



Part B: Product group definition | Commercial toilets | Part B #23-003

This Part B conforms to the ACLCA PCR Open Standard version 1.0 (May 2022) at the following level:

1 – Transparency 2 – Procurement 3 – Data source

Initiated by	TOTO USA - https://www.totousa.com/		
Working group members	Jim Mellentine, Thrive ESG (PCR committee chair) Fernando Fernandez, TOTO USA Kyle Thompson, Plumbing Manufacturers International (PMI) Andrea Burr, NSF Danny Gleiberman, Sloan Morgan Keck, Zurn John Watson, International Association of Plumbing and Mechanical Officials (IAPMO) Tanya Kuehl, Kohler Ben Perreault, Bradley Corporation Jim Kendzel, American Supply Association Olivia Tsamparlis, Watts Water Beth Cassese, SCS Global Services		
Public notices of development/outreach	<ul style="list-style-type: none"> Public notice on the Sustainable Minds website announcing the renewal of existing Part Bs on February 23, 2023: http://www.sustainableminds.com/transparency-report-program/part-b Email blast on March 24, 2023 to mailing lists of LCA professionals, building and construction industry and trade associations, and manufacturers with published transparency documentation listed in the Transparency Catalog under the plumbing CSI MasterFormat® Division (22 00 00), requesting participation on the PCR committee. Email blast on January 9, 2024 to the same mailing lists requesting public comment. 		
Non-participating parties	All interested parties identified participated in the working group.		
New Part B?	No	Part B version number	3.0
Publication date	March 6, 2024		
Validity period	03/06/2024 – 03/05/2029		
Expected renewal schedule	Sustainable Minds intends to notify the working group and post update/renewal information on its website approximately four months prior to expiration to determine update, extension, or expiration options for this Part B.		

Product group

Name	Commercial toilets	CSI MasterFormat® #	22 42 13.13
Description	Commercial toilet fixtures without a flushometer valve		
Exclusions	This product group does not include: <ul style="list-style-type: none"> Flushometer valves (these are typically sold separately from the commercial toilet fixture) Toilets intended for use in a residential setting 		
Geographic representativeness	North America		
Product-specific terms	The following terms are defined by ASME A112.19.2 and also apply to this PCR for consistency: <ul style="list-style-type: none"> Flushing device – a device for delivering water into a water closet bowl or urinal. Flush valve – a valve for discharging water from a flush tank into a water closet bowl or urinal. Water closet – a fixture with a water-containing receptor that receives liquid and solid body waste and on actuation conveys the waste through an exposed integral trap into a drainage system. Dual-flush water closet – a water closet incorporating a feature that allows the user to flush the water closet with either a reduced or a full volume of water. 		

Program operator responsibilities

Existing PCRs, EPDs, TRs, or LCAs	<ul style="list-style-type: none"> • This Part B shall be used in conjunction with Sustainable Minds Part A: LCA calculation rules and report requirements, version 2023. • This Part B is an update to: http://www.sustainableminds.com/files/transparency/pgds/Part_B_Product_Group_Definition_Commercial_Toilets_072018.pdf • Existing guidance: Plumbing Manufacturers International, 2018. Product Category Rule (PCR) Guidance for Kitchen and Bath Fixture Fittings v1.0. • Relevant study: Plumbing Manufacturers International, 2022. California Market Penetration of Water-Efficient Plumbing Products Study. • Expired PCR: UL Environment: Product Category Rules (PCR) Guidance for Building-Related Products and Services Part B: Sanitary Ceramic EPD Requirements (Version 2.1) (expired Jan 31, 2023) • Underlying LCA: TOTO Sanitary Ceramic Products LCA Background Report (public version), September 2014, https://transparencycatalog.com/assets/uploads/files/TOTO_Sanitary_Ceramic_Products_LCA_Background_Report_public_version_TOTO_2014.pdf
Justification for new Part B if relevant non-expired PCR exists	<p>Not applicable. An existing non-expired PCR for commercial toilets was not found at the time of publication of this Part B.</p>
Harmonization activities pursued	<p>Sustainable Minds announced the creation of this product group definition to other program operators, LCA analysts, and manufacturers via email, and posted an update on its website. An expired PCR for sanitary ceramics was found to include some product use information for a commercial toilet, which also aligned with the PMI PCR Guidance. Sustainable Minds reached out to the program operator to inquire whether that PCR would be updated and whether we could harmonize so as not to overlap on inclusion of commercial toilets. No response was received by the time of publication of this Part B.</p>

