

SM Transparency Catalog ▶ TOTO Showroom ▶ EcoPower® Ultra-HE Concealed Toilet Flush Valve TET2UB(X)

TOTO_®

EcoPower® Ultra-HE Concealed Toilet Flush Valve

TET2UB(X) - 1.0qpf





Performance dashboard

Features & functionality

1.0gpf EcoPower® Ultra High-Efficiency Toilet electronic flushometer valve

Hydropower self-generating system

Automatic sensor activated

12 hour automatic flush for trap seal protection

Piston valve technology

Manual override button

ADA compliant

Visit TOTO for more product specifications:

TET2UB(X)

Environment & materials

Improved by:

Powered by the sheer force of running water

Saves 37.5% more water than standard 1.6qpf valve

Metal parts and electric components are recyclable at the end of service

Certifications, rating systems & disclosures:

Contributes to earning credits in LEED®

Declare™ Label, LBC Compliant

MasterFormat® #22 42 43



- ECO-POWER® VALVES
- ter to create an electrical current that is stored in rechargeable cells to power Smart Sensor System of the faucet or valve.
- Reduces electricity use, lower maintenance costs and hands-free, automatic-shut-off functionality.

See LCA, interpretation & rating systems

See materials, interpretation & rating systems







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

LCA

3rd-party reviewed

✓ NSE

Transparency Report (EPD)

3rd-party verified

Validity: 09/01/2024 – 08/31/2029 TOTO - 20240901 - 013

Material evaluation

Self-declared

MATERIAL HEALTH

Ø

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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(865) 850-1883

NSF International

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734 769 8010



Certified Environmental Product Declaration

SUMMARY

Reference PCR

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

Functional unit

One flushometer valve for single flush toilets in an average commercial environment over the estimated service life of the building of the buildina

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

TOTO USA 1155 Southern Road Morrow, GA 30260

SM Transparency Catalog ► TOTO Showroom ► EcoPower® Ultra-HE Concealed Toilet Flush Valve TET2UB(X)

LCA results & interpretation

Scope and summary

○ Cradle to gate ○ Cradle to gate with options **② Cradle to grave**

Functional unit One flushometer valve for single flush toilets used in an average commercial

environment over the estimated service life of the building. 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 flush valve is 10 years, which is an industry-accepted average lifespan based on the economic lifespan of the product.

Maintenance Regular cleaning is assumed to use 10mL of a 1% sodium lauryl sulfate (SLS) solution daily in a commercial setting for 75 years, which is the building estimated service life. The use of 10mL/clean over 260days/year for 75 years gives a total of 195L of solution. Using a density of 1.01kg/L for a 1% $\ensuremath{\text{SLS}}$ solution, 195kg of solution will be needed over the course of 75 years.

Replacement At the end of its RSL, the flush valve is assumed to be replaced. Therefore, an additional 6.5 products are included as replacements, with all life cycle modules considered, over the building's ESL of 75 years.

Therefore, 2kg of SLS plus 195kg of water were included in the model.

Manufacturing data

Manufacturing data has been collected and compiled for TOTO Vietnam. Data reporting period: 2023.

Material composition by wt%

Valve body, cap & tailpiece	Bronze (C836000)	37.9%
Bottom and top covers	Stainless steel	20.4%
Seals	EPDM	17.6%
Frame	ABS	6.34%
Packaging	Carboard	5.73%
Small parts	Polyacetal	3.55%
Tailpiece nut	Brass	2.37%
Base	Rigid PU	1.11%
Base	PPO	1.10%
	Other	3.91%

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



PRODUCTION

(X) A1 Raw materials

Brass and stainless steel

parts together with the

printed wiring board in

7.92E+01

5.29E-06

1.36E-04

3.36E+02

4.90E+01

0

addition to manufacturing

processes such as bronze

All life cycle stages

What's causing the greatest impacts

The use stage [B1-B7] dominates the results for all impact categories. The

replacements module [B4] is highly dominant in all categories because of the amount of water consumed during operation and the necessity to consider an additional 6.5 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]

EcoPower® Ultra-HE Concealed Toilet Flush Valve

relevant to the carcinogenics category. The steel turning is a high contributor to all impact categories. Because these products are manufactured in Vietnam but sold in the US market, the transportation via oceanic freighter appears as a relevant contributor to the fossil fuel depletion and smog categories. Construction stage [A4-A5]

Installation of the product dominates impacts in the construction stage.

