



Part B: Product group definition | Commercial toilets

Initiators	TOTO USA Visit an SM Transparency Report for commercial toilets: http://www.sustainableminds.com/showroom/toto/
Other company(s) and organization(s) involved	TOTO USA, Kohler, and Sloan

Product group

Name	Commercial Toilets	CSI MasterFormat® #(s) or UNCPC(s)	22 42 13.13
Description Define the types of products included under this Part B	Commercial toilets intended for use with a flushometer valve to supply water volume and pressure necessary for proper function. Because toilets are used in conjunction with a flushometer valve, only one use phase per valve-toilet combination should be used.		
New Part B request? Yes / No	No	Is this an update to an existing Part B? Yes / No	Yes
Validity date	07/03/2018 – 07/03/2023		
Existing PCRs, EPDs, SM TRs or LCAs This information will be used to identify additional rules for comparability and to substantiate the rationale for creating a Part B.	<p>This Part B is an update to: http://www.sustainableminds.com/files/transparency/pgds/Part_B_Product_Group_Definition_Commercial_Toilets_09132017.pdf</p> <p>Institut Bauen und Umwelt e.V.: PCR Guidance-Texts for Building-Related Products and Service From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (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 sanitary ware. It does not contain any relevant additional rules specific to this product group.</p>		
Any relevant literature and/or published material	Updated according to new product cleaning assumptions and use phase data provided in the new PMI Product Category Rule (PCR) Guidance for Kitchen and Bath Vessel Fixtures [1] and Fixture Fittings [2].		

Functional performance

Standard/certification	URL
Functional performance - ASME A112.19.2	https://www.asme.org/products/codes-standards/a112192csa-b451-2013-ceramic-plumbing-fixtures-(1)
Flow rate - EPAct 1992	http://www.ferc.gov/legal/maj-ord-reg/epa.pdf

Functional / declared unit

Unit	10 years of use of a commercial toilet (single flush or dual flush) in an average US commercial environment
Rationale	<ul style="list-style-type: none"> Product available and used in US market 10 years is an industry accepted average lifespan that is based on the economic lifespan of a product; this is more limited due to changes in consumer preferences and innovations in water usage than the technical lifespan of the product. The ceramic will easily outlive the 10 years.

Additional rules for comparability

1. Clarification More product group specificity as needed	None
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2. Additional rules to Part A	Water and wastewater infrastructure are excluded																										
3. Default life cycle stage scenario(s)	<p><u>Default use phase scenario – single flush:</u> The single flush toilet is assumed to be used in an average US commercial environment over a 10-year time period with an average of 60 flushes per day, 260 days per year [2]. The bowl portion and valve portion of the toilet are assumed to be cleaned daily, 7 days a week, 52 weeks per year, each with 10mL of a 1% sodium lauryl sulfate solution for a total of 72.8L of SLS solution over the toilet’s lifetime [1, 2]. Any electricity used in flushometer valve operation is included. The volume of water per flush varies and depends on the specific product to which this Part B applies.</p> <p><u>Default use phase scenario – dual flush:</u> The dual flush toilet is assumed to be used in an average US commercial environment over a 10-year time period with an average of 90 flushes per day, 260 days per year [2]. The bowl portion and valve portion of the toilet are assumed to be cleaned daily, 7 days a week, 52 weeks per year, each with 10mL of a 1% sodium lauryl sulfate solution for a total of 72.8L of SLS solution over the toilet’s lifetime [1, 2]. Any electricity used in flushometer valve operation is included. The volume of water per flush varies and depends on the specific product to which this Part B applies.</p> <p><u>Transportation assumptions:</u> Primary data should be used for the transportation distances between the manufacturer and the distributor. Unless otherwise known, assume transportation distances of 500km from the distributor to the installation site and 100km from the installation site to waste processing, via diesel-powered truck/trailer [1, 2].</p> <p><u>Electricity consumption for water supply and treatment:</u> Water usage in a commercial facility would also include electricity usage for acquisition, treatment, and distribution of water to facilities and collection, conveyance and wastewater treatment of domestic wastewater. 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 (EPA) were used to establish weighted average composite factors, to obtain an electricity usage per gallon of water consumed. Use this table to calculate the electricity used for water supply and treatment:</p> <p>Table: Average National Electricity Usage Factors</p> <table border="1" data-bbox="500 1218 1450 1890"> <thead> <tr> <th>Activity</th> <th>EPRI factors: kWh / MMgal^{Note 1}</th> <th>Weighted avg composite factors: kWh / MMgal</th> </tr> </thead> <tbody> <tr> <td>Acquisition, treatment and distribution of surface water by a Public Water System (PWS)</td> <td>1,406</td> <td rowspan="2">1,540^{Note 2}</td> </tr> <tr> <td>Acquisition, treatment and distribution of ground water by a PWS</td> <td>1,824</td> </tr> <tr> <td>Self-supply of drinking water (typically pumping from private wells)</td> <td>700</td> <td>700</td> </tr> <tr> <td>Collection, conveyance and < secondary treatment of domestic wastewater</td> <td>661</td> <td rowspan="4">1,399^{Note 3}</td> </tr> <tr> <td>Collection, conveyance and secondary treatment of domestic wastewater</td> <td>1,212</td> </tr> <tr> <td>Collection, conveyance and advanced treatment of domestic wastewater</td> <td>1,726</td> </tr> <tr> <td>Collection, conveyance and zero discharge/other treatment of domestic wastewater</td> <td>400</td> </tr> <tr> <td>Total electricity per million gallons →</td> <td></td> <td>3,639</td> </tr> <tr> <td>Total kWh electricity per 1 gallon →</td> <td></td> <td>0.0036</td> </tr> </tbody> </table> <p>Note 1: Source: EPRI, Water & Sustainability (Volume 4): U.S. Electricity Consumption for Water Supply & Treatment -- The Next Half Century, March 2002.</p>	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
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Additional LCA calculation rules

N/A	Optional	Required	<i>Indicate whether conformance is the manufacturer's choice or required for EPD/TR. Refer to Part A: Compatibility appendices for content requirements.</i>
	X		ISO 21930