Functional performance

Standard/certification (most recent edition, conformance not required for PCR conformance)	URL
Functional performance - ASSE 1037-2015/ASME A112.1037-2015/CSA B125.37-15	https://webstore.ansi.org/standards/asse-sanitary/asse10372015asmea112csab12537
Functional performance – ASME A112.19.2/CSA B45.1-2018	https://www.asme.org/codes-standards/find-codes-standards/a112-19-2-csa-b45-1-ceramic-plumbing-fixtures

System boundary

System boundary	<p>The type of EPD shall be specified as cradle to grave. The modules considered in the LCA shall be described in brief as per “System boundaries” outlined in SM Part A section 5.1. Module D may be optionally declared. It should be apparent as to what processes are considered in each module per the module descriptions in SM Part A section 6.</p> <p>While it is unclear whether capital goods and infrastructure are significant to the overall impacts of the products, it is known that different databases inconsistently account for these items in secondary data sets. To reduce possible artificial variation in EPD results across the product group, capital goods and system infrastructure flows shall be excluded from the system boundary by default, with justification required for alternative assumptions.</p>
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Functional unit

Unit	One commercial toilet in an average commercial environment
Rationale	Products are available and used in the North American commercial market

Additional rules for comparability

1. Additional rules to Part A	<ul style="list-style-type: none"> • The construction of water and wastewater infrastructure are excluded • EPDs that use secondary data for any unit process that contributes 5% or more to any disclosed environmental impact category shall disclose the data source (database name and version, software type and version implemented, dataset name, dataset geography, and dataset allocation method). Materials considered confidential may be reported as “proprietary ingredient” along with the database name and version.
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2. Default life cycle stage scenario(s)	<p><u>Extraction and upstream production (A1)</u></p> <p>When materials used in the product are represented by secondary data, the manufacturing activities should reflect the source country or region to the extent possible. The electricity grid profile of the data set should be adapted to the source country or region, if known and possible with the selected data set. Average data sets with “Global” or “Rest of World” average electricity profiles may only be used if the material source location is unknown or adapting the electricity grid is not possible.</p> <p>In cases when the EPD owner purchases manufactured components, the manufacturing process activity at the upstream supplier shall be counted in the extraction and upstream production stage, separate and in addition to the upstream raw material extraction. For example, if a manufacturer purchases steel fastener that is used for installing the toilet, the steel cannot be simply represented by raw steel alone. Additional manufacturing must be added to represent the manufacturing of raw steel into the fastener.</p> <p><u>Transport to factory (A2)</u></p> <p>In cases when the EPD owner maintains multiple suppliers for the same material or part, the life cycle inventory and impact assessment results shall reflect a weighted average transportation distance from the multiple suppliers for each mode of transport used. To simplify the calculation for those with many suppliers for the same material or part, suppliers which provide less than 5%, by mass or by volume, of a particular material or part may be excluded from the calculation of weighted average transport distance, subject to existing cut-off requirements in SM Part A.</p> <p>If the location of a material/part supplier is unknown, a default distance of 1,243 miles (2,000 km) must be assumed unless otherwise justified.</p> <p><u>Transport to site (A4)</u></p> <p><u>Land transport</u></p> <p>If primary data are unavailable, assume land transport distance in the destination country is 497 miles (800 km) by truck with an empty return trip of the same distance (994 miles (1,600 km) total). This includes transport to the final installation site if multiple transport legs are included.</p> <p><u>Warehouse/distribution center and retail</u></p> <p>Energy consumption in warehouses, distribution centers, and retail facilities during the course of transport to the final customer shall be omitted from the analysis.</p> <p><u>Installation (A5)</u></p> <p>The installation stage shall include, as applicable, any ancillary materials, electricity and/or water consumption (e.g., from tools or initial product testing by customer prior to first use), and disposal of product packaging waste and other waste materials.</p> <p><u>Building estimated service life and product reference service life</u></p> <p>This Part B uses a building estimated service life (ESL) of 75 years. All use stage activity and impacts shall be counted for the full ESL period.</p> <p>The default reference service life (RSL) for a commercial toilet shall be 30 years unless otherwise justified. Justification shall include a guarantee by the signature of the most senior officer of the product manufacturer. The default 30-year RSL for the commercial toilet is based on the useful life specified in PMI’s California Market Penetration of Water-Efficient Plumbing Products Study.</p> <p>NOTE: Users of this PCR should be aware that the RSL has been updated in this version of the PCR compared to the previous version published in 2018. The previous PCR specified 10 years, whereas this PCR specifies 30 years. This is a significant change, and there were two reasons for making it. First, the flushometer valve was separated from the scope of this PCR. The previous version of the PCR included both the toilet fixture and flushometer valve, and because flushometer valves are usually replaced more often than the toilet fixtures, a shorter RSL was specified. Now that the PCR only covers the toilet, the PCR committee determined that a longer RSL was warranted. Second, newer information on product lifetimes was made available to the PCR committee. A study commissioned by PMI and</p>
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completed in 2022¹ brings together data from the National Association of Home Builders², International Association of Certified Home Inspectors³, inputs from plumbing fixture/fittings manufacturers, and from rental property managers to propose default service life assumptions for various plumbing fixtures and fittings. The primary implication of this change will be realized in the results of module B4 (replacements). Since the toilet is assumed to last longer in the building, less replacements will be needed over the building estimated service life, and therefore, less impacts will be shown in B4 compared to EPDs which use the previous version of this PCR. Manufacturers may want to note this explanation in their EPDs if they determine it will be useful to customers.