Brass and stainless steel parts, together with the printed wiring board,

have significant material contributions to the production stage. Potting is

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

additional 6.5 products as replacements. The water consumed during use and

AVG. % WT

embedded electricity used for the water supply are also contributors in this stage. 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

itself dominates all impact categories (>96%) due to the consideration of an

Operational energy and water use The flush valve uses 1.0 gallons of water per flush and is assumed to be used 90 times per day in a commercial environment. With commercial use at 260

days per year over 75 years, the flush valve uses a total of 1,755,000 gallons

relatively low portion (<1%) of total results for all impact categories.

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. This use stage electricity was modeled using a United States grid mix. 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

END OF LIFE

Demolition

(X) C1 Deconstruction/

Transport to waste

of material flows

3.40E-01 3.50E-08

2.25E-03

5.76E-09

2.61E-07

5.02E-01

4.49E-01

1/2 product

1 product

1 product

2 points

.5 points

.75 points

1 point

1.5 products

processing and disposal

transported to a landfill.

- See how we make it greener

(X) B1 Use

Volume of water used

replacements needed

number of product

4.55E+04

2.06E-03

2.49E+02

9.74E-04

5.38E-03

1.95E+04

2.76E+04

Building product disclosure and optimization

Environmental product declarations

during operation and the

over the building's service

LIFE CYCLE STAGE

		•		
	(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	
Information modules: Included (X) Excluded (MND)*			(X) B6 Operational energy use	
			(X) B7 Operational water use	
SM Single Score				
Impacts per flush valve	26.3 mPts	0.06 mPts	3,527 mPts	0.04 mPts

(X) A4 Transportation/

Delivery

stage

Impact category **Global warming**

Materials or processes contributing

>20% to total impacts in each life cycle

	turning.		life.				
TRACI v2.1 results per functional unit							
		CONCERNICATION	LIGE	END OF LIFE			
LIFE CYCLE STAGE	PRODUCTION	CONSTRUCTION	USE	END OF LIFE			
Ecological damage							

9.53E-01

2.29E-09

4.00E-03

of packaging.

Transportation of the

product to installation site

or consumer and disposal

Ozone depletion	kg CFC-11 eq	0	3.25E-06
Acidification	kg SO ₂ eq	0	1.34E+00

Additional environmental information

CTU_h

CTU

MJ surplus

kg CO₂ eq

Eutrophication	kg N eq	0	8.29E-01	7.33E-04	3.61E+01	3.43E-04
Human health o	lamage					
Impact category	Unit					
Smog	kg O ₃ eq	0	9.42E+00	1.16E-01	2.24E+03	4.69E-02
Respiratory effects	ka PM ea	•	1.88F-01	6.89F-05	179F+01	2 57F-04

Impact category Unit Carcinogenics CTU_h

Non-carcinogenics

Fossil fuel depletion

Ecotoxicity

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

9.03E-09

8.44E-08

1.59E+00

1.15E+00

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

services"

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.

March, 2024. PCR review conducted by Hugues Imbeault-Tétreault, ing.,

M.Sc.A., Chair (Groupe AGÉCO) hugues.i-tetreault@groupeageco.ca; Rebe Feraldi, LCACP, CLAR (TranSustainable Enterprises, LLC); Rifat Karim (Sphera).

