functional unit description, include: Quantity, performance, application, reference service life (RSL)	**Requirement:** Part B, page 6, section 3: *The declared or functional unit for ceramic sanitary wares is 1 packaged product piece with a provided conversion factor to 1 ton. The mass of one piece of the declared product shall be indicated. Flush and flow rate of ceramic sanitary wares shall be indicated.* **Name** / **Value** / **Unit**: Declared/functional unit: 1 piece Conversion factor to 1 ton: - Mass per piece: kg **Action:** Create conversion factor statement including declared/functional unit, conversion factor to 1 ton, and mass per piece → **Add to TR page:** Page 2 declared/functional unit description
Material composition	What's in the product – list contents larger than 1% by weight, describe remainder in aggregate. Include the product and other materials that are within the scope of this report. Create a table declaring the product composition information. Materials that exist in the product that are considered proprietary by the manufacturer may be described with a generic descriptor which includes role and/or function. Additionally, where necessary, materials may be reported with a corresponding reasonable range of mass percentages for which they exist in the product or product range. Table headers: Component | Material | % by weight Additionally, specify materials and substances that can adversely affect human health and/or the environment, in all stages of the life cycle.	**Requirement**: Part B, page 5, section 2.6: *Declaration of material product content must list at least those substances contained in the product which are included in the Resource Conservation and Recovery Act (RCRA), Subtitle 3.* **Action:** Declare substances listed in the RCRA, Subtitle 3 → **Add to TR page:** Page 2 Material composition
Numeric LCA results (defined by TRACI, needed for LEED, millipoints), broken down in cradle-to-gate, use phase and end-of-life; info-graphics	Inclusion of [A1], [A2], [A3] are a mandatory minimum and for 'cradle-to-gate'. 'Cradle-to-grave' studies need to include all life cycle stages. All other studies are referred to as 'cradle-to-gate with options'. List the inclusions & exclusions for the following and add explicit details about exclusions.	**Requirement:** Part B, pages 6-7, section 4: *The following information is necessary for the declared modules and optional for non-declared modules. Modules for which no information is declared can be deleted; additional information can also be listed if necessary.*

Indicate the impact assessment version used.

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

Transport to the building site (A4)

Name	Value	Unit
Liters of fuel		l/100km
Transportation distance		km
Capacity utilization (including empty runs)		%
Gross density of products transported		kg/m^3
Capacity utilization volume factor		-

Installation into the building (A5)

Name	Value	Unit
Auxiliary		kg
Water consumption		m^3
Other resources		kg
Electricity consumption		kWh
Other energy carriers		MJ
Material loss		kg
Output substances following waste treatment on site		kg
Dust in the air		kg
VOC in the air		kg

Use or application of the installed product (B1); see section 2.12 "Use". Use phase impacts shall only be assigned to products that control flow rate. Reporting of use (B1) and maintenance (B2) impacts of sanitary ceramics shall be defined by the information in: Table 1 "Use and maintenance (B1-B2) references." (see Part B for this table and referenced performance requirements)

Maintenance (B2)

Name	Value	Unit
Information on maintenance		-
Maintenance cycle		Number/RSL
Water consumption		m^3
Auxiliary		kg
Other resources		kg
Electricity consumption		kWh
Other energy carriers		MH
Material loss		kg

Repair (B3)

Name	Value	Unit
Information on the repair process		-
Information on the inspection process		-
Repair cycle		Number/RSL
Water consumption		m^3
Auxiliary		kg
Other resources		kg
Electricity consumption		kWh
Other energy carriers		MJ
Material loss		kg

Replacement (B4) / Refurbishment (B5)

Name	Value	Unit
Replacement cycle		Number/RSL
Electricity consumption		kWh
Liters of fuel		l/100km
Replacement of worn parts		kg

Operational energy use (B6); Operational water use (B7)

Name	Value	Unit
Water consumption		m^3
Electricity consumption		kWh
Other energy carriers		MJ
Equipment output		kW

End of life (C1-C4)

Name	Value	Unit
Collected separately		kg
Collected as mixed construction waste		kg
Reuse		kg
Recycling		kg
Energy recovery		kg
Landfilling		kg

Action	Add to TR page
Add LCA scenario tables	Page 4 Scenarios and additional technical information

Requirement: Part A, pages 25-26, section 8.1
The following environmental parameters use data from the inventory analysis. They describe the use of renewable and non-renewable material resources, renewable and non-renewable primary energy and water. The parameters are required and shall be specified as follows in the EPD:

Use of renewable primary energy excluding the renewable primary energy resources used as raw materials	MJ, calorific value ([Hi] lower calorific value)
Use of renewable primary energy resources used as raw materials	MJ, calorific value ([Hi] lower calorific value)
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, calorific value ([Hi] lower calorific value)
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, calorific value ([Hi] lower calorific value)
Use of non-renewable primary energy resources used as raw materials	MJ, calorific value ([Hi] lower calorific value)
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, calorific value ([Hi] lower calorific value)
Use of secondary materials	kg
Use of renewable secondary fuels	MJ, calorific value ([Hi] lower calorific value)
Use of non-renewable secondary fuels	MJ, calorific value ([Hi] lower calorific value)
Net use of fresh water resources	m^3

Action	Add to TR page
Add aggregated resource use parameters table	Page 4

Requirement: Part A, pages 26-27, section 8.1
The parameters describing waste categories and other material flows are output flows derived from LCI. They are required and shall be included in the EPD as follows:

Hazardous waste disposed	kg
Non-hazardous waste disposed	kg
Radioactive waste disposed	kg

Life Cycle Inventory Analysis indicators describing the output material flows:

Components for re-use	kg
Materials for recycling	kg
Materials for energy recovery	kg
Exported energy	MJ, heating value ([Hi] lower heating value) per energy carrier

Action	Add to TR page
Add aggregated waste categories and output flow parameters tables	Page 4

4. Variations that drive performance	No additional content required.
5. Relevant additional environmental data/certifications related to environmental performance	No additional content required.
6. Relevant product manufacturing/strategy about environmental ambition/programs	No additional content required.

