TOTO®

Drake® II

CST454CUFG – 1G®
CST454CEFG – 1.28gpf

Adaptable and tastefully designed, TOTO's Drake II Tornado Flush™ two-piece HET is accessible to everyone from all walks of life. Available in Drake II 1G or Drake II 1.28gpf option, this traditional style of toilet is easy to install and transport, and gives the comfort you have come to expect in TOTO's performance design, saving you water beautifully.

Performance dashboard

Features & functionality

Tornado Flush™ flushing system

Powerful siphon jet, quiet flush every time

Sleek, high profile two-piece design

CeFIONtect™: Super smooth, ion barrier glazing keeps your toilet bowl cleaner with every flush

Universal Height

12" Rough-in

Visit TOTO for more product specifications:

CST454CUFG, CST454CUFRG, CST454CUF

CST454CEFG, CST454CEFRG, CST454CEF

MasterFormat® #22 41 13.13

WATER · PEOPLE · PLANET · SMART FACT

TORNADO® FLUSH

The dual-nozzle propulsion system allows more water to be directed at the siphon for a more powerful flush that maximizes cleaning action.

- Uses only 1.28 GPF or less
- State-of-the art, hole-free rim design for easier cleaning
- Dual-nozzle bowl cleansing

Environment & materials

Improved by:

Lower water use

50% of all electricity from renewable resources

Kiln exhaust heat reused to power product dryers

Upcycling of post industrial porcelain waste into ceramic floor tile

Certification & rating systems:

WaterSense® certified

Declare™ label: 1G®, 1.28gpf

CALGreen® compliant

Contributes to earning credits in LEED®

See LCA, interpretation & rating systems

See materials, interpretation & rating systems

SM Transparency Report (EPD)™ + Material Health Overview™

EPD	LCA
3rd-party reviewed	✔ NSF
	Transparency Report (EPD)
3rd-party verified	✔ NSF

Validity: 08/31/2024 – 08/30/2029
TOTO – 20240831 – 004

MATERIAL HEALTH	Material evaluation
Self-declared	✔

This environmental product declaration (EPD) was externally verified by Jack Geibig (Ecoform) on behalf of NSF according to ISO 14044; ISO 21930:2017; SM Part A: LCA calculation rules and report requirements, 2023; the reference PCR; and ISO 14025:2006.

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NSF® Certified Environmental Product Declaration www.nsf.org

SUMMARY

Reference PCR
SM Part B: Residential toilets, v3.0

Regions; system boundaries
North America; Cradle-to-grave

Functional unit
One single toilet in an average residential environment without an electronic bidet seat, over the estimated service life of the building

LCIA methodology; LCA software; LCI database
TRACI 2.1; SimaPro Analyst 9.5; ecoinvent and USLCI databases

In accordance with ISO 14044 and the referenced PCR, the life cycle assessment was conducted by Sustainable Minds and critically reviewed by Jack Geibig (Ecoform) on behalf of NSF.

Public LCA
LCA background report of TOTO Faucets, Flush Valves, and Residential Toilets, 2024

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Contact us

LCA results & interpretation

Drake® II

Drake® II 1.28gpf | Drake® II 1G® | EPD additional content | Material health

Scope and summary

○ Cradle to gate ○ Cradle to gate with options ✔ **Cradle to grave**

Functional unit

One single flush toilet in an average residential environment without an electronic bidet seat. The expected service life (ESL) of a building is 75 years, and all use stage activity and impacts are accounted for in that full ESL period. The reference service life (RSL) of the toilet is 20 years, which is an industry-accepted average lifespan based on the economic lifespan of the product.

Maintenance

Regular cleaning is assumed to use 1.69 fl oz (50mL) of a 1% sodium lauryl sulfate (SLS) solution twice per month for 75 years, which is the building estimated service life. The use of 50mL/clean over 24cleans/year for 75 years gives a total of 90L of solution. Using a density of 1.01kg/L for a 1% SLS solution, 90kg of solution will be needed over the course of 75 years. Therefore, 0.9kg of SLS plus 90kg of water were included in the model.

Repair and replacement

The trip lever handle, flapper seal, and fill valve seal are assumed to be replaced once during each 20-year RSL period as part of regular repairs. At the end of its RSL, the residential toilet is assumed to be replaced. Therefore, an additional 2.75 products are included as replacements, with all life cycle modules considered, over the building's ESL of 75 years.

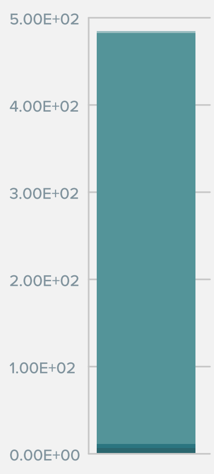
Manufacturing data

Manufacturing data has been collected and compiled for TOTO Lakewood, Morrow, and Thailand. **Data reporting period:** 2023.

Material composition greater than 1% by weight

PART	MATERIAL	AVG. % WT
Tank and bowl	Ceramic	78.2%
Packaging	Corrugated board, paper inserts	14.3%
Seat	Polypropylene	5.9%
Other	Fittings & tank components	1.7%

Total impacts by life cycle stage [mPts/func unit]



LIFE CYCLE STAGE	MPTS/FUNC. UNIT
Production	8.88
Construction	1.71
Use	470
End of life	0.11

Total impacts = 481 mPts per 75 years installed

What's causing the greatest impacts

All life cycle stages

The use stage [B1-B7] dominates the results for all impact categories. The operational water use and replacement modules are highly dominant in all categories because of the amount of water consumed during operation and the necessity to consider an additional 2.75 products as replacements. All life cycle modules are considered throughout the estimated service life (ESL) of the building, which is 75 years. The production stage [A1-A3] itself is slightly significant but does not dominate in any impact category. Additionally, the processes associated with dismantling the product and final waste treatment during the end-of-life stage do not have a significant impact.

Production stage [A1-A3]

The ceramic parts dominate all impact categories in the production stage except for non-carcinogenics and eutrophication. The zinc and stainless steel parts together with the corrugated board and turning brass process have major contributions to those impact categories. The injection molding process has a significant contribution to ozone depletion. The remaining parts and processes contribute between 2% and 11% of the overall impacts in the rest of the categories. The entire production stage itself accounts for less than 5% of the global warming potential impact category.

Construction stage [A4-A5]

Installation of the product dominates impacts in the construction stage. Transportation by truck for delivery to the installation site contributes the most, and this stage contributes less than 1% of the total global warming potential impacts throughout the product's life cycle.

Use stage [B1-B7]

Product replacements dominate impacts in the use stage. The use stage itself dominates all impact categories (>94%) due to the consideration of an additional 2.75 products as replacements.

End-of-life stage [C1-C4]

The transportation to landfill dominates impacts in the end-of-life stage. Transportation and the processes for dismantling the product contribute to a relatively low portion (<1%) of total results for all impact categories.

Operational water use

The amount of water used by the toilet depends on its flush rate. The 1.28gpf toilet consumes 1.28 gallons per flush and is assumed to be used 13 times per day over 75 years, resulting in 455,520 gallons of water over its lifetime. An electricity factor of 0.000961 kWh per liter of water is used to represent energy for upstream municipal water collection, treatment, supply, and downstream management.

