



Part B: Product group definition

What constitutes a product group?

A product group consists of products that compete for/deliver the SAME function. Product group definitions use a functional performance¹ requirement(s) that impacts/drives the potential environmental performance of the products as codified or specified in standards.

From this baseline, each manufacturer can then demonstrate business advantage, competitive advantage, and differentiation.

Part A + Part B = PCR

Part A: LCA calculation rules and report requirements
Part B: Product group definition

Transparency Report™ / EPD (TR/EPD)

Both are names for ISO 14025 Type III environmental declarations. A Transparency Report™ is Sustainable Minds' brand of EPD. Part A, Appendix C provides the content requirements for reporting; any delivery format can be selected.

Part B: Product group definitions consist of four sections:

- 1. Functional performance** (*what performance are customers buying and how the industry measures it*)
Performance is a measurable expression relating to the magnitude of a particular aspect of the product group relative to specified requirements, objectives, or targets. Every product group has its own (set of) performance parameter(s). A product group definition includes, when available, the functional performance parameters that are measurable and are codified or specified in a commonly accepted national standard. *Example: Insulation products are measured in R-values: 1 square foot of insulation per R-value point.* When necessary, excluded products will be identified.
- 2. Functional/declared unit** (*how the performance of a product system can be quantified*)
A **functional unit** is the quantified performance of a product system. In other words, a functional unit defines the amount of service to be delivered by a product. The functional unit includes 1) an amount or quantity using SI-units; 2) a description of the application; and 3) the performance parameters, as many as relevant. After the functional unit is specified, the applicable region and a time period for which the performance is met (RSL) should also be described.

A **declared unit** is used instead of the **functional unit** when an LCA study does not cover the entire life cycle, but only certain modules (e.g. only 'cradle-to-gate'). The declared unit includes an amount or quantity using SI-units.

The functional/declared unit is used to express the results of the LCA for a given product group. **If different products do not fulfill the same performance, by definition they represent different product groups.**
- 3. Additional rules for comparability** (*to enhance the comparability of products within the same group*)
A TR/EPD documents the LCA performance following the rules specified in the document **Part A: LCA calculation rules and report requirements**. Additional rules may be necessary to enhance the comparability between different products belonging to the same product group.

Conditions for adding rules include:
 - A. Clarification:** When the rules in Part A are not clear when applied to a specific product group, an interpretation may be in order to better define the rules applied to the product group. An interpretation request may be submitted to the Technical Advisory Board (TAB) for more details on product group parameters and reporting specifications.
 - B. Incompleteness of rules in Part A:** When the rules in Part A are incomplete when applied to a specific product group, the issuance of additional rule(s) may be in order. These could be added to Part B or be integrated into Part A.
 - C. Default life cycle stage scenarios²:** The variation of parameters in the LCA that are expected to be relevant to the results (i.e. lead to a difference >10% in any impact category) can require a specific rule or scenario that is required to be used by all products in the group. Examples include scenarios for any life cycle stage that are not under direct control of manufacturers. This is especially true in the use stage of products.
 - D. Additional data quality requirements:** Data quality requirements specific to the product group may be needed in addition to those listed in Part A. Examples include whether certain secondary life cycle data should have priority, if applicable, and where data collection efforts should be focused within the life cycle.
- 4. Additional LCA calculation rules** (*to specify conformance to additional standards or guidance*)
There may be circumstances where it is appropriate for the LCA to follow additional standards or guidance, either by the manufacturer's choice or as required. Substantiation is needed for why conformance is appropriate.

¹ Functional equivalence: quantified functional requirements and/or technical requirements for a building or an assembled system (part of works) for use as a basis for comparison (ISO 21931:2010).

² The process of requesting additional rules may be challenging for products that do not have an LCA. However, once the LCA is completed and a need for additional rules is identified, Part B can be enhanced with additional rules.

Parts A & B: How they work together

The intended application of the framework is to provide a common structural set of general LCA calculation rules, requirements, and guidelines applicable to any product in order to ensure that all Type III environmental declarations based on the framework are derived, verified, and presented in a harmonized and consistent manner.

A TR/EPD presents the summary of the LCA background report, which includes quantified environmental information on the life cycle of a product in information modules. Modularity allows for a consistent and structured organization and communication of data and results throughout the life cycle of a product (in conformance with ISO 14025:2006 Clause 5.3).

Parts A and B establish the principles and specify the procedures for developing a TR/EPD.