ASTM PCR: Portland and Other Cements

Product Category Rules for Preparing an Environmental Product Declaration for Portland, Blended Hydraulic, Masonry, Mortar, and Plastic (Stucco) Cements, September 2014
http://www.astm.org/CERTIFICATION/DOCS/168.PCR_ASTM_Portland_Cement_PCR_091014.pdf

Use this Appendix to create a TR/EPD compliant with the ASTM Portland cement PCR.
The right column indicates the additional content required and its location in the Transparency Report™.

<table>
<tr><th>Content list</th><th>What a TR/EPD must communicate to be useful & be ISO 14025 Type III environmental declaration</th><th>Additional content requirements from ASTM Portland cement PCR</th></tr>
<tr><td colspan="2">1. Company & product Identification</td><td></td></tr>
<tr><td>Product(s) description</td><td>Description of what it does for the end-user, standards followed (e.g. EN 13310:2003, Kitchen sinks – Functional requirements and test methods), dimensions of the product(s), the use and/or area of application, material type, sub-category, and other pertinent physical properties and technical information</td><td>Requirement: Page 8, section 5.3: Cement shall be described in accordance with the appropriate ASTM, AASHTO, CSA, or other product specifications under which it is purchased.
This description shall include:
• […] cement type, product designation […];
• Flow diagram illustrating main unit processes by life-cycle stage according to the scope of the declaration

<table><tr><th>Action</th><th>Add to TR* page</th></tr><tr><td>Specify the cement type and product designation</td><td>Page 1 Product description</td></tr><tr><td>Include a flow diagram of unit processes by life cycle stage on Page 4</td><td>Page 4 Life cycle information</td></tr></table>*Each program operator can determine placement in its EPD template.

Requirement: Page 11, section 7.1: A plant-specific EPD shall identify the plant process type: dry with preheater and precalciner, dry with preheater, long dry, or wet.

<table><tr><th>Action</th><th>Add to TR page</th></tr><tr><td>Specify plant process type</td><td>Page 1 Product description</td></tr></table></td></tr>
<tr><td colspan="2">2. Issuing party and verification information</td><td></td></tr>
<tr><td>Non-comparability statement</td><td>Include the following statement:
“Transparency Reports™ / environmental product declarations enable purchasers and users to compare the potential environmental performance of products on a life cycle basis. They are designed to present information transparently to make the limitations of comparability more understandable. TRs/EPDs of products that conform to the same PCR and include the same life cycle stages, but are made by different manufacturers, may not sufficiently align to support direct comparisons. They therefore, cannot be used as comparative assertions unless the conditions defined in ISO 14025 Section 6.7.2. ‘Requirements for Comparability’ are satisfied.”</td><td>Requirement: Page 7, section 4.0: It shall be stated in EPDs created using these PCR that only EPDs prepared from cradle-to-grave life-cycle results and based on the same function, reference service life, and quantified by the same functional unit, can be used to assist purchasers and users in making informed comparisons between products. Since EPDs developed under these PCR only cover the cradle-to-gate impacts of portland, blended hydraulic, masonry, mortar, or plastic (stucco) cements, using a declared unit, the results cannot be used to compare products used in different mixtures and construction products. The results from a portland, blended hydraulic, masonry, mortar, or plastic (stucco) cements EPD must be integrated into a comprehensive cradle-to-grave, ISO 14044-compliant LCA in order to compare between different products. The basis of a comparison, where applicable, shall</td></tr>
</table>

		include the product application in accordance with ISO 21930. **Action** / **Add to TR page** Add non-comparability statement to Page 4 or modify non-comparability statement on Page 2 / Page 4 or Page 2 non-comparability statement
3. LCA results		
Numeric LCA results (defined by TRACI, needed for LEED, millipoints), broken down in cradle-to-gate, use phase and end-of-life; info-graphics	Inclusion of [A1], [A2], [A3] are a mandatory minimum and for 'cradle-to-gate'. 'Cradle-to-grave' studies need to include all life cycle stages. All other studies are referred to as 'cradle-to-gate with options'. List the inclusions & exclusions for the following and add explicit details about exclusions. Indicate the impact assessment version used.	**Requirement**: Page 12, section 7.4: *SI units shall be used with conversions as shown in the Table 2 as necessary.* **Action** / **Add to TR page** Report results in SI units / Wherever LCA results are reported **Requirement**: Page 14, section 8.0: *Environmental impact category indicators shall be taken from Table 3 for declaring environmental aspects in accordance with ISO 21930, Section 8.2 and ISO 14044.* ***Total primary energy consumption*** *Nonrenewable fossil* — *MJ (HHV)* *Nonrenewable nuclear* — *MJ (HHV)* *Renewable (solar, wind, hydroelectric, and geothermal)* — *MJ (HHV)* *Renewable (biomass)* — *MJ (HHV)* ***Material resources consumption*** *Nonrenewable material resources* — *kg* *Renewable material resources* — *kg* *Net fresh water (inputs minus outputs)* — *L* *Non-hazardous waste generated* — *kg* *Hazardous waste generated* — *kg* **Action** / **Add to TR page** Add these material, energy and waste resource parameters / Page 4
4. Variations that drive performance		No additional content required.
5. Relevant additional environmental data/certifications related to environmental performance		
	All declared data and/or certifications require reference and must conform to the applicable standards for the region declared in the functional unit. This can include: • Certificate logos, certificate numbers, and/or other references. Use logos when possible, linked to the organization's web site. • For cradle-to-gate TRs/EPDs, the following may be qualitatively reported if known:	**Requirement**: Page 15, section 9.0: *A Type III environmental declaration shall include, where relevant […]* *• Instructions and limits for efficient use; […]* *• Preferred waste management option for used products; and* *• Potential for incidents that can have impact(s) on the environment, such as recycled content or recycling rates.*