Use or application of the installed product (B1)

Any activity related to product use and not included in stages B2-B7 shall be included in this stage.

Maintenance (B2)

Commercial toilets require periodic cleaning, and the following schedule of maintenance and corresponding quantities shall be used unless primary data or product usage guides are available to justify alternative assumptions.

Table 1. Maintenance activities for commercial toilet

Activity (as applicable)	Frequency	Assumptions per event
Toilet basin, bowl, seat, and lid cleaning	Daily, 260 days per year	1.69 fl oz (50 mL) of a 1% sodium lauryl sulfate solution.

Repair (B3)

Over the RSL, toilet flushing systems have components that will likely need to be replaced. However, the vast majority of commercial toilets are sold without flushing systems. If the toilet is sold with an integrated flushing system (valve or gravity fed), the LCA shall assume all flushing components, including seals, are replaced every 10 years.

When the commercial toilet is sold with a toilet seat, manufacturers shall, unless otherwise justified with evidence, assume the toilet seat and hinge are fully replaced every 10 years.

Replacement (B4)

Replacements for the duration of the ESL for the commercial toilet must be counted proportionally to the nearest tenth of a product. For example, if the default RSL of 30 years is used, then 1.5 replacement products (45 remaining years in the ESL divided by 30-year RSL) must be included. Replacements must include the sum of impacts from stages A1-A5 and C1-C4 multiplied by the number of replacements.

Refurbishment (B5)

Refurbishment is not expected to occur in the normal operation of the product. Zero activity may be assumed for this stage unless otherwise justified.

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

This PCR considers any operational energy and water use to be considered within the system boundary of the flushing system product. For the vast majority of commercial toilets sold without flushing systems, no operational energy or water use is considered since it lies outside the system boundary of the toilet fixture.

For commercial toilets sold with an integrated flushing system, the flushing system shall be included in all life cycle stages according to the requirements of one of the following PCRs, as appropriate:

- Gravity-flush systems: refer to Sustainable Minds Part B: Residential Toilets v3.0.
- Flushometer valve: refer to Sustainable Minds Part B for Commercial Flushometer Valves v3.0.

¹ Plumbing Manufacturers International. California Market Penetration of Water-Efficient Plumbing Products Study. 2022. This report is available to members of PMI.