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

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 $certain\ assumptions,\ data\ quality,\ and\ variability\ between\ LCA\ data\ sets\ may\ still\ exist.\ Any\ EPD$ 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

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.

construction works. Some LCA impact categories and inventory items are still under development

ISO 14025, "Sustainability in buildings and civil engineering works — Core

rules for environmental product declarations of construction products and

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

SM Part B: Commercial flushometer valves, v3.0

Download PDF SM Transparency Report/EPD

Product-specific Type III EPD

Industry-wide (generic) EPD

performance

LEED BD+C: New Construction | v4.1 - LEED v4.1 Building product disclosure and optimization

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

☐ Industry-wide (generic) EPD

Environmental product declarations

✓ Product-specific Type III EPD

Third-party certified type III EPD

Criteria			3					
MW C5.1 -	- Envi	ronme	ental Pro	oduc	t De	clara	atio	าร

Green Globes for New Construction and Sustainable Interiors Materials and resources

Collaborative for High Performance Schools National

BREEAM New Construction 2018

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

Mat 02 - Environmental impacts from construction products **Environmental Product Declarations (EPD)**

Multi-product specific EPD Product-specific EPD

TOTO USA Reference PCR 1155 Southern Road Morrow, GA 30260

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

toilets in an average commercial

☐ Industry-average EPD

LCIA methodology; LCA software; LCI database TRACI 2.1; SimaPro Analyst 9.5;

Sustainable Minds and critically reviewed by Jack Geibig (Ecoform) on

behalf of NSF. **Public LCA**

Contact us

MATERIAL HEALTH

EPD

3rd-party reviewed

3rd-party verified

Self-declared

requirements, 2023; the reference Validity: 09/01/2024 - 08/31/2029 One flushometer valve for single flush PCR; and ISO 14025:2006. TOTO - 20240901 - 013 Ecoform, LLC

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

This environmental product

declaration (EPD) was externally

behalf of NSF according to ISO

LCA calculation rules and report

verified by Jack Geibig (Ecoform) on

14044: ISO 21930:2017; SM Part A:

Transparency Report (EPD)

LCA

⋘ NSE

✓ NSF

Material

evaluation

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Knoxville, TN 37932

734 769 8010 Certified **Environmental**

SUMMARY

service life of the building of the

ecoinvent and USLCI databases

In accordance with ISO 14044 and the referenced PCR, the life cycle assessment was conducted by

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

Product Declaration

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Fairburn, GA

Diesel truck

Potential waste

29.5%

scenario - Landfill

406 km

EPD additional content

EPD additional content

Data

the total mass.

Zinc, primary, at

regional storage

Tap water at user

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 massbased 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.

Background This product-specific plant-specific declaration was created by

collecting production data from the Vietnam location. 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

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

Cut-off criteria for the inclusion of mass and energy flows are 1% of renewable primary resource (energy) usage, 1% nonrenewable primary resource (energy)

Flush valves include a lithium-ion battery which contains 1, 2-Dimethoxyethane (CAS# 110-71-4), a substance added to the SVHC Candidate List per the EU $\,$ REACH Regulation. Because the battery is sealed, 100% of this hazardous substance is confined in the battery. 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 flush valve and packaging materials. Data sets contributing 5% or more to any environmental impact category

SimaPro Die casting, zinc **US-EI 2.2** Analyst China By mass 9.5 SimaPro United

SimaPro

Analyst

9.5

Vietnam

By mass

By mace

name and version

US-EI 2.2

LIS EL 2.2

Tap water, at user	US-EI 2.2	Analyst 9.5	States	By mass				
Electricity, low voltage, at grid, Vietnam	US-EI 2.2 SimaPro Analyst 9.5		Vietnam	By mass				
Heat, natural gas, at boiler modulating <100kW	ecoinvent v3.10	SimaPro Analyst 9.5	Vietnam	By mass				
Flow diagram	Flow diagram							
Raw materials [A1]								
Electricity, Manu	Transportation	[A2]	Waste					
natural gas Core injection & Injection molding or zinc								
Ancillary Metal part machining, sanding, polishing, and chroming								
Packaging Assembling, labeling, and packaging								
Final product								

warming (kg

CO2 eq)

Fossil fuel depletion (MJ

surplus) **Ecotoxicity**

(CTUe)