<table>
<tr>
<td></td>
<td>

o Other products not included in assessment needed for product to serve intended function
o Anticipated replacement cycle of product
o Intended use
o Potential waste treatment scenarios

Statements that relate to the scope of the TR/EPD
Additional environmental statements which are mandatory through legislation, even for stages of the life cycle that are not part of the scope

</td>
<td>
<table>
<tr><th>Action</th><th>Add to TR page</th></tr>
<tr><td>Add instructions and limits for efficient use</td><td>Page 3 How we make it greener; or Page 4 Product information</td></tr>
<tr><td>Add preferred waste management option for used products</td><td>Page 4 Product information</td></tr>
<tr><td>Add potential for incidents that can have impacts on the environment, such as recycled content or recycling rates</td><td>Page 3 How we make it greener; or Page 4 Life cycle information</td></tr>
</table>
</td>
</tr>
<tr>
<td>6. Relevant product manufacturing/strategy about environmental ambition/programs</td>
<td>No additional content required.</td>
</tr>
</table>

NSF PCR: Architectural Coatings

Product Category Rule for Environmental Product Declarations
PCR for Architectural Coatings: NAICS 325510 June 2015 http://www.nsf.org/newsroom_pdf/su_architectural_coatings_pcr.pdf

Use this Appendix to create a TR/EPD compliant with the NSF PCR for Architectural Coatings.
The right column indicates the additional content required and its location in the Transparency Report™.

<table>
<tr><th>Content list</th><th>What a TR/EPD must communicate to be useful & be ISO 14025 Type III environmental declaration</th><th>Additional content requirements from NSF PCR for Architectural Coatings</th></tr>
<tr><td colspan="2">1. Company & product Identification</td><td></td></tr>
<tr><td>Product photo(s)</td><td>As it looks when delivered</td><td>Requirement: Page 8, section 2: If the EPD covers a range of products or multiple SKUs of the same product, […] the picture should be labeled as an example and clearly identify the specific product being displayed.

<table><tr><th>Action</th><th>Add to TR* page</th></tr><tr><td>If reporting for a range of products, label the picture as an example and clearly identify the product being displayed</td><td>Page 1 picture</td></tr></table>*Each program operator can determine placement in its EPD template.</td></tr>
<tr><td colspan="2">2. Issuing party and verification information</td><td></td></tr>
<tr><td>Non-comparability statement</td><td>Include the following statement:
“Transparency Reports™ / environmental product declarations enable purchasers and users to compare the potential environmental performance of products on a life cycle basis. They are designed to present information transparently to make the limitations of comparability more understandable. TRs/EPDs of products that conform to the same PCR and include the same life cycle stages, but are made by different manufacturers, may not sufficiently align to support direct comparisons. They therefore, cannot be used as comparative assertions unless the conditions defined in ISO 14025 Section 6.7.2. ‘Requirements for Comparability’ are satisfied.”</td><td>Requirement: Page 42, section 13: To avoid misinterpretation of results, a company shall include a disclaimer to the audience (reader) identifying the difficulties in comparing results, and referring the reader to additional information if needed.
In order to support comparative assertions, this EPD meets all comparability requirements stated in ISO 14025:2006. However, differences in certain assumptions, data quality, and variability between LCA data sets may still exist. As such, caution should be exercised when evaluating EPDs from different manufacturers, as the EPD results may not be entirely comparable. Any EPD comparison must be carried out at the building level per ISO 21930 guidelines. The results of this EPD reflect an average performance by the product and its actual impacts may vary on a case-to-case basis.

<table><tr><th>Action</th><th>Add to TR page</th></tr><tr><td>Add non-comparability statement to Page 4 or modify non-comparability statement on Page 2</td><td>Page 4 or Page 2 comparability disclaimer</td></tr></table></td></tr>
<tr><td colspan="2">3. LCA results</td><td></td></tr>
<tr><td>Data quality</td><td></td><td>Requirement: Page 29, section 7.2: A data quality assessment shall be made for the system under study and included in the EPD. […] Data quality assessment shall, at a minimum, address the following:</td></tr>
</table>

		a) *time-related coverage: age of data and the minimum length of time over which data was collected* b) *geographical coverage: geographical area from which data for unit processes was collected to satisfy the goal of the study;* c) *technology coverage: specific technology or technology mix; and* d) *uncertainty of the information (e.g. data, models and assumptions)* *[…] If the most recent version of an LCA database is not used to create the EPD, written justification for its exclusion must be provided and properly reflected in the data quality assessment […]. The EPD shall assess and disclose any significant data gaps that occur.* **Action** / **Add to TR page** Include data quality assessment summary on Page 2 and full assessment on Page 4 / Page 2 Data quality summary; Page 4 Data quality
Functional unit quantified performance of a product system for use as a reference unit (for cradle-to-grave)	In the functional unit description, include: Quantity, performance, application, reference service life (RSL)	**Requirement**: Page 10, section 3.3: *The reference flow shall be the amount of product needed to satisfy the above functional unit. In order to satisfy the functional unit, multiple coats or repaints may be needed. […] When determining product lifespan, both design life and an average market-based lifetime shall be used and reported by the EPD.* **Action** / **Add to TR page** Specify amount of product needed to satisfy functional unit for design-based life and market-based life, and specify design life and market-based lifetime. / Page 2 functional unit **Requirement**: Page 11, section 3.3: *If necessary, a standardized amount of colorant shall be added to the architectural coating depending on what type of base the product represents (for example, a light base, mid base, ultra deep base, etc.).* **Action** / **Add to TR page** Specify market-based and design-based amount of colorant added if applicable, using the worst-case scenario defined in section 3.5 / If the colorant makes a significant contribution to the impacts, then Page 2; otherwise, Page 4 Life cycle information **Requirement**: Page 11, section 3.4: *Each subcategory has a list of tests used to classify the product as a low, mid, or high quality product.* **Action** / **Add to TR page**