² National Association of Home Builders, Bank of America. Study of Life Expectancy of Home Components. February 2007. <https://www.reservedataanalyst.com/mt-content/uploads/2019/10/national-association-of-home-builders-life-expectancies.pdf>. Accessed 14 February 2024.

³ International Association of Certified Home Inspectors. Standard Estimated Life Expectancy Chart for Homes. <https://www.nachi.org/life-expectancy.htm>. Accessed 14 February 2024.

	<p><u>Deconstruction/demolition (C1)</u></p> <p>In the absence of primary data, the EPD owner may assume that the commercial toilet reaches its end of life separately from the building and is manually removed using common hand tools. As such, energy or material inputs may be assumed zero for this stage unless otherwise justified.</p> <p><u>Transport to waste processing or disposal (C2)</u></p> <p>In the absence of primary data, EPD owners shall assume the product is transported 100 km via diesel-powered truck/trailer from the building site to the waste processing/disposal site.</p> <p><u>Waste processing (C3)</u></p> <p>In the absence of primary data, the default assumption is that 100% of products are disposed in a sanitary landfill at end of life. In that case no waste processing activity is applicable in this stage. Justifications for other end-of-life pathways, such as recycling, refurbishment, or other pathway in a product take-back program require evidence such as documentation of the program and documented number or share of units sold that participate in the program.</p> <p><u>Waste disposal (C4)</u></p> <p>The EPD owner shall assume 100% disposal in a sanitary landfill unless otherwise justified as described in C3 above. Landfill processes shall be modeled based on the mass of distinct materials in the commercial toilet and availability of secondary data to model those materials.</p> <p><u>Benefits and loads beyond the system boundary (D), Optional</u></p> <p>Since the default end-of-life assumption is 100% landfill, there are no anticipated burdens or benefits beyond the system boundary. However, if alternative end-of-life pathways are justified, such benefits and burdens may be reasonably quantified or qualitatively described in this stage.</p>
3. Additional data quality requirements	No additional data collection specifications or data quality requirements were identified.

Additional LCA calculation rules

N/A	Optional	Required	Indicate whether conformance is the manufacturer's choice or required for TRs/EPDs.
		X	ISO 21930: conformance is required by construction product manufacturers

Industry-average EPD requirements

Requirements	Industry-average EPDs shall not be developed using this PCR.
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Part B development information

Part B review panel	<p>This Part B was reviewed for conformance to ISO 14025, ISO 21930:2017, and ACLCA PCR Open Standard v1.0 by the following parties:</p> <table border="0"> <tr> <td>Jack Geibig, Chair Ecoform Jgeibig@ecoform.com</td> <td>Hugues Imbeault-Tétreault, ing., M.Sc.A. Groupe AGÉCO hugues.i-tetreault@groupeageco.ca</td> <td>Rebe Feraldi, LCACP, CLAR Pacific Northwest National Laboratory rebe.feraldi@pnnl.gov</td> </tr> </table>	Jack Geibig, Chair Ecoform Jgeibig@ecoform.com	Hugues Imbeault-Tétreault, ing., M.Sc.A. Groupe AGÉCO hugues.i-tetreault@groupeageco.ca	Rebe Feraldi, LCACP, CLAR Pacific Northwest National Laboratory rebe.feraldi@pnnl.gov
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Open consultation	Sustainable Minds solicited public comments on this Part B from January 9, 2024 – February 8, 2024. This consultation period and list of parties to submit comments were made available to the review panel.			
Update justification	This Part B was updated upon consideration of manufacturers looking to create new TRs/EPDs beyond the validity period of the previous version of the PCR.			
Conflict statement	Funding sources used to develop this Part B were disclosed to the working group during the development process. The policies identified in Sustainable Minds' Program Governance were followed to identify and resolve any potential conflicts of interest.			
Sustainable Minds information	<p>This Part B was developed by Sustainable Minds and participating interested parties according to the Sustainable Minds Program Governance available at http://www.sustainableminds.com/transparency-report-program/how-it-works.</p> <p>For questions about this or another Part B, to submit comments on this Part B, or to obtain a template for developing a transparency report, contact us using the information on the following page: http://www.sustainableminds.com/contact-us.</p>			