Applying the general rules of Part A together with the specific rules of a Part B creates a TR/EPD. A verified TR/EPD is an ISO 14025:2006 conformant Type III environmental declaration which communicates verifiable, accurate, and non-misleading environmental information for products and their applications. The creation, development, and their use is voluntary (in conformance with ISO 14025:2006 Clause 5.2).

Getting started

Anyone can start a Part B as it is a publicly available form. It is then submitted to the TAB as a 'request.' This starts the review process. Here are some options for how to create Part B requests:

- One company submits a Part B request
- An informal group of 2 or more collaborates to create a Part B request
- An industry group representative creates a strawman Part B and invites companies to review
- A program operator uses its own process to create and facilitate a stakeholder group

Then refer the recommended steps in the table below:

	Using an existing LCA	LCA not yet developed
Creating new Part B	<ol style="list-style-type: none"> 1. A Part B request form is submitted to the TAB. 2. TAB working group (minimum three members) reviews the request within 2 weeks and either returns to initiator as incomplete; or if acceptable, notification of public 30-day review period is sent to interested parties and relevant stakeholders. A participant with relevant expertise will be invited to the working group if none exist on the TAB. 3. TAB reviews feedback and either returns to initiator to complete; or publishes the approved Part B*. 4. The LCA report is updated following Part A and approved Part B. 5. The LCA report is submitted for 3rd party verification in conformance with Parts A & B. 	<ol style="list-style-type: none"> 1. LCA consultant is engaged in the process. 2. A Part B request form is submitted to the TAB. 3. TAB working group (minimum three members) reviews the request within 2 weeks and either returns to initiator as incomplete, or if acceptable, notification of public 30-day review period is sent to interested parties and relevant stakeholders. A participant with relevant expertise will be invited to the working group if none exist on the TAB. 4. TAB reviews feedback and either returns to initiator to complete, or publishes the approved Part B*. 5. The LCA report is drafted following Part A and approved Part B. 6. The LCA report is submitted for 3rd party verification in conformance with Parts A & B.
Using existing Part B	<ol style="list-style-type: none"> 1. The LCA is updated following Part A and the approved Part B. 2. The LCA report is submitted for 3rd party verification in conformance with Parts A & B. <ul style="list-style-type: none"> • Updates to an existing Part B can be requested by submitting the Part B request form. The review and approval process above is repeated. 	<ol style="list-style-type: none"> 1. The LCA consultant is engaged in the process. 2. The LCA is drafted following the Parts A & B. 3. The LCA report is submitted for 3rd party verification in conformance with Parts A & B.

*NOTE: The name and date of the publication of Part B serves as the registration number.

Part B: Product group definition | Request form

Part B describes functional and environmental attributes of products that compete for/deliver the SAME function.

When complete email to TAB@sustainableminds.com.

Initiated by	
Title	
Organization	
Email/telephone	
Other company(s) and organization(s) involved	

Product group

Name		CSI MasterFormat® #(s) or UNCPC(s)	
Description Define the types of products included under this Part B			
New Part B request? Yes / No		Update to an existing Part B? Yes / No	
Existing PCRs, EPDs, TRs, or LCAs This information will be used to identify additional rules for comparability and to substantiate the rationale for creating a Part B.	Explain relevance and provide URL or document(s).		
Relevant literature and published material			

Functional performance

Standard/certification	URL
1.	
2.	
<i>Add rows as needed.</i>	

Functional / declared unit

Unit	
Rationale	

Additional rules for comparability

1. Clarification More product group specificity as needed	
2. Additional rules to Part A	
3. Default life cycle stage scenario(s)	Proposed scenario & rationale
4. Additional data	

quality requirements Pertaining to the product group	
<i>Add rows as needed.</i>	

Additional LCA calculation rules

N/A	Optional	Required	Indicate whether conformance is the manufacturer's choice or required for EPD/TR. Refer to Part A: Compatibility appendices for content requirements.
			Name of standard or guidance (e.g. ISO 21930) and substantiate the rationale for why conformance to this standard or guidance is appropriate.
			<i>Add rows as needed.</i>

Example Part B

Sustainable Minds Transparency Report™ / EPD Framework

Part B: Product group definition | Residential toilets

Initiated by	TOTO USA http://www.sustainableminds.com/showroom/toto/
Organization(s) involved	TOTO USA

Product group

Name	Residential toilets	CSI MasterFormat® #	22 41 13.13
Description	Single or dual flush toilets in average residential US households		
New Part B? Yes / No	Yes	Part B version number	v1.0
Validity date	September 1, 2014 – August 31, 2019		
Existing PCRs, EPDs, TRs, or LCAs	<p>Institut Bauen und Umwelt e.V., Königswinter (pub.): Product Category Rules for Construction from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part B: Requirements on the EPD for Sanitary Ceramics. November 2011 www.bau-umwelt.de</p> <p>This European guidance document applies to vitreous china and fine fire clay ceramic sanitaryware. It does not contain any relevant additional rules specific this product group.</p>		
Relevant literature and published material	N/A		