		Specify the quality of the product(s), and include the ASTM methods as indicated by each subcategory of section 3.4 (the specific test results need not be reported). — Page 4 Product specification **Requirement**: Page 10, section 3.3: *When determining opacity, ASTM D2805-11, ASTM D344-11, ASTM D5150-92(2013), or equivalent test methods shall be used.* **Action**: When opacity is applicable, list the test methods used for opacity — **Add to TR page**: Page 4 Product specification **Requirement**: Page 23, section 4.3: *For architectural coatings specifically formulated to be spray-applied, an application efficiency shall be estimated and disclosed in the EPD as well as used for all relevant calculations.* **Action**: When applicable, specify the application efficiency. — **Add to TR page**: Page 4 Product specification
Material composition	What's in the product – list contents larger than 1% by weight, describe remainder in aggregate. Include the product and other materials that are within the scope of this report. Create a table declaring the product composition information. Materials that exist in the product that are considered proprietary by the manufacturer may be described with a generic descriptor which includes role and/or function. Additionally, where necessary, materials may be reported with a corresponding reasonable range of mass percentages for which they exist in the product or product range. Table headers: Component | Material | % by weight Additionally, specify materials and substances that can adversely affect human health and/or the environment, in all stages of the life cycle.	**Requirement**: Page 33, section 8.1: *Specifications as required by SDS (Safety Data Sheets), such as reporting certain aspects of material composition of the assessed coating product(s), shall be disclosed in percentage of total weight.* **Action**: List substances which are required to be disclosed as required by SDS — **Add to TR page**: Page 2 Material composition
Numeric LCA results (defined by TRACI, needed for LEED, millipoints), broken down in cradle-to-gate, use phase and end-of-life; info-graphics	Inclusion of [A1], [A2], [A3] are a mandatory minimum and for 'cradle-to-gate'. 'Cradle-to-grave' studies need to include all life cycle stages. All other studies are referred to as 'cradle-to-gate with options'. List the inclusions & exclusions for the following and add explicit details about exclusions. Indicate the impact assessment version used.	**Requirement**: Page 28, section 6: *International System of Units (SI units) shall be used for both the LCA and the EPD. Quantities shall be represented with three valid digits expressed in scientific notation.* **Action**: Report results in SI units in scientific notation using three digits. — **Add to TR page**: Anywhere LCA results are presented **Requirement**: Page 33, section 8.2: *The following life cycle inventory analysis results shall be reported by life cycle stage and as totals:* 1. *Depletion of Non-Renewable Energy Resources (MJ)* 2. *Depletion of Non-Renewable Material Resources (kg)* 3. *Use of Renewable Primary Energy (MJ)*

		4. *Use of Renewable Material Resources (kg)* 5. *Consumption of Freshwater (m3)* *The waste allocated to the building product for the foreground system (the operations under direct control of the product manufacturer) shall be classified in the EPD as* 1. *Hazardous waste (kg) or* 2. *Non-hazardous waste (kg)* **Action** / **Add to TR page** Add these material and resource use parameters / Page 4 Add these waste categories / Page 4 **Requirement**: Page 34, section 8.4: *VOC emissions occurring during the use phase shall be declared in the EPD, measured in a way consistent with industry best-practice. The employed VOC testing method shall be disclosed in the EPD.* **Action** / **Add to TR page** If VOC emissions occur during the use phase, declare them in TR along with the testing method. / Page 2 LCA results
4. Variations that drive performance		No additional content required.
5. Relevant additional environmental data/certifications related to environmental performance		No additional content required.
	All declared data and/or certifications require reference and must conform to the applicable standards for the region declared in the functional unit. This can include: • Certificate logos, certificate numbers, and/or other references. Use logos when possible, linked to the organization's web site. • For cradle-to-gate TRs/EPDs, the following may be qualitatively reported if known: o Other products not included in assessment needed for product to serve intended function o Anticipated replacement cycle of product o Intended use o Potential waste treatment scenarios • Statements that relate to the scope of the TR/EPD Additional environmental statements which are mandatory through legislation, even for stages of the life cycle that are not part of the scope	**Requirement:** Page 35, section 9: *An EPD shall also include, where relevant:* *-Any data on building product performance (where environmentally significant);* *-Instructions and limits for efficient use;* *-Organization's adherence to any environmental management system, including a statement showing where an interested party can find additional information on the system;* *-Other environmental certification programs applied to the building product and a statement on where an interested party can find details on the certification program;* *-Other environmental activities of the organization, such as participation in recycling or recovery programs, provided details of these programs are readily available to the purchaser or user and contact information is provided;* *-Preferred waste management option for leftover paint.* **Action** / **Add to TR page** Add data on building product performance (where environmentally significant) / Page 3 How we make it greener; or Page 4 Product information Add instructions and limits for efficient use / Page 3 How we make it greener; or Page 4 Product information Add info about environmental management systems, other environmental / Page 3 How we make it greener; or Page 4 Product information

		certification programs and other environmental activities of the organization	
		Add preferred waste management option for leftover paint	Page 4 Product information
6. Relevant product manufacturing/strategy about environmental ambition/programs		No additional content required.	