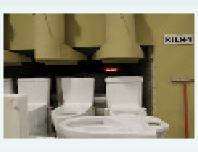
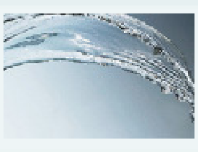
How we're making it greener

TOTO PeoplePlanetWater™ programs improving environmental performance

- Dual-Max®, E-Max®, Tornado Flush™, 1G®, and EcoPower® reduce water consumption in the use phase
- Energy efficiency programs optimize the firing process
- Modular packing methods increase the fill rate of a trailer, cutting down on the number of trips needed
- 100% of post-industrial ceramic waste is recycled

See how we make it greener

LCA results

LIFE CYCLE STAGE	PRODUCTION	CONSTRUCTION	USE	END OF LIFE
	(X) A1 Raw materials	**(X) A4 Transportation/ Delivery**	**(X) B1 Use**	**(X) C1 Deconstruction/ Demolition**
	(X) A2 Transportation	**(X) A5 Construction/ Installation**	**(X) B2 Maintenance**	**(X) C2 Transportation**
	(X) A3 Manufacturing		**(X) B3 Repair**	**(X) C3 Waste processing**
			(X) B4 Replacement	**(X) C4 Disposal**
Information modules: Included (X) | Excluded (MND)*			**(X) B5 Refurbishment**	
			(X) B6 Operational energy use	
			(X) B7 Operational water use	
				

SM Single Score

Impacts per toilet	8.92 mPts	1.71 mPts	471 mPts	0.106 mPts
Materials or processes contributing >20% to total impacts in each life cycle stage	Ceramic parts production as well as well zinc and brass parts together with zinc turning process.	Transportation of the product to installation site or consumer and disposal of packaging.	Volume of water used during operation and the number of product replacements needed over the building's service life.	Transport to waste processing and disposal of material flows transported to a landfill.

Drake® II 1.28gpf - TRACI v2.1 results per functional unit

LIFE CYCLE STAGE		PRODUCTION	CONSTRUCTION	USE	END OF LIFE
Ecological damage					
Impact category	Unit				
Global warming	kg CO_2 eq	1.18E+02	1.37E+01	6.38E+03	1.94E+00
Ozone depletion	kg CFC-11 eq	6.08E-06	1.36E-07	2.92E-04	1.30E-07
Acidification	kg SO_2 eq	3.85E-01	4.23E-01	3.25E+01	6.31E-03
Eutrophication	kg N eq	7.63E-02	3.03E-02	3.77E+00	1.80E-03
Human health damage					
Impact category	Unit				
Smog	kg O_3 eq	6.07E+00	1.42E+01	3.41E+02	1.74E-01
Respiratory effects	kg $PM_{2.5}$ eq	2.94E-02	5.31E-03	2.16E+00	3.61E-04
Additional environmental information					
Impact category	Unit				
Carcinogenics	CTU_h	1.67E-06	1.57E-07	1.28E-04	1.33E-08
Non-carcinogenics	CTU_h	2.02E-05	1.47E-06	6.29E-04	1.07E-07
Ecotoxicity	CTU_e	7.42E+01	2.78E+01	2.50E+03	1.92E+00
Fossil fuel depletion	MJ surplus	2.27E+02	2.04E+01	4.96E+03	2.29E+00

References

LCA Background Report
LCA background report of TOTO Faucets, Flush Valves, and Residential Toilets, 2024; SimaPro Analyst 9.5; ecoinvent and USLCI databases; TRACI 2.1.

ISO 14025, "Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services"

ISO 21930:2017, "Sustainability in Building Construction — Environmental Declaration of Building Products" serves as the core PCR along with Sustainable Minds Part A.

SM Part A: LCA calculation rules and report requirements, version 2023
August, 2023. PCR review conducted by the Sustainable Minds TAB, tab@sustainableminds.com.

SM Part B: Residential toilets, v3.0
March, 2024. PCR review conducted by Jack Geibig, Chair (Ecoform) Jgeibig@ecoform.com; Hugues Imbeault-Tétreault, ing., M.Sc.A. (Groupe AGÉCO); Rebe Feraldi, LCACP, CLAR (Pacific Northwest National Laboratory).

Download PDF SM Transparency Report/EPD

SM Transparency Reports (TR) are ISO 14025 Type III environmental declarations (EPD) that 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. Environmental declarations 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 as defined in ISO 14025 Section 6.7.2. 'Requirements for Comparability' are satisfied. 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. Any EPD comparison must be carried out at the building level per ISO 21930 guidelines, use the same sub-category PCR where applicable, include all relevant information modules, be limited to EPDs applying a functional unit, and be based on equivalent scenarios with respect to the context of construction works. Some LCA impact categories and inventory items are still under development and can have high levels of uncertainty. To promote uniform guidance on the data collection, calculation, and reporting of results, the ACLCA methodology (ACLCA 2019) was used.

Rating systems

The intent is to reward project teams for selecting products from manufacturers who have verified improved life-cycle environmental performance.

LEED BD+C: New Construction | v4 - LEED v4

Building product disclosure and optimization

Environmental product declarations

- ○ Industry-wide (generic) EPD — ½ product
- ✔ Product-specific Type III EPD — 1 product

LEED BD+C: New Construction | v4.1 - LEED v4.1

Building product disclosure and optimization

Environmental product declarations

- ○ Industry-wide (generic) EPD — 1 product
- ✔ Product-specific Type III EPD — 1.5 products

Collaborative for High Performance Schools National Criteria

MW C5.1 – Environmental Product Declarations

- ✔ Third-party certified type III EPD — 2 points

Green Globes for New Construction and Sustainable Interiors

Materials and resources

- ✔ NC 3.5.1.2 Path B: Prescriptive Path for Building Core and Shell
- ✔ NC 3.5.2.2 and SI 4.1.2 Path B: Prescriptive Path for Interior Fit-outs

BREEAM New Construction 2018

Mat 02 - Environmental impacts from construction products

Environmental Product Declarations (EPD)

- ○ Industry-average EPD — .5 points
- ○ Multi-product specific EPD — .75 points
- ✔ Product-specific EPD — 1 point

SM Transparency Report (EPD)™ + Material Health Overview™

EPD	LCA
3rd-party reviewed	✔ NSF
	Transparency Report (EPD)
3rd-party verified	✔ NSF

Validity: 08/31/2024 – 08/30/2029
TOTO – 20240831 – 004

MATERIAL HEALTH	Material evaluation
Self-declared	✔

This environmental product declaration (EPD) was externally verified by Jack Geibig (Ecoform) on behalf of NSF according to ISO 14044; ISO 21930:2017; SM Part A: LCA calculation rules and report requirements, 2023; the reference PCR; and ISO 14025:2006.

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NSF Certified Environmental Product Declaration www.nsf.org

SUMMARY

Reference PCR
SM Part B: Residential toilets, v3.0

Regions; system boundaries
North America; Cradle-to-grave

Functional unit
One single toilet in an average residential environment without an electronic bidet seat, over the estimated service life of the building

LCIA methodology; LCA software; LCI database
TRACI 2.1; SimaPro Analyst 9.5; ecoinvent and USLCI databases

In accordance with ISO 14044 and the referenced PCR, the life cycle assessment was conducted by Sustainable Minds and critically reviewed by Jack Geibig (Ecoform) on behalf of NSF.