Carcinogenics

secondary

fuels (MJ, LHV) Nonrenewable

secondary fuels (MJ, LHV) Recovered

energy (MJ, LHV) Use of net fresh water

resources (m3)Abiotic depletion

potential, fossil (MJ)

Hazardous

disposed (kg)

conditioned, to final repository (kg) Intermediateand low-level radioactive

waste, conditioned, to final repository (kg)

waste

Nonhazardous

waste disposed (kg) High-level radioactive waste,

0

0

0

7.78E-04

8.74E+00

1.20E+00

1.72E-06

1.65E-08

0

0

0

0

1.05E-02

1.21E-01

0

1.43E+00

2.56E-07

2.22E-09

0.00E+00

0.00E+00

0.00E+00

1.70E-04

1.89E+02

2.93E+01

7.76E-04

1.80E-06

0

0

0.00E+00

0.00E+00

0.00E+00

1.09E-02

4.47E+05

9.35E+01

2.10E+00

2.29E-02

0

0

0.00E+00

0.00E+00

0.00E+00

1.10E-02

5.85E+04

0.00E+00

3.40E-01

3.29E-03

0

0

0.00E+00

0.00E+00

0.00E+00

1.09E-02

7.73E+03

0.00E+00

1.03E-01

2.15E-04

0

0.00E+00

0.00E+00

0.00E+00

5.51E-05

6.19E-01

5.40E-01

1.22E-07

1.17E-09

0

0

0

0

0

0

0.00E+00

0.00E+00

0.00E+00

1.02E-02

2.50E+00

0.034

0.00E+00

1.38E-06

1.09E-08

0

0.00E+00

0.00E+00

0.00E+00

1.11E-03

4.99E-01

0.034

0.00E+00

1.59E-06

1.04E-08

0

0.00E+00

0.00E+00

0.00E+00

1.14E-02

1.02E+03

3.38E-03

3.26E+01

2.42E-03

2.72E-06

0

0

0

0

1.95E-04

1.01E+03

Output flows and waste category indicators

3.38E-03

2.99E+01

2.42E-03

1.02E+02

5.85E+01

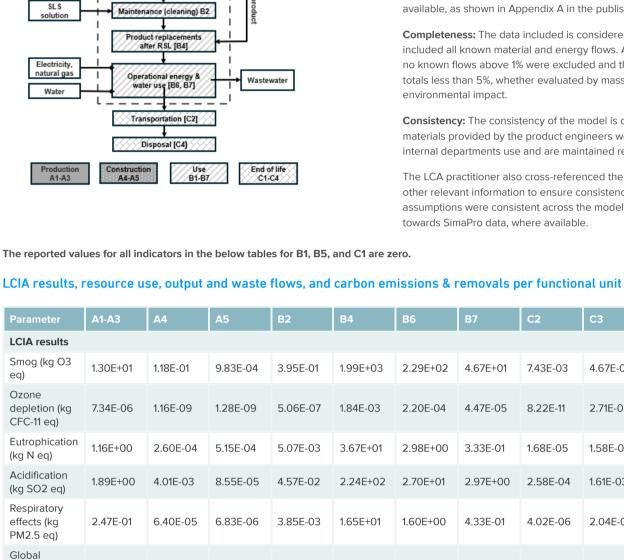
5.25E+02

Additional environmental information

6.58E-01

1.16E+00

1.62E+00



Use [B1-B7]

Vehicle type

Distribution [A4]

Plant location

Distance (port of Savannah to plant)

In 2023, outbound shipments of flush valves from Fairburn were transporte
an average of 947 miles (1,524 km) by diesel truck and an average of 1,114
miles (1,793 km) by rail. The quantity transported by truck is 83%, and by rai
17%.

EcoPower® Ultra-HE Concealed Toilet Flush Valve

Scenarios and additional technical information End of life [C1-C4] The model reflects the assumptions that flush valves 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

Bronze, stainless steel,

Material

waste after the sorting process. No additional waste processing is needed in that case, and no credits for material recovery are given.