NSF PCR: Flooring

Product Category Rule for Environmental Product Declarations
Flooring: Carpet, Resilient, Laminate, Ceramic, Wood – Version 2, June 2014 http://www.nsf.org/newsroom_pdf/flooring_pcr-new.pdf

Use this Appendix to create a TR/EPD compliant with the NSF PCR for Flooring.
The right column indicates the additional content required and its location in the Transparency Report™.

<table>
<tr><th>Content list</th><th>What a TR/EPD must communicate to be useful & be ISO 14025 Type III environmental declaration</th><th>Additional content requirements from NSF PCR for Flooring</th></tr>
<tr><td colspan="2">1. Company & product Identification</td><td></td></tr>
<tr><td>Product(s) description</td><td>Description of what it does for the end-user, standards followed (e.g. EN 13310:2003, Kitchen sinks – Functional requirements and test methods), dimensions of the product(s), the use and/or area of application, material type, sub-category, and other pertinent physical properties and technical information</td><td>Requirement: Page 9, section 2.1: The product description shall state the reference service life.

<table><tr><th>Action</th><th>Add to TR* page</th></tr><tr><td>Specify reference service life (RSL) in product description</td><td>Page 1 Product description</td></tr></table>*Each program operator can determine placement in its EPD template.

Requirement: Pages 12-17, section 3: The product characteristics shall be described. Basis for the description shall be the appropriate product specifications. Where such standards are not available, equivalent descriptions shall be given. (examples are given in the PCR) […] Formaldehyde emissions for wood composite products shall be required to be reported in accordance with California Air Resource Board (CARB).

<table><tr><th>Action</th><th>Add to TR page</th></tr><tr><td>Describe the product characteristics according to the appropriate product specifications</td><td>Page 4 Product information</td></tr><tr><td>For wood composite products, report formaldehyde emissions</td><td>Page 4 Product information</td></tr></table></td></tr>
<tr><td>Certifications</td><td>Functional performance</td><td>Requirement: Page 10, section 2.2: The intended application and the performance to the specifications of the following tests shall be declared.

<table><tr><th>Action</th><th>Add to TR page</th></tr><tr><td>Report the results of each applicable product standard listed for the product group being presented</td><td>Page 4 Product information</td></tr></table></td></tr>
<tr><td colspan="2">2. Issuing party and verification information</td><td>No additional content required.</td></tr>
<tr><td colspan="2">3. LCA results</td><td></td></tr>
</table>

<table>
<tr>
<td>Data quality</td>
<td></td>
<td>
Requirement: Page 6, section 1: The country of the manufacturing facilities for the product group shall be specified. For these facilities, ISO 9001 or other ISO standards, the level of certification and applicable facilities shall be declared.
<table>
<tr><th>Action</th><th>Add to TR page</th></tr>
<tr><td>Specify the country of the manufacturing facilities</td><td>Page 4 Data background</td></tr>
<tr><td>Specify level of certification for manufacturing facilities</td><td>Page 4 Data background</td></tr>
</table>
Requirement: Page 33, section 6.5: All life cycle inventory database(s) shall be referenced within the EPD.
<table>
<tr><th>Action</th><th>Add to TR page</th></tr>
<tr><td>Specify all datasets used</td><td>Page 4 Dataset use</td></tr>
</table>
</td>
</tr>
<tr>
<td>Material composition</td>
<td>What’s in the product – list contents larger than 1% by weight, describe remainder in aggregate. Include the product and other materials that are within the scope of this report. Create a table declaring the product composition information. Materials that exist in the product that are considered proprietary by the manufacturer may be described with a generic descriptor which includes role and/or function. Additionally, where necessary, materials may be reported with a corresponding reasonable range of mass percentages for which they exist in the product or product range.
Table headers: Component | Material | % by weight

Additionally, specify materials and substances that can adversely affect human health and/or the environment, in all stages of the life cycle.</td>
<td>
Requirement: Page 18, section 4: Statements on the general availability and the materials origin shall be given for the main materials.
<table>
<tr><th>Action</th><th>Add to TR page</th></tr>
<tr><td>Give a description of the origin and availability for each material listed</td><td>Page 4 Product information</td></tr>
</table>
Requirement: Page 18, section 4.1: Use of raw material(s) in the manufacture of a flooring product that shall be reported or is identified under any of the criteria 1-6 below, shall be included in the EPD as Chemical Name and CASRN regardless of the ingredient amount used. The PCR lists the types of materials required to be disclosed.
<table>
<tr><th>Action</th><th>Add to TR page</th></tr>
<tr><td>List materials considered hazardous according to the PCR</td><td>Page 2 Material composition</td></tr>
</table>
Requirement: Page 25, section 4.2: A short description of the main materials (1% by cut off) and manufacturing process shall be given.
<table>
<tr><th>Action</th><th>Add to TR page</th></tr>
<tr><td>Give a description of the materials and manufacturing processes</td><td>Page 4 Product information</td></tr>
</table>
</td>
</tr>
<tr>
<td>Numeric LCA results (defined by TRACI, needed for LEED, millipoints), broken down in cradle-to-gate, use phase and end-of-life; info-graphics

See Appendix C for LCA results tables</td>
<td>Inclusion of [A1], [A2], [A3] are a mandatory minimum and for ‘cradle-to-gate’. ‘Cradle-to-grave’ studies need to include all life cycle stages. All other studies are referred to as ‘cradle-to-gate with options’.

List the inclusions & exclusions for the following and add explicit details about exclusions.