Functional performance

Standard/certification	URL
1. Single flush performance – DOE EAct 1992	http://www.ferc.gov/legal/maj-ord-reg/epa.pdf
2. Dual flush performance – Watersense	http://www.epa.gov/watersense/docs/revised_het_specification_v1.1_050611_final508.pdf

Functional / declared unit

Unit	10 years of use of a single or dual flush toilet in an average US household
Rationale	<ul style="list-style-type: none"> Residential use and commercial use are very different. Products are available and used in the US market. 10 years is an industry accepted average lifespan that is based on the economic lifespan of the product. This is more limited due to changes in consumer preferences as well as innovations in water usage more than the technical lifespan of the product. The ceramic will easily outlive the 10 years timeframe. Some parts, especially related to rubbers for watertight connections and moving parts, however, require replacement beyond this timeframe.

Additional rules for comparability

1. Clarification	None
2. Additional rules to Part A	<ul style="list-style-type: none"> Water and wastewater infrastructure are excluded Dual flush toilets are assumed to be 1 solid flush per day, others are assumed to be liquid
3. Default life cycle stage scenario(s)	<p>Default use phase scenario: The toilet is assumed to be used in an average U.S. household over a 10-year time period with an average of 2.6 persons per household, 5.1 flushes per day per person [1]. The volume of water per flush varies and depends on the specific product to which this Part B applies.</p> <p>Water usage in a household would also include electricity usage for acquisition, treatment, and distribution of water to households in addition to collection, conveyance and domestic wastewater treatment. The Electric Power Research Institute (EPRI) published this type of data in a study on water and sustainability. Data from the U.S. Environmental Protection Agency</p>

(EPA) were used to establish weighted average composite factors, to obtain an electricity usage per gallon of water consumed:

Table: Average National Electricity Usage Factors

Activity	EPRI factors: kWh / MMgal ^{Note 1}	Weighted avg composite factors: kWh / MMgal
Acquisition, treatment and distribution of surface water by a Public Water System (PWS)	1,406	1,540 ^{Note 2}
Acquisition, treatment and distribution of ground water by a PWS	1,824	
Self-supply of drinking water (typically pumping from private wells)	700	700
Collection, conveyance and < secondary treatment of domestic wastewater	661	1,399 ^{Note 3}
Collection, conveyance and secondary treatment of domestic wastewater	1,212	
Collection, conveyance and advanced treatment of domestic wastewater	1,726	
Collection, conveyance and zero discharge/other treatment of domestic wastewater	400	
Total electricity per million gallons →		3,639
Total kWh electricity per 1 gallon →		0.0036

Note 1: Source: EPRI, Water & Sustainability (Volume 4): U.S. Electricity Consumption for Water Supply & Treatment -- The Next Half Century, March 2002.

Note 2: Source: U.S. Environmental Protection Agency (EPA), Office of Water (4606) Drinking Water Treatment, June 2004

http://water.epa.gov/lawsregs/guidance/sdwa/upload/2009_08_28_sdwa_fs_30ann_treatment_web.pdf. This document cites 68% of population served by PWSs relies on surface water while 32% relies on ground water.

Note 3: Source: U.S. Environmental Protection Agency (EPA), Clean Watersheds Needs Survey 2008 Report to Congress <http://water.epa.gov/scitech/datait/databases/cwns/upload/cwns2008rtc.pdf>. This report cites 1.7% of POTW-served population receives < secondary treatment, 40.9% receives secondary treatment, 49.9% receives advanced treatment, and 7.5% receives zero discharge or other treatment.

[1] U.S. Environmental Protection Agency (EPA) Watersense, Water-Efficient Single-Family New Home Specification (Washington, DC, May 14, 2008)

http://www.epa.gov/watersense/docs/home_suppstat508.pdf. This document cites 5.1 flushes/day/person per Mayer, P, DeOreo, W. et al 2000 and 2003, and 2.6 persons per household per U.S. Department of Housing and Urban Development 2005.

4. Additional data quality requirements

None

Additional LCA calculation rules

N/A	Optional	Required	Indicate whether conformance is the manufacturer's choice or required for TRs/EPDs. Refer to Part A: Compatibility appendices for content requirements.
	X		ISO 21930: conformance may be desired by construction product manufacturers