70.5%

Potential waste

scenario - Recycling

brass Corrugated board 66.5% 33.5% EPDM, ABS, Polyacetal, 15.0% 85.0% rigid PU, PPO **Product information**

Product code	ASTM or ANSI product specification	Physical properties and technical information				
TET2UB(X)	ASSE 1037, CSA B125.3 IAPMO(cUPC)	Commercial flushometer				
Major system boundary exclusions						
 Construction of major capital equipment, water & wastewater infrastructure 						
Maintenance and operation of support equipment						

Manufacture & transport of packaging materials not associated w/ final

Disposal of packaging materials not associated with final product

Energy consumption in warehouses, distribution centers, and retail facilities during the course of transport to the final customer

product

- Transportation of all raw materials with the mass above 1% of the cumulative mass of the model, products from vendors, is estimated based
- Pallet use is assumed based on the average numbers per unit of product and reported pallet quantity of specific models.

Human labor and employee transport

Building operational energy and water use

Major assumptions and limitations

on rail lines and port information.

Data quality assessment

distances were calculated based on the raw material manufacturers' addresses, extracted from the relevant SDSs.

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

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

no known flows above 1% were excluded and the sum of all excluded flows

included all known material and energy flows. As pointed out in that section,

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

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

internal departments use and are maintained regularly.

towards SimaPro data, where available.

3.33E-01

2.97E+00

4.33E-01

7.85E+02

7.11E+02

6.52E+02

4.92E-05

1.99E-04

1.99E+03

1.84E-03

3.67E+01

2.24E+02

1.65E+01

3.98E+04

2.41E+04

1.97E+04

2.98E+00

2.70E+01

1.60E+00

5.06E+03

3.00E+03

1.38E+03

2.29E+02 4.67E+01 7.43E-03 4.67E-02 4.07E-03 2.29E+03 2.20E-04 4.47E-05 8.22E-11 2.71E-08 5.00E-09 2.12E-03

1.58E-04

1.61E-03

2.04E-04

1.72E-01

3.19E-01

3.58E-02

1.41E-09

6.27E-09

5.37E-05

3.08E-04

2.45E-05

5.15E-02

5.12E-02

6.80E-02

4.60E-10

5.52E-09

4.13E+01

2.57E+02

1.88E+01

4.59E+04

2.77E+04

2.23E+04

9.52E-04

8.00E-03

1.68E-05

2.58E-04

4.02E-06

4.66E-02

8.23E-02

1.15E-01

6.44E-10

6.01E-09

2.77E-06 9.09E-09 1.61E-10 1.60E-07 8.27E-04 7.23E-05 (CTUh) Non 3.24E-04 7.17E-03 carcinogenics 8.49E-08 1.62E-09 1.58E-06 2.96E-04

3.24E-01

1.28E-02

1.01E-02

8.08E+00

2.23E+01

3.85E+00

(CTUh)											
Resource use in	ndicators										
Renewable primary energy used as energy carrier (fuel) (MJ, LHV)	-3.46E+01	-1.26E+01	-1.27E+01	2.09E+00	3.93E+04	3.80E+03	2.36E+03	-1.19E+01	-3.15E+01	-1.26E+01	-5.99E+01
Renewable primary resources with energy content used as material (MJ, LHV)	1.28E+02	1.27E+01	1.27E+01	1.27E+01	3.34E+02	0.00E+00	0.00E+00	1.19E+01	3.15E+01	1.27E+01	1.54E+02
Total use of renewable primary resources with energy content (MJ, LHV)	9.37E+01	1.89E-02	2.76E-03	1.47E+01	3.96E+04	3.80E+03	2.36E+03	1.34E-03	1.41E-02	1.40E-02	9.37E+01
Non- renewable primary resources used as an energy carrier (fuel) (MJ, LHV)	1.03E+03	7.38E+00	-1.35E+00	2.03E+02	6.15E+05	8.25E+04	9.31E+03	-8.57E-01	2.58E+00	-9.09E-01	1.03E+03
Non- renewable primary resources with energy content used as material (MJ, LHV)	7.65E+00	1.49E+00	1.49E+00	1.49E+00	2.26E+01	0.00E+00	0.00E+00	1.49E+00	0.00E+00	1.49E+00	1.06E+01
Total use of non- renewable primary resources with energy content (MJ, LHV)	1.04E+03	8.86E+00	1.37E-01	2.05E+02	6.15E+05	8.25E+04	9.31E+03	6.28E-01	2.58E+00	5.76E-01	1.04E+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
Renewable											