Indicate the impact assessment version used.</td>
<td>Requirement: Pages 27-31, section 5: The sourcing and extraction stage shall be described in the EPD. […] The manufacturing process of the product shall be described […] Statements on the delivery (e.g., estimated vehicle, distances to the typical markets) shall be provided. […] A general description of installation methods shall be provided, including ancillary materials used for installation (e.g., adhesives or other setting materials). […] Location of MSDS and/or other information needed to protect health, safety, or regarding environmental aspects during</td>
</tr>
</table>

installation should be made available upon request. […] Recommended collection and separation of waste accumulated at the construction site shall be documented including any take back system in place for post installation floor covering waste or packaging. […] Kind and material of packaging shall be documented. […] Statements on the use stage of a floor covering should contribute to a modeling of the use of the floor covering throughout its life span and over the duration of common periods of use. […] Details on how to clean and maintain the floor covering based on the manufacturer's recommendations shall be documented. […] Provide guidance relative to opportunity to recycle, reuse, or repurpose the flooring product. If available, statements on the transport (e.g., estimated vehicle, distance to the recycling/reuse site) shall be provided. […] Disposal methods for the floor covering should be documented. If available, statements on the transport (e.g., estimated vehicle, distance to the recycling/reuse site) shall be provided.

Action	Add to TR page
Provide description of each module	Page 4 Life cycle information

Requirement: Page 36, section 6.9: *The LCA results shall be documented separately for the stages using the boundaries described in section 5:*

1. *Sourcing/extraction […]*
2. *Manufacturing […]*
3. *Delivery and installation […]*
4. *Use […]*
5. *End of life […]*

Action	Add to TR page
Present results aggregated over these five stages	Page 4 LCA results

Requirement: Pages 36-37, section 6.10: *The following parameters of the life cycle impact assessment, based on CML (current version) and its associated reporting units shall be declared in the EPD per functional unit per RSL. […]*

1. *Abiotic depletion potential*
2. *Global warming potential (GWP 100 years); Biomass CO_2 emissions shall be reported separately.*
3. *Acidifications potential (AP)*
4. *Photochemical ozone creation potential (POCP, or "Smog")*
5. *Eutrophication potential (EP)*
6. *Ozone depletion potential (ODP) – Steady State / Infinite*
7. *Non-renewable material resources such as abiotic resource depletion potential (ADP), not including primary energy*
8. *Primary energy demand of non-renewable resources (MJ)*
9. *Primary energy demand of renewable resources (MJ)*

[…] The LCIA impacts shall be declared in the following tables.

- *Table A: The impacts for 1 m^2 of floor covering shall be given for each of the following life cycle stages: sourcing/extraction, manufacturing, delivery and installation, and end-of-life.*
- *Table B: The impacts for the use stage for 1 m^2 of floor covering shall be given for an average one year use.*
- *Table C: The total impacts of all life cycle stages based on the estimated replacement schedule for 1 m2 of floor covering over a 60-year reference service life (RSL) of a building.*

Action	Add to TR page
Present impact assessment results using CML for the listed parameters over three separate tables	Page 4

Requirement: Page 38, section 6.10: *A list of use and maintenance activities shall accompany Table B as stated in 5.4.2. The list of use and maintenance activities shall clearly declare the user defined RSL of product.*

Action	Add to TR page
Present use and maintenance activities accompanying Table B	Page 4

Requirement: Although not included in this PCR, ISO 21930 requires reporting the depletion of non-renewable material resources, the use of renewable material resources, the consumption of freshwater, hazardous waste flows, non-hazardous waste flows and emissions to water, soil and indoor air.

Action	Add to TR page
Add renewable and non-renewable material resource parameters	Page 4
Add waste flow parameters	Page 4
Add emissions to water, soil and indoor air	Page 2 or MHO

4. Variations that drive performance	No additional content required.
5. Relevant additional environmental data/certifications related to environmental performance	No additional content required.
6. Relevant product manufacturing/strategy about environmental ambition/programs	No additional content required.

IERE PCR: Cradle to Gate Windows

Cradle to Gate Window Product Category Rule, September 10, 2015 v1.02 – Earthsure PCR Cradle-to-Gate 30171600:2015
http://iere.org/images/PCRs/C2G-Window-PCR-v1.01.pdf

Use this Appendix to create a TR/EPD compliant with the IERE C2Gate Window PCR.
The right column indicates the additional content required and its location in the Transparency Report™.

<table>
<tr><th>Content list</th><th>What a TR/EPD must communicate to be useful & be ISO 14025 Type III environmental declaration</th><th>Additional content requirements from IERE C2Gate Window PCR</th></tr>
<tr><td colspan="2">1. Company & product Identification</td><td>No additional content required.</td></tr>
<tr><td colspan="2">2. Issuing party and verification information</td><td></td></tr>
<tr><td>Non-comparability statement</td><td>Include the following statement:
“Transparency Reports™ / environmental product declarations enable purchasers and users to compare the potential environmental performance of products on a life cycle basis. They are designed to present information transparently to make the limitations of comparability more understandable. TRs/EPDs of products that conform to the same PCR and include the same life cycle stages, but are made by different manufacturers, may not sufficiently align to support direct comparisons. They therefore, cannot be used as comparative assertions unless the conditions defined in ISO 14025 Section 6.7.2. ‘Requirements for Comparability’ are satisfied.”</td><td>Requirement: Page 16, section 10: The EPD shall include a disclaimer stating the EPD and PCR process is informational only and does not warranty performance.
<table><tr><th>Action</th><th>Add to TR* page</th></tr><tr><td>Add to the existing statement: “The TR / EPD and PCR process is informational only and does not warranty performance.”</td><td>Page 2 Non-comparability statement</td></tr></table>*Each program operator can determine placement in its EPD template.</td></tr>
<tr><td colspan="2">3. LCA results</td><td></td></tr>
<tr><td>Material composition</td><td>What’s in the product – list contents larger than 1% by weight, describe remainder in aggregate. Include the product and other materials that are within the scope of this report. Create a table declaring the product composition information. Materials that exist in the product that are considered proprietary by the manufacturer may be described with a generic descriptor which includes role and/or function. Additionally, where necessary, materials may be reported with a corresponding reasonable range of mass percentages for which they exist in the product or product range.
Table headers: Component | Material | % by weight