Public LCA
LCA background report of TOTO Faucets, Flush Valves, and Residential Toilets, 2024

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LCA results & interpretation

Drake® II

Drake® II 1.28gpf | Drake® II 1G® | EPD additional content | Material health

Scope and summary

○ Cradle to gate ○ Cradle to gate with options ✔ **Cradle to grave**

Functional unit

One single flush toilet in an average residential environment without an electronic bidet seat. The expected service life (ESL) of a building is 75 years, and all use stage activity and impacts are accounted for in that full ESL period. The reference service life (RSL) of the toilet is 20 years, which is an industry-accepted average lifespan based on the economic lifespan of the product.

Maintenance

Regular cleaning is assumed to use 1.69 fl oz (50mL) of a 1% sodium lauryl sulfate (SLS) solution twice per month for 75 years, which is the building estimated service life. The use of 50mL/clean over 24cleans/year for 75 years gives a total of 90L of solution. Using a density of 1.01kg/L for a 1% SLS solution, 90kg of solution will be needed over the course of 75 years. Therefore, 0.9kg of SLS plus 90kg of water were included in the model.

Repair and replacement

The trip lever handle, flapper seal, and fill valve seal are assumed to be replaced once during each 20-year RSL period as part of regular repairs. At the end of its RSL, the residential toilet is assumed to be replaced. Therefore, an additional 2.75 products are included as replacements, with all life cycle modules considered, over the building's ESL of 75 years.

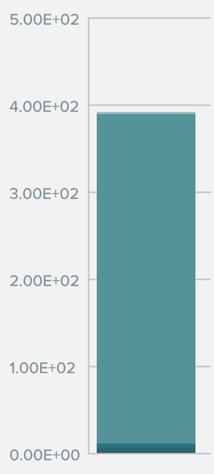
Manufacturing data

Manufacturing data has been collected and compiled for TOTO Lakewood, Morrow, and Thailand. **Data reporting period:** 2023.

Material composition greater than 1% by weight

PART	MATERIAL	AVG. % WT
Tank and bowl	Ceramic	76.2%
Packaging	Corrugated board, paper inserts	13.2%
Seat	Polypropylene	4.2%
Other	Fittings & tank components	6.4%

Total impacts by life cycle stage [mPts/func unit]



LIFE CYCLE STAGE	MPTS/FUNC. UNIT
Production	8.88
Construction	1.71
Use	380
End of life	0.11

Total impacts = 391 mPts per 75 years installed

What's causing the greatest impacts

All life cycle stages

The use stage [B1-B7] dominates the results for all impact categories. The operational water use and replacement modules are highly dominant in all categories because of the amount of water consumed during operation and the necessity to consider an additional 2.75 products as replacements. All life cycle modules are considered throughout the estimated service life (ESL) of the building, which is 75 years. The production stage [A1-A3] itself is slightly significant but does not dominate in any impact category. Additionally, the processes associated with dismantling the product and final waste treatment during the end-of-life stage do not have a significant impact.

Production stage [A1-A3]

The ceramic parts dominate all impact categories in the production stage except for non-carcinogenics and eutrophication. The zinc and stainless steel parts together with the corrugated board and turning brass process have major contributions to those impact categories. The injection molding process has a significant contribution to ozone depletion. The remaining parts and processes contribute between 2% and 11% of the overall impacts in the rest of the categories. The entire production stage itself accounts for less than 5% of the global warming potential impact category.

Construction stage [A4-A5]

Installation of the product dominates impacts in the construction stage. Transportation by truck for delivery to the installation site contributes the most, and this stage contributes less than 1% of the total global warming potential impacts throughout the product's life cycle.

Use stage [B1-B7]

Product replacements dominate impacts in the use stage. The use stage itself dominates all impact categories (>94%) due to the consideration of an additional 2.75 products as replacements.

End-of-life stage [C1-C4]

The transportation to landfill dominates impacts in the end-of-life stage. Transportation and the processes for dismantling the product contribute to a relatively low portion (<1%) of total results for all impact categories.

Operational water use

The amount of water used by the toilet depends on its flush rate. The 1G® toilet consumes 1 gallon per flush and is assumed to be used 13 times per day over 75 years, resulting in 355,875 gallons of water over its lifetime. An electricity factor of 0.000961 kWh per liter of water is used to represent energy for upstream municipal water collection, treatment, supply, and downstream management.

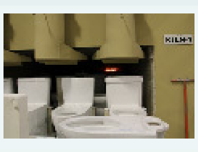
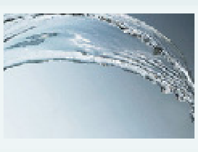
How we're making it greener

TOTO PeoplePlanetWater™ programs improving environmental performance

- Dual-Max®, E-Max®, Tornado Flush™, 1G®, and EcoPower® reduce water consumption in the use phase
- Energy efficiency programs optimize the firing process
- Modular packing methods increase the fill rate of a trailer, cutting down on the number of trips needed
- 100% of post-industrial ceramic waste is recycled

See how we make it greener

LCA results

LIFE CYCLE STAGE	PRODUCTION	CONSTRUCTION	USE	END OF LIFE
Information modules: **Included (X)** | Excluded (MND)*	(X) A1 Raw materials	(X) A4 Transportation/ Delivery	(X) B1 Use	(X) C1 Deconstruction/ Demolition
	(X) A2 Transportation	(X) A5 Construction/ Installation	(X) B2 Maintenance	(X) C2 Transportation
	(X) A3 Manufacturing		(X) B3 Repair	(X) C3 Waste processing
			(X) B4 Replacement	(X) C4 Disposal
			(X) B5 Refurbishment	
			(X) B6 Operational energy use	
			(X) B7 Operational water use	
				

SM Single Score

Impacts per toilet	8.92 mPts	1.71 mPts	380 mPts	0.106 mPts
Materials or processes contributing >20% to total impacts in each life cycle stage	Ceramic parts production as well as well zinc and brass parts together with zinc turning process.	Transportation of the product to installation site or consumer and disposal of packaging.	Volume of water used during operation and the number of product replacements needed over the building's service life.	Transport to waste processing and disposal of material flows transported to a landfill.