Components for re-use (kg)	0	0	(
Materials for	0	0	(

2.70E-06

Materials for energy recovery (kg)	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
Carbon emissions and removals											
Biogenic Carbon Removal from Product (kg CO2)	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	0	0	0	0	0
Biogenic Carbon Removal from	8 20F-01	0	0	0.00F+00	123F+00	0	0	0	0	0	8 20F-01

for re-use (kg)											
Materials for recycling (kg)	0	0	0	2.93E+01	6.59E+01	0.00E+00	0.00E+00	4.90E+00	4.90E+00	4.90E+00	0.00E+00
Materials for energy recovery (kg)	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
Carbon emissions and removals											
Biogenic Carbon Removal from Product (kg CO2)	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	0	0	0	0	0
Biogenic Carbon Removal from Packaging (kg CO2)	8.20E-01	0	0	0.00E+00	1.23E+00	0	0	0	0	0	8.20E-01
Biogenic Carbon Emission from Packaging (kg CO2)	0	0	8.20E-01	0.00E+00	1.23E+00	0	0	0	0	0	8.20E-01
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
Calcination Carbon Emissions (kg CO2)	0	0	0	0.00E+00	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

Carbon Emissions from Combustion of Waste from

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

Renewable 0

0 0 0

0

EPD LCA

3rd-party reviewed



Transparency Report (EPD)

3rd-party verified



Validity: 09/01/2024 – 08/31/2029 TOTO – 20240901 – 013

Material MATERIAL HEALTH evaluation

evaluatior

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.

Ecoform, LLC 11903 Black Road Knoxville, TN 37932 (865) 850-1883

NSF International

P.O Box 130140, 789 N.Dixboro Road, Ann Arbor, MI 48105, USA

www.nsf.o

734 769 8010



Certified Environmental Product Declaration

SUMMARY

Reference PCR

SM Part B: Commercial flushometer valves, v3.0

Regions; system boundaries

North America; Cradle-to-grave

Functional unit

One flushometer valve for single flush toilets in an average commercial environment over the estimated service life of the building 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 Residentia Toilets. 2024

TOTO USA

1155 Southern Road Morrow, GA 30260

LCA & material health results & interpretation

EcoPower® Ultra-HE Concealed Toilet Flush Valve

Sustainable Minds

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 2

Click the label to see the full declaration.

EcoPower® Ultra-HE Concealed Toilet Flush Valve



What's in this product and why

Declare level

'Living Building Challenge Compliant' is achieved when the product contains Red List ingredients that have been given a temporary exception by the Living Building Challenge due to current market limitations.

What's in the product and why

The electronics used for flush valve operation include circuit board components. The controller, battery, and sensor allow for a self-powered hydroelectric flush valve system while also maintaining a true mechanical flush override. The electronic components are contained within the flush valve body and do not represent any hazards to the user.

The TOTO facility in which the valve is manufactured is ISO 14001 certified. This means that the facility has implemented an environmental management system as part of TOTO's commitment to the health of the environment.

Where it goes at the end of its life TOTO encourages consumers to recycle their used lavatory and lavatory

parts. Contact your local municipality for recycling programs.

How we're making it healthier

The EcoPower technology enables the flush valve to operate off the energy grid and requires no routine battery replacement. This technology helps to reduce pollution and hazardous waste, thereby mitigating human health impacts.