Additionally, specify materials and substances that can adversely affect human health and/or the environment, in all stages of the life cycle.</td><td>Requirement: Page 14, section 9.1.1: Any material hazardous to human health and the environment present in at least 0.1% of the window (not including the packaging) shall be disclosed. At a minimum, substances on the Candidate List Substances of Very High Concern shall be disclosed.
<table><tr><th>Action</th><th>Add to TR page</th></tr><tr><td>List any material hazardous to human health and the environment present in at least 0.1% of the window</td><td>Page 2 Material composition</td></tr></table></td></tr>
<tr><td>Numeric LCA results
(defined by TRACI, needed for LEED, millipoints), broken down in cradle-to-gate, use phase and end-of-life; info-graphics

See Appendix C for LCA results tables</td><td>Inclusion of [A1], [A2], [A3] are a mandatory minimum and for ‘cradle-to-gate’. ‘Cradle-to-grave’ studies need to include all life cycle stages. All other studies are referred to as ‘cradle-to-gate with options’.

List the inclusions & exclusions for the following and add explicit details about exclusions.

Indicate the impact assessment version used.</td><td>Requirement: Page 11, section 3.9: All LCIA data must be in SI (metric) units. Optionally, IP (English) units may be added in parentheses.
<table><tr><th>Action</th><th>Add to TR page</th></tr><tr><td>Report LCA results in SI units using preferred basic units</td><td>Everywhere LCA results are reported</td></tr></table></td></tr>
</table>

Requirement: Page 9, section 3.3: While the PCR does not state whether to include emissions in the EPD, it is required by ISO 21930. Here is the text from the PCR: *All known emissions to air, water and soil shall be included.*

Action	Add to TR page
Include emissions to air, water and soil	Page 2 LCA results

Requirement: Page 14, section 7.1: *The amount of primary energy (renewable and non-renewable) shall be disclosed, based on the higher heating value and expressed as MJ per declared units. The amount of renewable and non-renewable materials used shall be disclosed in units of kg per declared unit.*

Action	Add to TR page
Include renewable and non-renewable primary energy (based on higher heating value, MJ/DU), and renewable and non-renewable materials (kg/DU) in a table formatted substantially similar to that in Appendix A of the PCR	Page 4

Requirement: Page 14, section 7.2: *The mass of hazardous and non-hazardous wastes produced shall be disclosed in units of kg per declared unit.*

Action	Add to TR page
Include hazardous and non-hazardous waste flows (kg/DU) in a table formatted substantially similar to that in Appendix A of the PCR	Page 4

Requirement: Page 14, section 7.3: *Consumptive fresh water use shall be disclosed.*

Action	Add to TR page
Include freshwater output flows in a table formatted substantially similar to that in Appendix A of the PCR	Page 4

4. Variations that drive performance

<table>
<tr>
<td>Important parameters within the LCA, what are the major contributions

What things have range or variations, and the relevance</td>
<td>Report:
• All processes or materials that have a contribution of 20% or more in any of the LCA results (= relevant impacts)
• A sensitivity analysis for the most important choices and assumptions must be performed to check the robustness of the results of the LCA. Indicate which influence the results in any environmental parameter by more than 20%. State the chosen approach for these parameters.

Topics include:
• The impact of the geographical & technological variation over the different production locations.
• The variation due to variation in the average composition.
• The variation due to averaging for drawing up a ‘group-average’.
• For above, use the highest and lowest values in the sensitivity analysis. Outliers can be disregarded.
• Allocation of recycling processes.
• Allocation of multi- input and multi-output processes.

What’s causing the greatest impacts, in which life cycle stages, and what is the company doing about them?</td>
<td>Requirement: Page 14, section 8: The EPD shall explain the results of the sensitivity analyses, describing their implication on the certainty of the EPD results.

<table><tr><th>Action</th><th>Add to TR page</th></tr><tr><td>Revise sensitivity analysis to include explanation describing certainty of the results</td><td>Page 2 sensitivity analysis</td></tr></table></td>
</tr>
<tr>
<td colspan="2">5. Relevant additional environmental data/certifications related to environmental performance</td>
<td>No additional content required.</td>
</tr>
<tr>
<td colspan="2">6. Relevant product manufacturing/strategy about environmental ambition/programs</td>
<td>No additional content required.</td>
</tr>
</table>

TR/EPD compatibility evaluation form

PCR name

PCR date and/or description / URL

Use this form to identify additional content required to create a TR/EPD compliant with this PCR.
Evaluate each TR/EPD content category relative to the PCR's requirements. Indicate the additional content in the right column.