Drake® II 1G® - TRACI v2.1 results per functional unit

LIFE CYCLE STAGE		PRODUCTION	CONSTRUCTION	USE	END OF LIFE
Ecological damage					
Impact category	Unit				
Global warming	kg CO_2 eq	1.18E+02	1.37E+01	5.13E+03	1.94E+00
Ozone depletion	kg CFC-11 eq	6.08E-06	1.36E-07	2.36E-04	1.30E-07
Acidification	kg SO_2 eq	3.85E-01	4.23E-01	2.61E+01	6.31E-03
Eutrophication	kg N eq	7.63E-02	3.03E-02	3.06E+00	1.80E-03
Human health damage					
Impact category	Unit				
Smog	kg O_3 eq	6.07E+00	1.42E+01	2.82E+02	1.74E-01
Respiratory effects	kg $PM_{2.5}$ eq	2.94E-02	5.31E-03	1.73E+00	3.61E-04
Additional environmental information					
Impact category	Unit				
Carcinogenics	CTU_h	1.67E-06	1.57E-07	1.02E-04	1.33E-08
Non-carcinogenics	CTU_h	2.02E-05	1.47E-06	5.22E-04	1.07E-07
Ecotoxicity	CTU_e	7.42E+01	2.78E+01	2.07E+03	1.92E+00
Fossil fuel depletion	MJ surplus	2.27E+02	2.04E+01	4.17E+03	2.29E+00

References

LCA Background Report
LCA background report of TOTO Faucets, Flush Valves, and Residential Toilets, 2024; SimaPro Analyst 9.5; ecoinvent and USLCI databases; TRACI 2.1.

ISO 14025, "Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services"

ISO 21930:2017, "Sustainability in Building Construction — Environmental Declaration of Building Products" serves as the core PCR along with Sustainable Minds Part A.

SM Part A: LCA calculation rules and report requirements, version 2023
August, 2023. PCR review conducted by the Sustainable Minds TAB, tab@sustainableminds.com.

SM Part B: Residential toilets, v3.0
March, 2024. PCR review conducted by Jack Geibig, Chair (Ecoform) Jgeibig@ecoform.com; Hugues Imbeault-Tétreault, ing., M.Sc.A. (Groupe AGÉCO); Rebe Feraldi, LCACP, CLAR (Pacific Northwest National Laboratory).

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Rating systems

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LEED BD+C: New Construction | v4 - LEED v4

Building product disclosure and optimization

Environmental product declarations

- ○ Industry-wide (generic) EPD — ½ product
- ✔ Product-specific Type III EPD — 1 product

LEED BD+C: New Construction | v4.1 - LEED v4.1

Building product disclosure and optimization

Environmental product declarations

- ○ Industry-wide (generic) EPD — 1 product
- ✔ Product-specific Type III EPD — 1.5 products

Collaborative for High Performance Schools National Criteria

MW C5.1 – Environmental Product Declarations

- ✔ Third-party certified type III EPD — 2 points

Green Globes for New Construction and Sustainable Interiors

Materials and resources

- ✔ NC 3.5.1.2 Path B: Prescriptive Path for Building Core and Shell
- ✔ NC 3.5.2.2 and SI 4.1.2 Path B: Prescriptive Path for Interior Fit-outs

BREEAM New Construction 2018

Mat 02 - Environmental impacts from construction products

Environmental Product Declarations (EPD)

- ○ Industry-average EPD — .5 points
- ○ Multi-product specific EPD — .75 points
- ✔ Product-specific EPD — 1 point

SM Transparency Report (EPD)™ + Material Health Overview™

EPD	LCA
3rd-party reviewed	✔ NSF
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Validity: 08/31/2024 – 08/30/2029
TOTO – 20240831 – 004

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Self-declared	✔

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SUMMARY

Reference PCR
SM Part B: Residential toilets, v3.0

Regions; system boundaries
North America; Cradle-to-grave

Functional unit
One single toilet in an average residential environment without an electronic bidet seat, over the estimated service life of the building

LCIA methodology; LCA software; LCI database
TRACI 2.1; SimaPro Analyst 9.5; ecoinvent and USLCI databases

In accordance with ISO 14044 and the referenced PCR, the life cycle assessment was conducted by Sustainable Minds and critically reviewed by Jack Geibig (Ecoform) on behalf of NSF.

Public LCA
LCA background report of TOTO Faucets, Flush Valves, and Residential Toilets, 2024

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Contact us

EPD additional content

Drake® II

Drake® II 1.28gpf | Drake® II 1G® | EPD additional content | Material health

Data

Background This product-specific plant-average declaration was created by collecting production data from the Lakewood, Morrow, and Thailand locations. All unit processes were modeled using primary data. Secondary data sources include those available in ecoinvent and USLCI databases. Literature data was used to fill any data gaps to complete the inventory.

In the manufacturing of the products, secondary materials such as scrap metals and metal bars used to hold the primary products in place were partially incorporated in the manufacturing of the primary products but were not considered due to a lack of background data in the LCA model.

Allocation Allocations of multi-input and multi-output processes follow a mass-based approach in the collected data, which is the most appropriate for the unit processes modeled. Allocation approaches in the background data follow the ecoinvent methodology. No co-product allocations were made in the model.

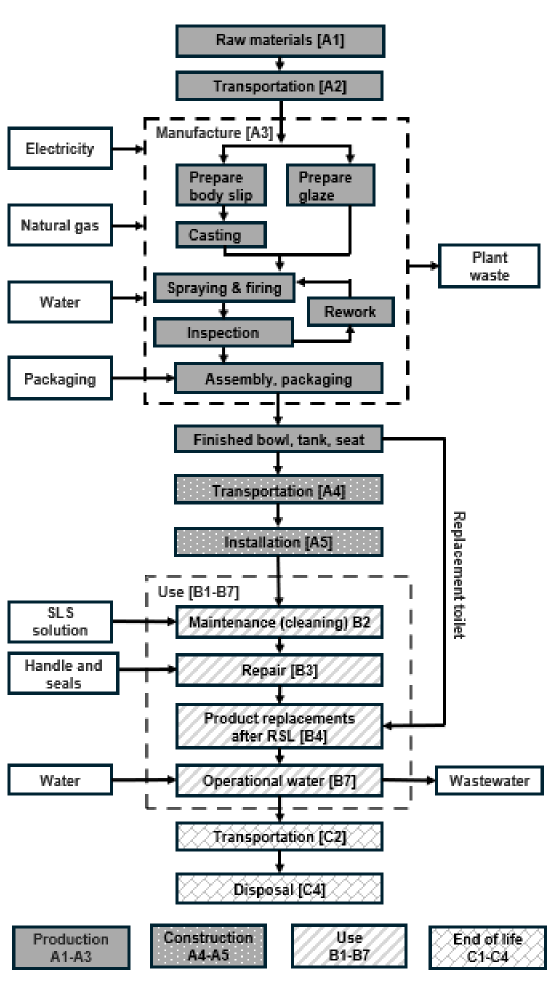
Cut-off criteria for the inclusion of mass and energy flows are 1% of renewable primary resource (energy) usage, 1% nonrenewable primary resource (energy) usage, 1% of the total mass input of that unit process, and 1% of environmental impacts. The total of neglected input flows per module does not exceed 5% of energy usage, mass, and environmental impacts. The only exceptions to these criteria are substances with hazardous and toxic properties, which must be listed even when the given process unit is under the cut-off criterion of 1% of the total mass.

Non-ceramic parts in toilets include the spud nut and washer. All parts with a weight of >1% weight of all parts (excluding ceramic and packaging materials) are included in the LCA model; no substances considered to be hazardous or toxic according to local regulations are present in the product. A check was performed to ensure that the completeness of the overall material use is >99.0wt% of the finished product after cut-off, including the ceramic and packaging materials.