See how we make it greener

References

Declare

TOTO USA, Declare label for EcoPower® Toilet Flush Valve TET2UB(X) & TET2LB(X)

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

1. Reporting

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

Material Ingredients

2. Optimization

Credit value options

1 product each 3. Supply Chain Optimization

1 product each

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

Material Ingredients

Credit value options

1. Reporting 2. Optimization \bigcirc 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



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

This environmental product

declaration (EPD) was externally

behalf of NSF according to ISO

verified by Jack Geibig (Ecoform) on

EPD LCA **⋘** NSE 3rd-party reviewed Transparency Report (EPD)

3rd-party verified **✓** NSF Validity: 09/01/2024 - 08/31/2029

Material **MATERIAL HEALTH** evaluation

TOTO - 20240901 - 013

Self-declared

14044: ISO 21930:2017; SM Part A: LCA calculation rules and report requirements, 2023; the reference PCR; and ISO 14025:2006. Ecoform, LLC 11903 Black Road

Knoxville, TN 37932 (865) 850-1883

NSF International P.O Box 130140, 789 N.Dixboro Road,

Ann Arbor, MI 48105, USA

734 769 8010



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SUMMARY Reference PCR

Regions; system boundaries

North America; Cradle-to-grave

Functional unit One flushometer valve for single flush

toilets in an average commercial

environment over the estimated

TRACI 2.1; SimaPro Analyst 9.5;

Sustainable Minds and critically

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ecoinvent and USLCI databases In accordance with ISO 14044 and the referenced PCR, the life cycle assessment was conducted by

behalf of NSF.

Public LCA

reviewed by Jack Geibig (Ecoform) on

Morrow, GA 30260

1155 Southern Road

TOTO USA

EcoPower® Ultra-HE Concealed Toilet Flush Valve

How we make it greener

Sustainable Minds

Transparency Report (EPD)

Expand all







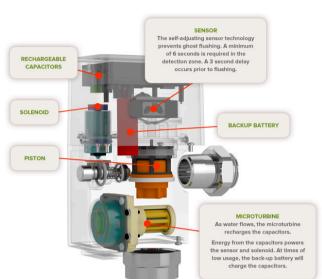


TOTO participates in the UPS Carbon Neutral program. TOTO is a certified SmartWay® Transport Partner.

USE



TOTO's EcoPower® Toilet Flush Valves feature the highly regarded EcoPower technology. Engineered to reduce environmental impacts, TOTO's EcoPower products offer water and energy savings without sacrificing performance. Below are some of the features of TOTO's EcoPower technology.



SENSOR:

Ensuring that water flows only when needed, the self-adjusting EcoPower sensor eliminates "ghost" flushing that wastes water. A minimum of six seconds in front of the sensor is required to get its acknowledgement, and a three second flush delay after stepping away from the sensing zone prevents excessive flushing.

MICROTURBINE:

TOTO's EcoPower technology enables the product to operate 100% off grid. As water flows, the microturbine recharges capacitors for the sensor and solenoid. Less reliance on the back-up battery results in much less battery waste.

PISTON AND SOLENOID:

The piston and solenoid mechanism, a marked improvement over traditional rubber diaphragm type valves, maintains consistent flush volume under a range of supply pressures.



ADDITIONAL WATER SAVINGS

Using the same proven EcoPower engineering, the high-efficiency tollet flush valve reinforces TOTO's performance reputation while offering additional water savings.



Metal and electronic parts can be recycled at the end of life.

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

LCA **▼** NSI 3rd-party reviewed

Transparency Report (EPD)

Validity: 09/01/2024 - 08/31/2029

3rd-party verified

TOTO - 20240901 - 013 Material

MATERIAL HEALTH Self-declared

Ø

evaluation

✓ NSF

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 International P.O Box 130140, 789 N.Dixboro Road, Ann Arbor, MI 48105, USA 734 769 8010



SUMMARY

Functional unit

Reference PCR SM Part B: Commercial flushometer valves, v3.0

Regions; system boundaries

North America; Cradle-to-grave

One flushometer valve for single flush

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