Content list	What a TR/EPD must communicate to be useful & be ISO 14025 Type III environmental declaration	Additional content requirements from PCR *Provide explanation or excerpts as needed*
1. Company & product Identification		
Brand identification – company logo, product logo		
Company contact info	Name, corporate address, URL	
Product photo(s)	As it looks when delivered	
Product name(s)/ID(s)	That the market recognizes	
Product(s) description	Description of what it does for the end-user, standards followed (e.g. EN 13310:2003, Kitchen sinks – Functional requirements and test methods), dimensions of the product(s), the use and/or area of application, material type, sub-category, the represented site(s)/plant(s), and other pertinent physical properties and technical information	
Product identification (e.g. model number)		
Part B / PCR identification	Reference the Part B / PCR used to create the TR/EPD. Include who the Part B / PCR review was conducted by. (e.g. Part B review conducted by the Sustainable Minds TAB, tab@sustainableminds.com)	
Performance Dashboard	**Functional performance**	
	User inserts product category-specific attribute list with scores. Required to be on the market or industry-accepted attributes.	
	Potential environmental performance	
	Declared product unit	
	Single figure scores by Sustainable Minds impact scores and life cycle stage (optional)	
Attributes	**Functional performance**	
	Additional attributes that describe product performance, but not required to satisfy a minimum legal standard.	
	Potential environmental performance	
	Attributes that are relevant to the LCA results and have shown to reduce the footprint by more than 10% in any environmental parameter.	
Certifications	**Functional performance**	
	Mandatory and optional	
	Potential environmental performance	
	Mandatory and optional	
2. Issuing party and verification information		
Issuing party information	Name, program name, address, logo, website	

Third-party verifier information (when relevant)	Name, postal address, phone number, website, email address	
Release date, valid until (5 years after release date, or as specified by the PCR)		
Reference to full LCA report	Include title, release date, and software type and version used	
Non-comparability statement	Include the following statement: "**Transparency Reports™ / environmental product declarations enable purchasers and users to compare the potential environmental performance of products on a life cycle basis.** They are designed to present information transparently to make the limitations of comparability more understandable. TRs/EPDs of products that conform to the same PCR and include the same life cycle stages, but are made by different manufacturers, may not sufficiently align to support direct comparisons. They therefore, cannot be used as comparative assertions unless the conditions defined in ISO 14025 Section 6.7.2. 'Requirements for Comparability' are satisfied."	
Verification level	Choose one of the following:	
	□ Verified report and LCA results	
	□ Self-declared report with ISO 14044 3rd party reviewed LCA results	
	□ Self-declared report with self-declared LCA results	
Verification statement	Include statement of verification (e.g. The LCA and background report are independently verified to the Sustainable Minds Transparency Report™ / EPD Framework and ISO 14025.)	
Scope	Choose one of the following	
	□ Cradle-to-grave (max)	
	□ Cradle-to-gate with options	
	□ Cradle-to-gate (min)	
Time coverage	Indicate the year for which primary data have been collected.	
3. LCA results		
Functional unit quantified performance of a product system for use as a reference unit (for cradle-to-grave)	In the functional unit description, include: Quantity, performance, application, reference service life (RSL)	
Declared unit (for cradle-gate or cradle-to-gate with options)	In the declared unit description, include: Quantity, performance, application	
Material composition	What's in the product – list contents larger than 1% by weight, describe remainder in aggregate. Include the product and other materials that are within the scope of this report. Create a table declaring the product composition information. Materials that exist in the product that are considered proprietary by the manufacturer may be described with a generic descriptor which includes role and/or function. Additionally, where necessary, materials may be reported with a corresponding reasonable range of mass percentages for which they exist in the product or product range. Table headers: Component | Material | % by weight Additionally, specify materials and substances that can adversely affect human health and/or the environment, in all stages of the life cycle.	

Numeric LCA results (defined by TRACI, needed for LEED, millipoints), broken down in cradle-to-gate, use phase and end-of-life; info-graphics ***See Appendix C for LCA results tables***	Inclusion of [A1], [A2], [A3] are a mandatory minimum and for 'cradle-to-gate'. 'Cradle-to-grave' studies need to include all life cycle stages. All other studies are referred to as 'cradle-to-gate with options'. List the inclusions & exclusions for the following and add explicit details about exclusions. Indicate the impact assessment version used.	

4. Variations that drive performance

Important parameters within the LCA, what are the major contributions **What things have range or variations, and the relevance**	Report: • All processes or materials that have a contribution of 20% or more in any of the LCA results (= relevant impacts) • A sensitivity analysis for the most important choices and assumptions must be performed to check the robustness of the results of the LCA. Indicate which influence the results in any environmental parameter by more than 20%. State the chosen approach for these parameters. Topics include: • The impact of the geographical & technological variation over the different production locations. • The variation due to variation in the average composition. • The variation due to averaging for drawing up a 'group-average'. • For above, use the highest and lowest values in the sensitivity analysis. Outliers can be disregarded. • Allocation of recycling processes. • Allocation of multi- input and multi-output processes.	
Results Interpretation	What's causing the greatest impacts, in which life cycle stages, and what is the company doing about them?	

5. Relevant additional environmental data/certifications related to environmental performance

	All declared data and/or certifications require reference and must conform to the applicable standards for the region declared in the functional unit. This can include:
	• Certificate logos, certificate numbers, and/or other references. Use logos when possible, linked to the organization's web site.
	• For cradle-to-gate TRs/EPDs, the following may be qualitatively reported if known:
	  o Other products not included in assessment needed for product to serve intended function
	  o Anticipated replacement cycle of product
	  o Intended use
	  o Potential waste treatment scenarios
	• Statements that relate to the scope of the TR/EPD Additional environmental statements which are mandatory through legislation, even for stages of the life cycle that are not part of the scope	

6. Relevant product manufacturing/strategy about environmental ambition/programs		
	• Relevant to LCA results • Content about programs, strategies, and successes relevant to the potential environmental performance of the product. Detailed stories and images about potential environmental performance improvement methods and techniques such as: closed-loop recycling, up-cycling, renewable energy, sustainable supply chain efforts, etc.	