Data sets contributing 5% or more to any environmental impact category

Data set name	Database name and version	Software type and version	Geography	Allocation method
Zinc, primary, at regional storage	US-EI 2.2	SimaPro Analyst 9.5	Vietnam	By mass
Slack wax, at plant, US SE	USLCI	SimaPro Analyst 9.5	United States	By mass
Brass, at plant	US-EI 2.2	SimaPro Analyst 9.5	United States	By mass
Tap water, at user	US-EI 2.2	SimaPro Analyst 9.5	United States	By mass
Electricity, low voltage, at grid, Indonesia	US-EI 2.2	SimaPro Analyst 9.5	Indonesia	By mass
Electricity, low voltage, at grid, Mexico	US-EI 2.2	SimaPro Analyst 9.5	Mexico	By mass
Electricity mix, eGrid	ecoinvent v3.10	SimaPro Analyst 9.5	United States	By mass
Heat, natural gas, at boiler condensing modulating >100kW	ecoinvent v3.10	SimaPro Analyst 9.5	Indonesia	By mass

Flow diagram



Scenarios and additional technical information

Distribution [A4]

Plant location	Fairburn, GA
Distance (port of Savannah to plant)	406 km
Vehicle type	Diesel truck

In 2023, outbound shipments of CT725 from Fairburn were transported an average of 883 miles (1,421 km) by diesel truck and an average of 1,269 miles (2,042 km) by rail. The quantity transported by truck is 83%, and by rail 17%.

Installation [A5]

A 0.15kg wax ring was accounted for in this study. These are necessary for creating a seal between the toilet outlet and drain line.

End of life [C1-C4]

The model reflects the assumptions that toilets are 100% landfilled. The product is assumed to be transported 100 km via truck to final disposal.

However, it should be noted that many of the associated metal and plastic components follow the waste scenarios as listed in the table below. TOTO ceramic materials can be recycled as aggregate in several applications, although this is not currently common practice. Secondary materials, including shredded and sorted metal waste, are valuable goods that lose their status as waste after the sorting process. No additional waste processing is needed in that case, and no credits for material recovery are given.

Material	Potential waste scenario - Recycling	Potential waste scenario - Landfill
Brass, zinc	70.5%	29.5%
Ceramic	0.00%	100%
Corrugated board, paper	66.5%	33.5%
Pallet	14.5%	85.5%
SBR, EPDM rubber, silicone rubber, ABS, POM	15.0%	85.0%

Product information

Product code	ASTM or ANSI product specification	Physical properties and technical information
CST454CEFG CST454CUFG	ASME A112.19.2/CSA B45.1 Certifications: IAPMO(cUPC)	Vitreous china plumbing fixture

Major system boundary exclusions

- Construction of major capital equipment
- Construction of water and wastewater infrastructure
- Maintenance and operation of support equipment
- Human labor and employee transport
- Manufacture and transport of packaging not associated with final product
- Energy consumption in warehouses, distribution centers, and retail facilities during the course of transport to the final customer
- Disposal of packaging materials not associated with final product
- Building operational energy and water use

Major assumptions and limitations

- Transportation of all raw materials with the mass above 1% of the cumulative mass of the model, products from vendors, is estimate based on rail lines, port information. The worst case scenario of the furthest distance from each factory to the manufacturing facility to transport kaolin with ocean freight method was considered.
- Water content of sludge was measured and reported; however, this measurement not performed routinely.
- Pallet use is assumed based on the average numbers per unit of product and reported pallet quantity of specific models.

Data quality assessment

Precision: The precision of the data is considered high. Product engineers provided detailed bills of materials, and facility managers provided utility information for the manufacturing facilities. The raw material transportation distances were calculated based on the raw material manufacturers' addresses, extracted from the relevant SDSs. Proxy datasets were utilized in the LCA model when secondary data were not available, as shown in Appendix A in the published LCA background report.

Completeness: The data included is considered complete. The LCA model included all known material and energy flows. As pointed out in that section, no known flows above 1% were excluded and the sum of all excluded flows totals less than 5%, whether evaluated by mass, energy, or potential environmental impact.

Consistency: The consistency of the model is considered high. The bills of materials provided by the product engineers were developed for multiple internal departments use and are maintained regularly. The LCA practitioner also cross-referenced the installation documents and other relevant information to ensure consistency. Furthermore, modeling assumptions were consistent across the model, with preference given towards SimaPro data, where available.

The reported values for all indicators in the below tables for B1, B5, and C1 are zero.

Drake® II 1.28gpf - LCIA results, resource use, output and waste flows, and carbon emissions & removals per functional unit

