

Product Group Definition (PGD)

Part B: Commercial Toilets

PGDs describe baseline functional and environmental attributes of products that compete for/deliver the SAME function or purpose.

Product group

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|---|---|
| Name | Commercial Toilets |
| Initiators: | TOTO USA, Inc. Visit an SM Transparency Report for residential toilets: http://www.sustainableminds.com/showroom/toto/ |
| Validity date: | September 1, 2014 – August 31, 2017 |
| Any existing PCRs, EPDs or SM TRs? | 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 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. |

Functional performance

| Standard/certification | URL |
|---|---|
| 1. Water consumption - EPA Act 1992 | http://www.ferc.gov/legal/maj-ord-reg/epa.pdf |
| 2. Water consumption - Watersense – in development | http://www.epa.gov/watersense/products/flushometer-valve-toilets.html |
| 3. Functional performance - ASME A112.19.2 | https://www.asme.org/products/codes-standards/a112192csa-b451-2013-ceramic-plumbing-fixtures-(1) |

Declared/Functional unit

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|---------------------------------|--|
| Declared/Functional unit | 10 years of use of a commercial toilet in an average US commercial environment. |
| Rationale | <ul style="list-style-type: none"> • 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 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 outlive the 10 years easily. • Commercial toilets are intended for use with a flush valve to supply water volume and pressure necessary for proper function. Because toilets are used in conjunction with flush valve, only one use phase per valve-toilet combination should be used. |

Additional rules for comparability

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| 1. Clarification(s) | None |
| 2. Add rules to Part A | Water and wastewater infrastructure are excluded |
| 3. Default life cycle stage scenario(s) | <p><u>Default use phase scenario:</u> The toilet is assumed to be used in an average US commercial environment over a 10-year time period with an average of 133 flushes per day*. The volume of water per flush varies and depends on the specific product to which this PGD applies.</p> <p>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</p> |

domestic wastewater. The Electric Power Research Institute (EPRI) published this type of data in a study on water and sustainability. Data from the US Environmental Protection Agency (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/datat/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.

* The average usage number is estimated by the TOTO R&D team in Japan.