Parameter	A1-A3	A4	A5	B2	B3	B4	B6	B7	C2	C3	C4	Total
LCIA results												
Smog (kg O3 eq)	6.07E+00	4.07E+00	1.01E+01	1.70E-01	1.22E-01	2.69E+02	5.94E+01	1.21E+01	9.82E-02	7.54E-03	6.82E-02	3.61E+02
Ozone depletion (kg CFC-11 eq)	6.08E-06	1.67E-08	1.19E-07	2.23E-07	1.77E-07	2.23E-04	5.70E-05	1.16E-05	1.08E-09	5.27E-09	1.24E-07	2.98E-04
Eutrophication (kg N eq)	7.63E-02	8.03E-03	2.23E-02	2.18E-03	1.19E-02	2.89E+00	7.75E-01	8.63E-02	2.22E-04	1.22E-03	3.58E-04	3.87E+00
Acidification (kg SO2 eq)	3.85E-01	1.38E-01	2.85E-01	1.95E-02	1.64E-02	2.47E+01	7.02E+00	7.70E-01	3.41E-03	4.75E-04	2.42E-03	3.34E+01
Respiratory effects (kg PM2.5 eq)	2.94E-02	2.26E-03	3.05E-03	1.68E-03	2.05E-03	1.63E+00	4.16E-01	1.13E-01	5.32E-05	5.35E-05	2.54E-04	2.20E+00
Global warming (kg CO2 eq)	1.18E+02	1.06E+01	3.06E+00	3.51E+00	1.46E+00	4.86E+03	1.31E+03	2.04E+02	6.16E-01	7.97E-01	5.30E-01	6.52E+03
Additional environmental information												
Fossil fuel depletion (MJ surplus)	2.27E+02	1.88E+01	1.56E+00	1.02E+01	2.88E+00	3.98E+03	7.79E+02	1.84E+02	1.09E+00	5.72E-02	1.14E+00	5.20E+03
Ecotoxicity (CTUe)	7.42E+01	2.62E+01	1.64E+00	1.72E+00	1.03E+01	1.96E+03	3.58E+02	1.69E+02	1.52E+00	3.70E-02	3.63E-01	2.61E+03
Carcinogenics (CTUh)	1.67E-06	1.46E-07	1.06E-08	7.15E-08	6.65E-08	9.61E-05	1.88E-05	1.28E-05	8.52E-09	1.17E-09	3.58E-09	1.30E-04
Non carcinogenics (CTUh)	2.02E-05	1.37E-06	1.01E-07	7.01E-07	8.43E-06	4.91E-04	7.70E-05	5.17E-05	7.95E-08	8.69E-09	1.91E-08	6.50E-04
Resource use indicators												
Renewable primary energy used as energy carrier (fuel) (MJ, LHV)	1.70E+02	-1.19E+02	-1.19E+02	-1.13E+02	2.10E+00	4.00E+03	9.85E+02	6.13E+02	-1.22E+02	-2.91E+02	-1.19E+02	-6.81E+01
Renewable primary resources with energy content used as material (MJ, LHV)	1.28E+02	1.19E+02	1.19E+02	1.19E+02	0.00E+00	1.53E+03	0.00E+00	0.00E+00	1.22E+02	2.91E+02	1.19E+02	3.67E+02
Total use of renewable primary resources with energy content (MJ, LHV)	2.98E+02	2.60E-01	2.66E-01	6.64E+00	2.10E+00	5.53E+03	9.85E+02	6.13E+02	1.77E-02	1.96E-02	6.32E-02	2.99E+02
Non-renewable primary resources used as an energy carrier (fuel) (MJ, LHV)	2.05E+03	1.39E+02	9.68E+00	8.83E+01	2.97E+01	7.75E+04	2.14E+04	2.42E+03	4.44E+00	8.27E+00	4.98E+00	2.20E+03
Non-renewable primary resources with energy content used as material (MJ, LHV)	1.99E+01	3.86E+00	3.86E+00	3.86E+00	0.00E+00	5.88E+01	0.00E+00	0.00E+00	3.86E+00	0.00E+00	3.86E+00	2.76E+01
Total use of non-renewable primary resources with energy content (MJ, LHV)	2.07E+03	1.42E+02	1.35E+01	9.22E+01	2.97E+01	7.75E+04	2.14E+04	2.42E+03	8.30E+00	8.27E+00	8.84E+00	2.23E+03
Secondary materials (kg)	0	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels (MJ, LHV)	0	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels (MJ, LHV)	0	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered energy (MJ, LHV)	0	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water resources (m3)	4.30E-05	1.70E-03	1.19E-02	1.00E-03	0.00E+00	1.09E-02	1.10E-02	1.09E-02	7.29E-04	1.04E-02	7.18E-04	1.37E-02
Abiotic depletion potential, fossil (MJ)	1.86E+03	1.40E+02	1.23E+01	8.46E+01	2.59E+01	5.81E+04	1.52E+04	2.01E+03	8.19E+00	5.65E-01	8.64E+00	2.02E+03
Output flows and waste category indicators												
Hazardous waste disposed (kg)	6.40E-01	0	0	0	0	0	0	0	0	0	0	6.40E-01
Non-hazardous waste disposed (kg)	2.99E+01	1.20E+00	1.43E+00	2.93E+01	1.11E+00	1.32E+02	0.00E+00	0.00E+00	5.40E-01	0.00E+00	2.59E+01	3.26E+01
High-level radioactive waste, conditioned, to final repository (kg)	5.60E-03	5.93E-04	4.11E-05	3.50E-04	0.00E+00	3.17E-01	8.83E-02	1.51E-02	1.61E-06	8.03E-07	5.31E-06	6.24E-03
Intermediate- and low-level radioactive waste, conditioned, to final repository (kg)	3.04E-05	3.39E-07	1.40E-07	8.13E-07	0.00E+00	2.69E-03	8.55E-04	5.58E-05	1.55E-08	2.17E-09	2.78E-08	3.09E-05
Components for re-use (kg)	0	0	0	0	0	0	0	0	0	0	0	0
Materials for recycling (kg)	0	0	0	2.93E+01	0.00E+00	4.49E+01	0.00E+00	0.00E+00	2.20E-01	2.20E-01	2.20E-01	0.00E+00
Materials for energy recovery (kg)	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy (MJ, LHV)	0	0	0	0	0	0	0	0	0	0	0	0
Carbon emissions and removals												
Biogenic Carbon Removal from Product (kg CO2)	0	0	0	0	0	0	0	0	0	0	0	0
Biogenic Carbon Emission from Product (kg CO2)	0	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0	0
Biogenic Carbon Removal from Packaging (kg CO2)	7.00E+00	0	0	0.00E+00	0	1.05E+01	0	0	0	0	0	7.00E+00
Biogenic Carbon Emission from Packaging (kg CO2)	0	0	7.00E+00	0.00E+00	0	1.05E+01	0	0	0	0	0	7.00E+00
Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes (kg CO2)	0	0	0	0	0	0	0	0	0	0	0	0
Calcination Carbon Emissions (kg CO2)	0	0	0	0.00E+00	0	0.00E+00	0	0	0	0	0	0
Carbonation Carbon Removals (kg CO2)	0	0	0	0	0	0	0	0	0	0	0	0
Carbon Emissions from Combustion of Waste from	0	0	0	0	0	0	0	0	0	0	0	0

Renewable and Non-Renewable Sources used in Production Processes (kg CO2)												

Drake® II 1G® - LCIA results, resource use, output and waste flows, and carbon emissions & removals per functional unit

Parameter	A1-A3	A4	A5	B2	B3	B4	B6	B7	C2	C3	C4	Total
LCIA results												
Smog (kg O3 eq)	6.07E+00	4.07E+00	1.01E+01	1.70E-01	1.22E-01	2.26E+02	4.64E+01	9.46E+00	9.82E-02	7.54E-03	6.82E-02	3.02E+02
Ozone depletion (kg CFC-11 eq)	6.08E-06	1.67E-08	1.19E-07	2.23E-07	1.77E-07	1.82E-04	4.46E-05	9.07E-06	1.08E-09	5.27E-09	1.24E-07	2.42E-04
Eutrophication (kg N eq)	7.63E-02	8.03E-03	2.23E-02	2.18E-03	1.19E-02	2.37E+00	6.05E-01	6.74E-02	2.22E-04	1.22E-03	3.58E-04	3.17E+00
Acidification (kg SO2 eq)	3.85E-01	1.38E-01	2.85E-01	1.95E-02	1.64E-02	2.00E+01	5.48E+00	6.02E-01	3.41E-03	4.75E-04	2.42E-03	2.70E+01
Respiratory effects (kg PM2.5 eq)	2.94E-02	2.26E-03	3.05E-03	1.68E-03	2.05E-03	1.31E+00	3.25E-01	8.79E-02	5.32E-05	5.35E-05	2.54E-04	1.76E+00
Global warming (kg CO2 eq)	1.18E+02	1.06E+01	3.06E+00	3.51E+00	1.46E+00	3.95E+03	1.03E+03	1.59E+02	6.16E-01	7.97E-01	5.30E-01	5.28E+03
Additional environmental information												
Fossil fuel depletion (MJ surplus)	2.27E+02	1.88E+01	1.56E+00	1.02E+01	2.88E+00	3.40E+03	6.08E+02	1.44E+02	1.09E+00	5.72E-02	1.14E+00	4.41E+03
Ecotoxicity (CTUe)	7.42E+01	2.62E+01	1.64E+00	1.72E+00	1.03E+01	1.65E+03	2.80E+02	1.32E+02	1.52E+00	3.70E-02	3.63E-01	2.17E+03
Carcinogenics (CTUh)	1.67E-06	1.46E-07	1.06E-08	7.15E-08	6.65E-08	7.72E-05	1.47E-05	9.97E-06	8.52E-09	1.17E-09	3.58E-09	1.04E-04
Non carcinogenics (CTUh)	2.02E-05	1.37E-06	1.01E-07	7.01E-07	8.43E-06	4.13E-04	6.01E-05	4.04E-05	7.95E-08	8.69E-09	1.91E-08	5.45E-04
Resource use indicators												
Renewable primary energy used as energy carrier (fuel) (MJ, LHV)	1.70E+02	-1.19E+02	-1.19E+02	-1.13E+02	2.10E+00	3.04E+03	7.70E+02	4.79E+02	-1.22E+02	-2.91E+02	-1.19E+02	-6.81E+01
Renewable primary resources with energy content used as material (MJ, LHV)	1.28E+02	1.19E+02	1.19E+02	1.19E+02	0.00E+00	1.53E+03	0.00E+00	0.00E+00	1.22E+02	2.91E+02	1.19E+02	3.67E+02
Total use of renewable primary resources with energy content (MJ, LHV)	2.98E+02	2.60E-01	2.66E-01	6.64E+00	2.10E+00	4.57E+03	7.70E+02	4.79E+02	1.77E-02	1.41E-02	6.32E-02	2.99E+02
Non-renewable primary resources used as an energy carrier (fuel) (MJ, LHV)	2.05E+03	1.39E+02	9.68E+00	8.83E+01	2.97E+01	6.31E+04	1.67E+04	1.89E+03	4.44E+00	5.85E-01	4.98E+00	2.20E+03
Non-renewable primary resources with energy content used as material (MJ, LHV)	1.99E+01	3.86E+00	3.86E+00	3.86E+00	0.00E+00	5.88E+01	0.00E+00	0.00E+00	3.86E+00	0.00E+00	3.86E+00	2.76E+01
Total use of non-renewable primary resources with energy content (MJ, LHV)	2.07E+03	1.42E+02	1.35E+01	9.22E+01	2.97E+01	6.32E+04	1.67E+04	1.89E+03	8.30E+00	5.85E-01	8.84E+00	2.23E+03
Secondary materials (kg)	0	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels (MJ, LHV)	0	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels (MJ, LHV)	0	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered energy (MJ, LHV)	0	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water resources (m3)	4.30E-05	1.70E-03	1.19E-02	1.00E-03	0.00E+00	1.09E-02	1.09E-02	1.09E-02	7.29E-04	1.04E-02	7.18E-04	1.37E-02
Abiotic depletion potential, fossil (MJ)	1.86E+03	1.40E+02	1.23E+01	8.46E+01	2.59E+01	4.78E+04	1.19E+04	1.57E+03	8.19E+00	5.65E-01	8.64E+00	2.02E+03
Output flows and waste category indicators												
Hazardous waste disposed (kg)	6.40E-01	0	0	0	0	0	0	0	0	0	0	6.40E-01
Non-hazardous waste disposed (kg)	2.99E+01	1.20E+00	1.43E+00	2.93E+01	1.11E+00	1.32E+02	0.00E+00	0.00E+00	5.40E-01	0.00E+00	2.59E+01	3.26E+01
High-level radioactive waste, conditioned, to final repository (kg)	5.60E-03	5.93E-04	4.11E-05	3.50E-04	0.00E+00	2.54E-01	6.90E-02	8.18E-02	1.61E-06	8.03E-07	5.31E-06	6.24E-03
Intermediate- and low-level radioactive waste, conditioned, to final repository (kg)	3.04E-05	3.39E-07	1.40E-07	8.13E-07	0.00E+00	2.14E-03	6.68E-04	7.18E-04	1.55E-08	2.17E-09	2.78E-08	3.09E-05
Components for re-use (kg)	0	0	0	0	0	0	0	0	0	0	0	0
Materials for recycling (kg)	0	0	0	2.93E+01	0.00E+00	4.49E+01	0.00E+00	0.00E+00	2.20E-01	2.20E-01	2.20E-01	0.00E+00
Materials for energy recovery (kg)	0	0	0	0	0	0	0	0	0	0	0	0
Exported energy (MJ, LHV)	0	0	0	0	0	0	0	0	0	0	0	0
Carbon emissions and removals												
Biogenic Carbon Removal from Product (kg CO2)	0	0	0	0	0	0	0	0	0	0	0	0
Biogenic Carbon Emission from Product (kg CO2)	0	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0	0
Biogenic Carbon Removal from Packaging (kg CO2)	7.00E+00	0	0	0.00E+00	0	1.05E+01	0	0	0	0	0	7.00E+00
Biogenic Carbon Emission from Packaging (kg CO2)	0	0	7.00E+00	0.00E+00	0	1.05E+01	0	0	0	0	0	7.00E+00
Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes (kg CO2)	0	0	0	0	0	0	0	0	0	0	0	0
Calcination Carbon Emissions (kg CO2)	0	0	0	0.00E+00	0	0.00E+00	0	0	0	0	0	0
Carbonation Carbon Removals (kg CO2)	0	0	0	0	0	0	0	0	0	0	0	0
Carbon Emissions from Combustion of Waste from Renewable and Non-Renewable Sources used in Production Processes (kg CO2)	0	0	0	0	0	0	0	0	0	0	0	0

SM Transparency Report (EPD)™ + Material Health Overview™

EPD	LCA
3rd-party reviewed	✓ NSF
	Transparency Report (EPD)
3rd-party verified	✓ NSF

Validity: 08/31/2024 – 08/30/2029
TOTO – 20240831 – 004

MATERIAL HEALTH	Material evaluation
Self-declared	✓

This environmental product declaration (EPD) was externally verified by Jack Geibig (Ecoform) on behalf of NSF according to ISO 14044; ISO 21930:2017; SM Part A: LCA calculation rules and report requirements, 2023; the reference PCR; and ISO 14025:2006.

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734 769 8010

NSF Certified Environmental Product Declaration www.nsf.org

SUMMARY
Reference PCR
SM Part B: Residential toilets, v3.0
Regions; system boundaries
North America; Cradle-to-grave
Functional unit
One single toilet in an average residential environment without an electronic bidet seat, over the estimated service life of the building
LCIA methodology; LCA software; LCI database
TRACI 2.1; SimaPro Analyst 9.5; ecoinvent and USLCI databases

In accordance with ISO 14044 and the referenced PCR, the life cycle assessment was conducted by Sustainable Minds and critically reviewed by Jack Geibig (Ecoform) on behalf of NSF.

Public LCA
LCA background report of TOTO Faucets, Flush Valves, and Residential Toilets, 2024

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Contact us

LCA & material health results & interpretation

Drake® II

Drake® II 1.28gpf | Drake® II 1G® | EPD additional content | Material health

Evaluation programs

Declare

Declare labels are issued to products disclosing ingredient inventory, sourcing, and end of life options. Declare labels are based on the Manufacturers Guide to Declare, administered by the International Living Future Institute.

How it works

Material ingredients are inventoried and screened against the Living Building Challenge (LBC) Red List which represents the 'worst in class' materials, chemicals, and elements known to pose serious risks to human health and the greater ecosystem.

The Declare product database and label are used to select products that meet the Living Building Challenge's stringent materials requirements, streamlining the materials specification and certification process.

Assessment scope and results

Declare™

Inventory threshold: 100 ppm

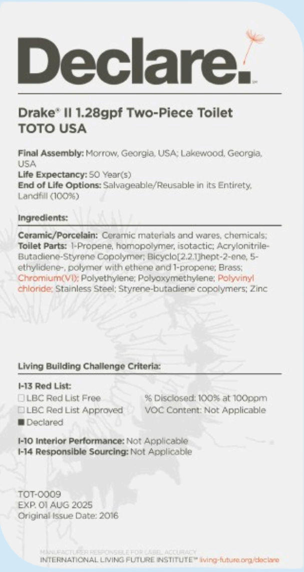
Declare level:

The Declare product database and label are used to select products that meet the LBC's stringent materials requirements, streamlining the materials specification and certification process.

- LBC Red List Free
- LBC Red List Approved
- Declared

Click the label to see the full declaration.

Drake® II 1.28gpf Two-Piece Toilet



Declare.

Drake® II 1.28gpf Two-Piece Toilet
TOTO USA

Final Assembly: Morrow, Georgia, USA; Lakewood, Georgia, USA
Life Expectancy: 50 Year(s)
End of Life Options: Salvageable/Reusable in its Entirety, Landfill (100%)

Ingredients:

Ceramic/Porcelain: Ceramic materials and wares, chemicals; **Toilet Parts:** 1-Propene, homopolymer, isotactic; Acrylonitrile-Butadiene-Styrene Copolymer; Bicyclo[2.2.1]hept-2-ene, 5-ethylidene-, polymer with ethene and 1-propene; Brass; Chromium(VI); Polyethylene; Polyoxymethylene; Polyvinyl chloride; Stainless Steel; Styrene-butadiene copolymers; Zinc

Living Building Challenge Criteria:

I-13 Red List:
☐ LBC Red List Free — % Disclosed: 100% at 100ppm
☐ LBC Red List Approved — VOC Content: Not Applicable
■ Declared

I-10 Interior Performance: Not Applicable
I-14 Responsible Sourcing: Not Applicable

TOT-0009
EXP. 01 AUG 2025
Original Issue Date: 2016

MANUFACTURER RESPONSIBLE FOR LABEL ACCURACY
INTERNATIONAL LIVING FUTURE INSTITUTE™ living-future.org/declare

Drake® II 1G® Two-Piece Toilet

Declare.

Drake® II 1G® Two-Piece Toilet
TOTO USA

Final Assembly: Burbank, California, USA
Life Expectancy: 50 Year(s)
End of Life Options: Salvageable/Reusable in its Entirety, Landfill (100%)

Ingredients:

Ceramic/Porcelain: Ceramic materials and wares, chemicals; **Toilet Parts:** 1-Propene, homopolymer, isotactic; Acrylonitrile-Butadiene-Styrene Copolymer; Bicyclo[2.2.1]hept-2-ene, 5-ethylidene-, polymer with ethene and 1-propene; Brass; Chromium(VI); Polybutylene Terephthalate; Polyethylene; Polyoxymethylene; Polyvinyl chloride; Silica gel; Stainless Steel; Zinc

Living Building Challenge Criteria:

I-13 Red List:
☐ LBC Red List Free — % Disclosed: 100% at 100ppm
☐ LBC Red List Approved — VOC Content: Not Applicable
■ Declared

I-10 Interior Performance: Not Applicable
I-14 Responsible Sourcing: Not Applicable

TOT-0010
EXP. 01 AUG 2025
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What's in this product and why

Declare level

'Declared' is awarded to products when all the ingredients name and CAS numbers have been disclosed. 100% disclosure qualifies the product for the LEED v4 building product disclosure and optimization - material ingredients credit option 1.

What's in the product and why

Manufacturing in the United States means that robust human labor, safety and environmental rules and regulations were followed. In addition, local sourcing of raw materials means that less smog and air pollution are generated as a result of transport. The ceramic body and glaze makes up ~92-93% of the total mass of the toilet. Therefore, manufacturing and transportation of the ceramic create the greatest human health impacts when compared to the overall manufacture of the entire toilet. By specifying a Drake II toilet manufactured in the United States, the consumer helps mitigate these human health impacts.

Red List materials

The toilet trip lever handle is plated with chrome (Hexavalent Chromium VI). Chromium material is used as a decorative finish in applications where corrosion-resistance and durability are required. During the chrome plating process health hazards have been identified and are managed according the OHSA Guidelines. Process controls are used to protect the environment and the production workers wear personal protection equipment. After the plating process the chrome surface is inert and does not pose any health risks. The trip lever in the final form does not represent any hazards to the user.

TOTO continues to investigate alternative finishes in order to reduce and/or eliminate Chromium VI on the toilet trip levers. Standard versions of the Drake II use parts containing PVC (Polyvinyl Chloride), a plastic commonly used within the plumbing industry. The primary health concern is during the production process when the raw material components are in a powder or pelletized form. If inhaled or ingested the results can be toxic and potentially carcinogenic. In the final form, materials are inert and not a hazard to the users of the toilet.

As part of TOTO's efforts to reduce health impacts, PVC-free versions of the Drake II are available. PVC parts have been removed and replaced with materials of compatible functional strength and chemical resistance. These alternative parts are sourced within the continental United States. It should be noted that there are no legislative or regulatory mandates to remove this material from a product, however, as part of our goal to mitigate adverse health impacts, TOTO has decided to move beyond compliance by voluntarily eliminating this compound.

Where it goes at the end of its life

TOTO encourages consumers to recycle their used toilet and toilet parts. Contact your local municipality for recycling programs.

How we're making it healthier

Goals and plans for improvement

- Utilize alternative materials to PVC, removing this compound from tank parts in all TOTO models.
- With no compromise to beauty, functionality or durability, TOTO intends to offer alternative finishes for trip levers that do not require Chromium VI.

See how we make it greener

References

Declare
TOTO USA, Declare label for Drake II 1G
TOTO USA, Declare label for Drake II 1.28gpf

Manufacturer's Guide to Declare
A comprehensive guide providing information about the program, the assessment methodology, how to submit material data to obtain a Declare label and how they are used to meet the Health & Happiness and Materials Petals of the Living Building Challenge.

Rating systems

LEED BD+C: New Construction | v4 - LEED v4
Building product disclosure and optimization
Material Ingredients

Credit value options — 1 product each

- ☑ 1. Reporting
- ○ 2. Optimization
- ○ 3. Supply Chain Optimization

LEED BD+C: New Construction | v4.1 - LEED v4.1
Materials and resources
Material Ingredients

Credit value options — 1 product each

- ☑ 1. Reporting
- ○ 2. Optimization
- ○ 3. Supply Chain Optimization

Living Building Challenge
Materials petals imperatives

- ○ 10. Red List Free
- ○ 12. Responsible Industry
- ○ 13. Living Economy Sourcing

WELL Building Standard®
Air and Mind Features

- ☑ **X07** Materials Transparency
- ○ **X08** Materials Optimization

Collaborative for High Performance Schools National Criteria
EQ C7.1 Material Health Disclosures

- ☑ Performance Approach — 2 points
- ☑ Prescriptive Approach — 2 points

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